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MATEMATIKA (INFORMATIKA BILAN)

37. $\frac{3-x}{5x} - \frac{5+x}{6x} = \frac{1-23x}{8x}$ tenglamani yeching.

A) 7 B) $-\frac{1}{7}$ C) $\frac{1}{7}$ D) 3,5

38. Hisoblang: $\operatorname{ctg}^2\left(arcsin\frac{1}{\sqrt{5}}\right) - 5$

A) $-\frac{2}{3}$ B) $\frac{1}{2}$ C) -1 D) $-\frac{1}{2}$

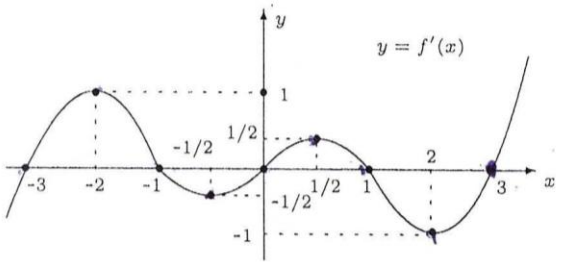
39. $\log_{0,5}(4^x - 5\cdot 2^x + 6) \geq -1$ tengsizlikni qanoatlantiradigan eng katta butun sonni toping.

A) 2 B) *0* C) -1 D) *3*

40 Qaysi jism(lar)ning simmetriya tekisliklari chekli sonda?
1) shar; 2) prizma; 3) konus; *4*) kub

A) *2, 3* B) *1* C) *1, 4* D) *2, 4*

41. Rasmda $y = f'(x)$ funksiya grafigi tasvirlangan. $f'(x) = 0$ tenglama yechimlari o'rta arifmetigini toping. $(x \in [-3;3])$



A) 1,5 B) 1 C) 0 D) 2

42. Beshta a_1, a_2, a_3, a_4, a_5 tub sonlar ayirmasi 6 ga teng bo'lgan arifmetik progressiyani tashkil qiladi. $a_2 + a_5$ ni toping.

A) *22* B) *28* C) *34* D *40*

43. a va b natural sonlarning umumiy bo'luvchilari soni 5 ga teng bo'lsa, $a + 5b$ va b sonlarning umumiy bo'luvchilari nechta?

A) *4* B) *5* C) *bir qiymatli aniqlab bo'lmaydi* D) *1*

44. $y > 0$ bo'lsin. To'rtburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(1;0)$, $B(1;y)$, $C(-8;y)$ va $D(-10;0)$. To'rtburchak diagonallarining o'rtalari orasidagi masofani toping.

A) $\sqrt{2}$ B) *y ga bog'liq* C) *1* D) *2*

45. [0; 300] kesmada 3 ga bo'linganda qoldiq 1 ga, 4 ga bo'linganda qoldiq 2 ga, 5 ga bo'linganda qoldiq 3 ga va 6 ga bo'linganda qoldiq 4 ga teng bo'ladigan natural sonlar nechta?

A) *5* B) *2* C) *3* D) *4*

46. $y = \frac{1}{x^2}$; $y = 0$; $x = 1$; $x = 2$ chiziqlar bilan chegaralangan shaklning yuzini toping.

A) *2,5* B) *4* C) *0,5* D) *2*

47. $x^3 - (\sqrt{6}+1)x^2 + 6$ ko'phadni ko'paytuvchilarga ajrating.

A) $(x-\sqrt{6})(x^2+x-\sqrt{6})$ B) $(x-\sqrt{6})(x^2-x-\sqrt{6})$
C) $(x+\sqrt{6})(x^2-x+\sqrt{6})$ D) $(x+\sqrt{6})(x^2+x+\sqrt{6})$

48. Hisoblang: $\log_2\left(\frac{3}{0,(4)} + \frac{3}{0,(6)} + \frac{3}{0,(8)} + 1,375\right)$

A) *1* B) *4* C) *2* D) $\log_2 3$

49. Agar $|x+5| = \frac{x}{2} + a$ tenglama a parametrning nechta natural qiymatida yechimga ega emas?

A) *3* B) *2* C) 0 D) *1*

50. $\frac{(x-4)(x+2)^2(x-8)}{(x+1)(x-7)} \leq 0$ tengsizlikni yeching.

A) $(-1;4] \cup (7;8]$
B) $(-1;4] \cup (7;8] \cup \{-2\}$
C) $(-1;4) \cup (7;8)$
D) $(-1;4) \cup (7;8) \cup \{-2\}$

51. Kvadratga ikkita doira ichki chizilgan. Radiusi 2 ga teng bo'lgan birinchi doira kvadratning ikkita qo'shni tomonlariga urinadi, radiusi 6 ga teng bo'lgan ikkinchi doira kvadratning qolgan ikkita tomoni va birinchi doiraga urinadi. Kvadratning yuzini toping.

A) $16(2\sqrt{2}+1)$ B) $32(2\sqrt{2}+3)$ C) $12(2\sqrt{2}+1)$
D) $8(3\sqrt{2}+1)$

101-variant

Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(-\frac{1}{2};-2)$, $C(-1;0)$. Uchburchak yuzini toping.

A) $\sqrt{2}$ B) $\sqrt{3}$ C) *1* D) *2*

3. $y=f(x)$ funksiya D to'plamda kamayuvchi bo'lsin. D to'plamdan olingan ixtiyoriy a, b elementlari uchun $(a<b)$ quyidagi munosabatlardan qaysi biri o'rinli?

A) $f(b)<f(a)$ B) $f(b)=f(a)$ C) $f(a)<f(b)$
D) $f(a)\le f(b)$

4. $\alpha+\beta+\gamma=\pi$, $\cos\alpha\cos\beta\cos\gamma=-\frac{1}{2}$ bo'lsa,
$\sin^2\alpha+\sin^2\beta+\sin^2\gamma$ ning qiymatini toping.

A) *1* B) $\sqrt{2+\sqrt{2}}$ C) *2* D) $-\sqrt{2}$

C nuqta – AB kesmaning o'rtasi. AC va BC kesmalarda mos ravishda M, N nuqtalar shunday olinganki, $AM{:}MC{=}CN{:}NB$ munosabat bajariladi. Agar AB kesma uzunligi 12 ga teng bo'lsa, MN kesma uzunligini toping.

A) *6* B) *3* C) *2* D) *4*

56. O'zaro teng bo'lmagan x va y sonlari $x^2+36y=y^2+36x$ tenglikni qanoatlantirsa, $x+y$ ni toping.

A) *18* B) *24* C) *0* D) *36*

57. Muntazam uchburchakli piramida asosining tomonidan unga ayqash yon qirraga perpendikular bo'lgan tekislik o'tkazilgan. Kesuvchi tekislik yon qirrani uchidan hisoblaganda 3:2 nisbatda kesadi. Asos tomoni $6\sqrt{2}$ ga teng bo'lsa, piramida yon sirtining yuzini toping.

A) *108* B) *90* C) *54* D) *72*

58. $a=5$ bo'lsa, $\int\limits_a^{a+1}(ln(\sin^2 3x+\cos^2 3x)+1)dx$ aniq integralni hisoblang.

A) 1 B) $2\sqrt{2}$ C) $\sqrt{2}$ D) $\frac{\ln 2-1}{3}$

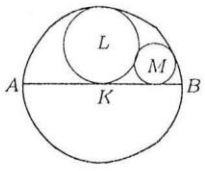
59. $|x^2+2x-8|=3a$ tenglama a ning qanday qiymatlarida 4 ta haqiqiy yechimga ega?

A) $1<a<3$ B) $a>3$, $a=0$ C) $a=3$ D) $(0;3)$

60. Agar $f(x)=ax^7+bx^3-2$ funksiya uchun $f(3)=-2$ shart bajarilsa, $f(-3)$ qiymatni toping.

A) *bir qiymatli aniqlanmaydi* B) *-1* C) -2 D) *1*

61. AB kesma K aylananing diametri bo'lsin. L aylana K aylanaga hamda AB to'g'ri chiziqqa K aylananing markazida urinadi; M aylana K va L aylanaga hamda AB to'g'ri chiziqqa urinadi (chizmaga qarang). Agar M doira yuzasi 0,25 ga teng bo'lsa, K doira yuzasini toping.



A) *aniqlab bo'lmaydi* B) *4* C) *8* D) *6*

62. $y=\log_2(\operatorname{arctg}2x+\operatorname{arcctg}2x)$ funksiyaning $x=\frac{1}{2}$ nuqtadagi ikkinchi tartibli hosilasining qiymatini toping.

A) *1* B) $-\log_2 2$ C) $\log_2 3$ D) *0*

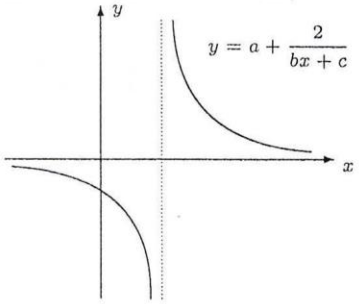
63. Parallelepipedning asoslari tomoni 6 ga teng kvadratlardan, barcha yon yoqlari romblardan iborat. Yuqori asosining uchlaridan biri ostki asosining barcha uchlaridan baravar uzoqlikda joylashgan. Parallelepipedning hajmini toping.

A) $108\sqrt{2}$ B) *81* C) $54\sqrt{2}$ D) $72\sqrt{2}$

64. $\{x|x\in N, 2\le x^2\le 40\}$ to'plamning nechta qism-to'plamlari mavjud?

A) *40* B) *5* C) *32* D) *16*

65. Rasmda $y=a+\frac{2}{bx+c}$ funksiya grafigi tasvirlangan. Quyidagilardan qaysi biri noto'g'ri?



A) $a^3-b^2<0$ B) $bc+ab^2<0$ C) $b-c+a>0$
D) $c-b>0$

66. Poyezd 5 minutda 9 kilometr masofani, motosikl 6 minutda 9 kilometr masofani bosib o'tdi. Motosiklchining tezligi poyezd tezligining necha foizini tashkil etadi?

A) $63\frac{1}{3}\%$ B) $83\frac{1}{3}\%$ C) *80%* D) $81\frac{2}{3}\%$

67. 4 terabayt necha gigabaytga teng?

A) 2^{32} *gigabayt* B) 2^{12} *gigabayt* C) 2^{25} *gigabayt*
D) 2^{22} *gigabayt*

68. 22012, 12202 butun sonlarni barchasini yozish mumkin bo'lgan eng kichik asosli sanoq sistemasida shu sonlar raqamlarining yig'indisini hisoblang.

A) *1110* B) *24* C) *32* D) *112*

69. Qaysi javobda faqat arxivlangan fayllar kengaytmasi berilgan?

A) *.awi, .com, .bac* B) *.htm, .arj, .txt* C) *.zip, .rar, .arj*
D) *.zip, .jpg, .rar*

70. $A1{=}{-3}$, $B1{=}7$, $B2{=}3$ bo'lsin. Quyidagi formula natijasi -13 ga teng bo'lishi uchun $A2$ katakka kiritilishi kerak bo'lgan qiymatni aniqlang.
=ЕСЛИ(ИЛИ($A1{+}B2{>=}A2{*}B1$;$A1{*}B1{>}0$);
$A1{*}B2{-}B1{-}A2$;$A1{*}B1{+}B2{+}A2$)

A) *3* B) *7* C) *5* D) *2*

71. <TH> yoki <TD> teglarda jadval satrlarini birlashtirish uchun HTML hujjatlarida qanday parametr ishlatiladi?

A) *ROWSPAN* B) *CELLPADDING* C) *COLSPAN*
D) *CELLSPACING*

72. Paskal. Quyidagi dastur natijasini aniqlang.

```
Var x, y, z : Real;
Begin y:=-1; x:=0;
IF (x>=0) and (1+Sqrt(x) <>0) THEN
Begin z:=Sqr(1+y+x)/(1+Sqrt(x));
Write('Z=', z:5:2); end
ELSE Write('Hisoblab bo'lmaydi'); End.
```

A) *Z= 2.00*
B) *Hisoblab bo'lmaydi*
C) *Kompilyatsiyada xatolik xabari chiqadi*
D) *Z= 0.00*

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MATEMATIKA (INFORMATIKA BILAN)

37. [50; 400] kesmada 3 ga bo'linganda qoldiq 1 ga, 4 ga bo'linganda qoldiq 2 ga, 5 ga bo'linganda qoldiq 3 ga va 6 ga bo'linganda qoldiq 4 ga teng bo'ladigan natural sonlar nechta?

A) 5 B) 6 C) 3 D) 4

38. Hisoblang: $\sin 25° \cdot \sin 35° \cdot \sin 85°$.

A) $\frac{\sqrt{2-\sqrt{3}}}{16}$ B) $\frac{\sqrt{2-\sqrt{3}}}{8}$ C) $\frac{\sqrt{2+\sqrt{3}}}{16}$

D) $\frac{\sqrt{2+\sqrt{3}}}{8}$

39. Kvadrat uchhadni ko'paytuvchilarga ajrating $-\frac{1}{2}x^2+6x+14$

A) $-\frac{1}{2}(x+2)(x-14)$ B) $-\frac{1}{2}(x+14)(x-2)$

C) $-\frac{1}{2}(x+2)(x-7)$ D) $-\frac{1}{2}(x+4)(x-7)$

40. Ushbu $f(x)=\frac{2x-7}{x^2-7x+12}$ funksiyaning boshlang'ich funksiyasini toping.

A) $\ln|x-4|+C$ B) $\frac{2x^2}{x-3}+C$

C) $\ln(|x-3|\cdot|x-4|)+C$ D) $\ln(x-3)+C$

41. Asosi a ga, yon tomoni b ga teng bo'lgan teng yonli uchburchakning yon tomoniga tushirilgan bissektrisa uzunligini toping.

A) $l_b=\frac{a}{a+b}\sqrt{2a^2+ab}$ B) $l_b=\frac{b}{a+b}\sqrt{ab+2b^2}$

C) $l_b=\frac{b}{a+b}\sqrt{2a^2+ab}$ D) $l_b=\frac{a}{a+b}\sqrt{ab+2b^2}$

42. To'g'ri burchakli trapetsiyaning asoslari 15 va 5 ga teng. Unga ichki chizilgan aylana radiusini toping.

A) 3,5 B) 3 C) 3,75 D) 4

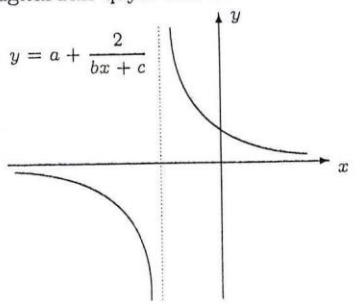
43. Agar $\log_{30}90=a$ bo'lsa, $\log_3 10$ ni a orqali ifodalang.

A) $\frac{a-2}{a+1}$ B) $\frac{a-2}{1-a}$ C) $\frac{a+2}{a+1}$ D) $\frac{2-a}{a+1}$

44. Agar barcha x, y lar uchun
$x^3+4x^2y+axy^2+3xy-bx^cy+7xy^2+dxy+y^2=x^3+y^2$
ayniyat bajarilsa, $|a+b+c|(a+b+c+d)$ ni toping. $(c>1)$

A) -4 B) -3 C) -1 D) 2

45. Rasmda $y=a+\frac{2}{bx+c}$ funksiya grafigi tasvirlangan. Quyidagilardan qaysi biri doim o'rinli?

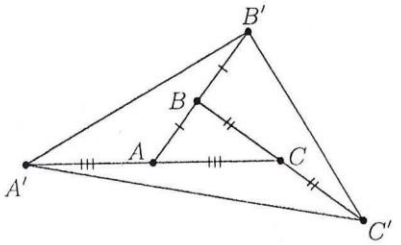


A) $a+b<0$ B) $2b-3c<0$ C) $-bc-c^2<0$
B) $2a+4b<0$

46. Prizmaning qirralari soni 69 ga teng. Uning yoqlari sonini toping.

A) 69 B) *bir qiymatli aniqlab bo'lmaydi* C) 23 D) 25

47. ABC uchburchakning har bir tomoni chizmada ko'rsatilgandek o'z uzunligiga teng uzunlikda davom ettirilgan. Agar ABC uchburchak yuzasi 1 ga teng bo'lsa, $A'B'C'$ uchburchak yuzasini toping.



A) 5 B) 7 C) 6 D) 8

48. Agar $\operatorname{tg}^2\alpha=\frac{1}{6}$ va $\alpha\in\left(0;\frac{\pi}{2}\right)$ bo'lsa, $\cos^2\alpha-\sin^2\alpha$ ni hisoblang.

A) $\frac{5}{7}$ B) $-\frac{1}{6}$ C) $-\frac{1}{7}$ D) $\frac{3}{7}$

49. $ABCD$ tetraedrning D uchidagi barcha yassi burchaklar to'g'ri. Shu tetraedrga kub shunday ichki chizilganki, kubning bitta uchi D nuqtada, unga qarama-qarshi uchi esa ABC yoqda yotibdi. Agar DA=1, DB=4 va DC = 5 bo'lsa, kub qirrasining uzunligini toping.

A) $\frac{17}{19}$ B) $\sqrt{2}$ C) $\frac{13}{12}$ D) $\frac{20}{29}$

50. $y>0$ bo'lsin. To'rtburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(1;0)$, $B(1;y)$, $C(2;y)$ va $D(4;0)$. To'rtburchak diagonallarining o'rtalari orasidagi masofani toping.

A) *y ga bog'liq* B) $\sqrt{2}$ C) 2 D) 1

51. $y=\log_3(\sin^2 2x+\cos^2 2x)$ funksiyaning $x=\frac{2016\pi}{6}$ nuqtadagi qiymatini hisoblang.

A) $\log_3 2$ B) 0 C) 1 D) $-\log_3 2$

102-variant

52. Geometrik progressiya n-hadi $b_n = \frac{\sqrt{2}}{4} \cdot 5^{2n-1}$ ga teng.

Progressiyaning maxrajini toping.

A) -25 B) $0{,}25$ C) 5 25

53. Tenglamalar sistemasi yechimlaridan $x + y + z$ ni toping.

$$\begin{cases} 3x - y + 2z = 7 \\ 2x + 5y - z = 0 \\ 4x - 3y + z = 6 \end{cases}$$

A) 4 B) 1 C) $2{,}5$ D) 3

54. $\sqrt[3]{x^{\log_3 \sqrt[3]{x}}} > 3$ tengsizlikning yechimi bo'lmaydigan eng katta va eng kichik natural sonlar yig'indisini toping.

A) 30 B) 29 C) 28 D) 27

55. $|2x - x^2| \le x$ tengsizlikni yeching.

A) $\{0\} \cup [1;3]$ B) $[1;4]$ C) $[0;+\infty)$ D) $[0;3]$

56. $\frac{256}{2^{x+3}} = (0,25)^{2-x}$ tenglamani yeching.

A) 0 B) 2 C) 3 D) 1

57. $y = \sin x$ funksiya grafigi berilgan bo'lib, uni parallel ko'chirish yordamida $y = \sin(x + a) - b$ funksiya grafigi hosil qilingan. Bunday parallel ko'chirishda koordinata boshi qanday nuqtaga ko'chadi?

A) $N(b;a)$ B) $N(-a;b)$ C) $N(a;b)$ D) $N(-a;-b)$

58. $y = \log_3(\operatorname{arctg} 2x + \operatorname{arcctg} 2x)$ funksiyaning $x = \frac{1}{2}$ nuqtadagi ikkinchi tartibli hosilasining qiymatini toping.

A) $-\log_3 2$ B) $\log_3 2$ C) 1 D) 0

59. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(-\frac{1}{2};-6)$, $C(-1;0)$. Uchburchak yuzini toping.

A) 3 B) 2 C) $2\sqrt{2}$ D) $2\sqrt{3}$

60. Agar $[a] = [b]$ bo'lsa ($[x]$ va $\{x\}$ mos ravishda x ning butun va kasr qismi), u holda a va b haqiqiy sonlar uchun qanday munosabat doim o'rinli?

A) $a = b$ B) $a - b = \{a\} - \{b\}$ C) $a, b \in Z$
D) $a - b = \pm 1$

61. $\int \left(x^2 + \sqrt[3]{x} - 7\right) dx$ ni hisoblang.

A) $x^3 + \frac{\sqrt[3]{x}}{4} - 7x + C$ B) $\frac{x^3}{3} + \frac{3x\sqrt[3]{x}}{4} - 7x + C$

C) $\frac{x^3}{3} + \frac{4x\sqrt[3]{x}}{3} - \frac{7x}{3} + C$ D) $x^3 + \frac{x\sqrt[3]{x}}{4} - 7x + C$

62. $60°$ ga teng bo'lgan A burchakka aylana ichki chizilgan. Bu aylana burchak tomonlariga B va C nuqtalarda urinadi. Agar BC=2 bo'lsa, ABC uchburchak perimetrini toping.

A) 5 B) *bir qiymatli aniqlab bo'lmaydi* C) 6 D) 7

63. Velosipedchi tepalikka 12 km/soat tezlik bilan chiqdi. Chiqqan yo'li orqali 20 km/soat tezlik bilan pastga tushdi va chiqishdagiga qaraganda 16 minut kamroq vaqt sarfladi. Yo'lning uzunligini (km) toping.

A) 10 B) 12 C) 14 D) 8

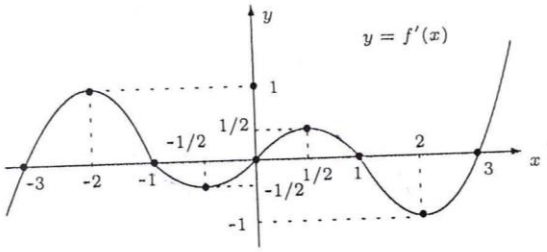
64. $\{x | x \in N, -2 < x \le 5\}$ to'plamning nechta qism-to'plamlari mavjud?

A) 16 B) 5 C) 32 D) 8

65. Agar $\log_{12} 27 = a$ bo'lsa, $\log_6 16$ ni a orqali ifodalang.

A) $\frac{3+a}{3-a}$ B) $\frac{4(3-a)}{3+a}$ C) $\frac{4a-3}{3+a}$ D) $\frac{3-a}{a+3}$

66. Rasmda $y = f'(x)$ funksiya grafigi tasvirlangan. [-3;3] kesmada $y = f(x)$ funksiyaning nechta maksimum nuqtasi bor?



A) 4 B) 3 C) 2 D) 1

67. Quyidagi jumlalar axborot bilan bog'liq qaysi tushunchaga xos?

Tovush to'lqinlari, nerv impulslari, nur

A) *xususiyatlari* B) *ko'rinishi* C) *hajmi* D) *turi*

68. $B0F5$, $3A07$ butun sonlarni barchasini yozish mumkin bo'lgan eng kichik asosli sanoq sistemasida shu sonlar yig'indisini hisoblang va natijani o'nlik sanoq sistemasida tasvirlang.

A) *71939* B) *60156* C) *49737* D) *40598*

69. Operatsion sistema (tizim) ... kabi asosiy sifatlarga ega bo'lishi kerak.

A) *tezkorlik, soddalik, himoya, registr*
B) *ko'p vazifalilik, ko'rinish, samaradorlik, takrorlanishlik*
C) *himoyalash, samaradorlik, qulaylik, ishonchlilik*
D) *bir vazifalilik, yuklanish, kesh*

70. MS Excel dasturida formulaning natijasini aniqlang:
$A1 = -12$; $B1 = 15$; $= ABS(A1) + B1 * 3HAK(-1 * A1)$

A) *27* B) *-3* C) *3* D) *-27*

71. <IMG SRC= "mypic.jpg" WIDTH=100 HEIGHT=50> HTML hujjat fragmentining web-brauzerda aks ettirilgan natijasini ko'rsating.

A) *mypic.jpg rasmining haqiqiy o'lchamini hisobga olmagan holda, 100x50 piksellar o'lchamida web-sahifaga joylashtiriladi*
B) *mypic.jpg rasm atrofida chapdan, o'ngdan, yuqori va pastki qismidan 100 piksel o'lchamda bo'sh joy qoldirib web-sahifaga joylashtiradi*
C) *mypic.jpg rasmining haqiqiy o'lchamini hisobga olmagan holda, 50x50 piksellar o'lchamida web-sahifaga joylashtiriladi*
D) *mypic.jpg rasm atrofida ko'rsatilgan o'lchamlarda ramka hosil qilib web-sahifaga joylashtiradi*

72. Agar a=12 va b=10 bo'lsa, Paskal dasturlash tilida berilgan ushbu ifodaning qiymatini toping.

Round(a/b)+b* (a mod 4)

A) *32* B) *1* C) *2* D) *31*

103-variant

MATEMATIKA (INFORMATIKA BILAN)

37. $7\sin^2 x - 8\sin x < 0$ tengsizlikning $[0; 2\pi]$ kesmadagi yechimlari to'plamini toping.

A) $\left[\frac{\pi}{6}; \frac{\pi}{3}\right] \cup \left[\frac{5\pi}{6}; \frac{4\pi}{3}\right]$

B) $\left[\frac{\pi}{2}; \pi\right]$

C) $\left(0; \frac{\pi}{2}\right] \cup \left[\frac{3\pi}{2}; 2\pi\right]$

D) $(0; \pi)$

38. $x - \sqrt{2x} - 4 = 0$ tenglamaning haqiqiy ildizlari ko'paytmasini (ildiz yagona bo'lsa o'zini) toping.

A) 32 B) 8 C) -8 D) *16*

39. $\alpha + \beta + \gamma = \pi$, $\cos\alpha\cos\beta\cos\gamma = -\frac{1}{2}$ bo'lsa, $\sin^2\alpha + \sin^2\beta + \sin^2\gamma$ ning qiymatini toping.

A) $\sqrt{2+\sqrt{2}}$ B) *2* C) *1* D) $-\sqrt{2}$

40. Hisoblang: $\operatorname{ctg}^2\left(arcsin\frac{1}{7}\right) - 15$

A) *33* B) *17* C) *36* D) -24

41. Tenglama ildizlari yig'indisini toping.
$(x-3)^3 + (2x+1)^3 = 27x^3 - 8$

A) $\frac{1}{6}$ B) $\frac{7-\sqrt{17}}{4}$ C) 1,5 D) $\frac{2}{3}$

42. $a = -b$, $c = 1$ bo'lsa, $\frac{c(a-b)^3 + a(b-c)^3 + b(c-a)^3}{c^2(b-a) + a^2(c-b) + b^2(a-c)}$ ifodaning qiymatini toping.

A) *1* B) -2 C) *2* D) -1

43. $a^2b^2x^4 = b^4x^2 - a^2b^2 + a^4x^2$ tenglamada x ni toping. $(a \cdot b \neq)$

A) $\pm a; \pm b$ B) $\pm 1/a; \pm 1/b$ C) $\varnothing$ D) $\pm a/b; \pm b/a$

44. Agar barcha x, y lar uchun
$x^3 + 4x^2y + axy^2 \quad 3xy - bx^cy + 7xy^2 + dxy + y^2 = x^3 + y^2$
ayniyat bajarilsa $|a+b+c|(a-b-d)$ ni toping. $(c > 1)$

A) *3* B) -4 C) -8 D) -2

45. $y = f(x)$ funksiya D to'plamda kamayuvchi bo'lsin. D to'plamdan olingan ixtiyoriy a, b elementlari uchun $(a < b)$ quyidagi munosabatlardan qaysi biri o'rinli?

A) $f(b) < f(a)$ B) $f(b) = f(a)$ C) $f(a) < f(b)$
D) $f(a) \leq f(b)$

46. Parallelepipedning asoslari tomoni 2 ga teng kvadratlardan, barcha yon yoqlari romblardan iborat. Yuqori asosining uchlaridan biri ostki asosining barcha uchlaridan baravar uzoqlikda joylashgan. Parallelepipedning hajmini toping.

A) $4\sqrt{2}$ B) $2\sqrt{2}$ C) *8* D) *6*

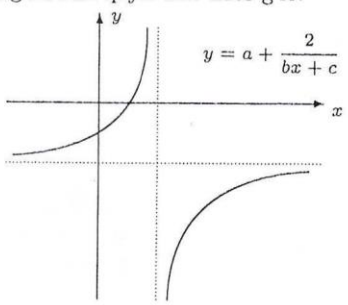
47. $a = -5$ bo'lsa, $\int_a^{a+1} (\sin^2 2x + \cos^2 2x)dx$ aniq integralni hisoblang.

A) *1* B) $\frac{\sqrt{2}-1}{2}$ C) $2\sqrt{2}$ D) $\sqrt{2}$

48. Hisoblang: $\frac{1}{\log_3 9} - \frac{1}{\log_9 9} + \frac{1}{\log_{27} 9} - \frac{1}{\log_{81} 9} + \frac{1}{\log_{243} 9} - \frac{1}{\log_{729} 9} + \frac{1}{\log_{2187} 9}$.

A) *1* B) *2* C) -1 D) *0*

49. Rasmda $y = a + \frac{2}{bx+c}$ funksiya grafigi tasvirlangan. Quyidagilardan qaysi biri noto'g'ri?



A) $a^2bc > 0$ B) $a < 0$ C) $bc < 0$ D) $ab > 0$

50. To'g'ri burchakli uchburchakning gipotenuzasi 32 ga, unga ichki chizilgan aylana radiusi 6 ga teng. Uchburchakning perimetrini toping.

A) *72* B)*76* C) *36* D) *68*

51. $\frac{\sqrt{3}}{2}$ radiusli sferaga muntazam to'rtburchakli piramida ichki chizilgan. Uchidagi yassi burchak $45°$ ga teng bo'lsa, piramida yon sirtining yuzini toping.

A) $2\sqrt{2}$ B) *3* C) *2* D) *4*

103-variant

2. Agar $\begin{cases} x^2+(y+a)^2-4=0 \\ x^2+y=b \end{cases}$ tenglamalar sistemasi yagona yechimga ega bo'lsa, $a+b$ ni toping.

A) 2 B) *bir qiymatli aniqlanmaydi* C) *0* D) *-2*

3. $a=2$ bo'lsa, $\int\limits_a^{a+1}(\sin^2 3x+\cos^2 3x)dx$ integralni hisoblang.

A) $2\sqrt{2}$ B) $\frac{\sqrt{2}-1}{3}$ C) $\sqrt{2}$ D) *1*

4. $y=\log_2(\sin^2 3x+\cos^2 3x)$ funksiyaning $x=\frac{1}{2}$ nuqtadagi hosilasining qiymatini toping.

A) *1* B) $-\log_2 2$ C) *0* D) $\log_2 3$

5. To'g'ri tenglikni aniqlang. $(a\in R,\ \frac{m}{n}\in Q)$

A) $a^{\frac{m}{n}}=\sqrt[n]{a^m}$ B) $(a^2-1)^{-1}=\frac{1}{a^2-1}$

C) $\sqrt{(-a)^2}=|a|$ D) $\sqrt{(-a)^2}=a$

6. To'g'ri burchakli uchburchak gipotenuzasiga tushirilgan balandligi 6 ga, to'g'ri burchak bissektrisasi 7 ga teng. Uchburchakning yuzini toping.

A) $76\frac{11}{23}$ B) *148* C) $75\frac{16}{23}$ D) $76\frac{16}{23}$

7. $\sqrt[3]{x^{\log_3\sqrt[3]{x}}}>3$ tengsizlikning yechimi bo'lmaydigan eng katta natural sonni toping.

A) *12* B) *28* C) *27* D) *11*

8. $y=\log_7(\sin^2 3x+\cos^2 3x)$ funksiyaning $x=\frac{2016\pi}{6}$ nuqtadagi qiymatini hisoblang.

A) $-\log_7 2$ B) *1* C) *0* D) $\log_7 2$

9. $y>0$ bo'lsin. To'rtburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(1;0)$, $B(1;y)$, $C(-3;y)$ va $D(-5;0)$. To'rtburchak diagonallarining o'rtalari orasidagi masofani toping.

A) *1* B) *2* C) *y ga bog'liq* D) $\sqrt{2}$

10. $\{x|x\in N, -5<x<5\}$ to'plamning nechta qism-to'plamlari mavjud?

A) *32* B) *16* C) *10* D) *4*

11. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(-1;1)$, $C(-2;0)$. Uchburchak yuzini toping.

A) *2* B) *1* C) $\sqrt{2}$ D) $\sqrt{3}$

12. Asosi a ga, yon tomoni b ga teng bo'lgan teng yonli uchburchakning yon tomoniga tushirilgan balandlik uzunligini toping.

A) $h_b=\frac{b}{a}\sqrt{4b^2-2a^2}$ B) $h_b=\frac{a}{b}\sqrt{4b^2-2a^2}$

C) $h_b=\frac{b}{2a}\sqrt{4b^2-a^2}$ D) $h_b=\frac{a}{2b}\sqrt{4b^2-a^2}$

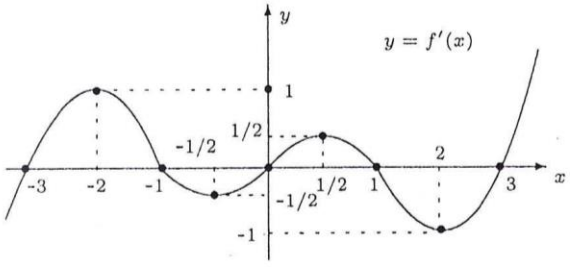
13. Kichik asosi 2 ga teng bo'lgan teng yonli trapetsiyaga radiusi 2 ga teng bo'lgan aylana ichki chizilgan. Trapetsiyaning yuzini toping.

A) *15* B) *20* C) *16* D) *10*

14. [2; 200] kesmada 2, 3, 5 va 7 sonlariga bo'linganda qoldiq 1 ga teng bo'ladigan natural sonlar nechta?

A) *1* B) *0* C) *2* D) *3*

15. Rasmda $y=f'(x)$ funksiya grafigi tasvirlangan. $y=f(x)$ funksiya grafigiga $x_0=2$ nuqtada o'tkazilgan urinmaning burchak koeffitsiyentini toping.



A) 0 B) 3 C) −1 D) 1

16. Geometrik progressiya n-hadi $b_n=\frac{\sqrt{2}}{4}\cdot 5^{2n-1}$ ga teng. Progressiyaning maxrajini toping.

A) −25 B) *25* C) *5* D) *0,25*

17. ... inson tomonidan axborotni izlash, yig'ish, saqlash, qayta ishlash va undan foydalanish usullari va vositalari deb yuritiladi.

A) *Elektromagnit maydon* B) *Axborotni kodlash*
C) *Axborot texnologiyasi* D) *Axborot xavfsizligi*

18. 524, 353, 307 butun sonlarni barchasini yozish mumkin bo'lgan eng kichik asosli sanoq sistemasida shu sonlar yig'indisini aniqlang.

A) *1520* B) *1285* C) *1406* D) *1184*

19. proba.txt fayli joylashgan katalogni ko'rsating:
C : \doc\1\proba.txt

A) *1* B) *proba* C) *doc* D) *C : *

20. *A1*=-4, *A2*=-1, *B1*=6, *B2*=3 bo'lsin. Natijasi 3 ga teng bo'ladigan formulani aniqlang.

A) *=MAKC(ABS(A1*A2);ABS(B1*B2))*
B) *=ЕСЛИ(A1*B2>=0;A2+9;B2+5)*
C) *=МИН(ABS(A1);B2;ABS(B1*A2))*
D) *=ЕСЛИ(A1*B2<0;A2+5;B2+9)*

21. Qanday teg yordamida HTML hujjatlarida hujjatning bir joydan boshqa joyiga o'tish yoki boshqa hujjatga o'tish mumkin?

A) *<U>* B) *<A>* C) *<I>* D) *<B>*

22. Paskal dasturlash tilida berilgan ushbu ifodaning qiymatini toping.
trunc(sqrt(abs(trunc(9.5)+sqrt(100) *round(3.5))))

A) *7* B) *6* C) *4* D) *5*

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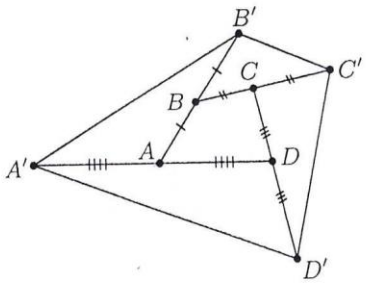
$ABCD$ to'rtburchakning har bir tomoni chizmada ko'rsatilgandek o'z uzunligiga teng uzunlikda davom ettirilgan. Agar $A'B'C'D'$ to'rtburchak yuzasi 25 ga teng bo'lsa, $ABCD$ to'rtburchak yuzasini toping.



A) 4 B) 6 C) 4,5 D) 5

38. $\log_{\frac{1}{5}}^2(9-x^2) - 2\log_{\frac{1}{5}}(9-x^2) - 8 \le 0$ tengsizlikning barcha natural yechimlari yig'indisini toping.

A) 6 B) 10 C) 3 D) 15

39. $y = \log_3(\sin^2 2x + \cos^2 2x)$ funksiyaning $x = \frac{1}{2}$ nuqtadagi hosilasining qiymatini toping.

A) $-\log_3 2$ B) 1 C) 0 D) $\log_3 2$

40. Qaysi jism(lar)ning simmetriya tekisliklari chekli sonda?
1) shar; 2) prizma; 3) konus

A) 1 B) 3 C) 2, 3 D) 2

41. $ABCD$ tetraedrning D uchidagi barcha yassi burchaklar to'g'ri. Shu tetraedrga kub shunday ichki chizilganki, kubning bitta uchi D nuqtada, unga qarama-qarshi uchi esa ABC yoqda yotibdi. Agar DA=1, DB=5 va $DC = 6$ bo'lsa, kub qirrasining uzunligini toping.

A) $\sqrt{2}$ B) $\frac{30}{41}$ C) $\frac{17}{19}$ D) $\frac{4}{3}$

42. $a = 4$ bo'lsa, $\int_a^{a+1} (ln(\sin^2 3x + \cos^2 3x) + 1)dx$ aniq integralni hisoblang.

A) 1 B) $\frac{\ln 2-1}{3}$ C) $\sqrt{2}$ D) $2\sqrt{2}$

43. To'g'ri burchakli uchburchakning bir kateti 7 ga teng. Uning medianalari kesishish nuqtasidan ikkinchi katetigacha bo'lgan masofani toping.

A) $2\frac{1}{3}$ B) 2,5 C) $\sqrt{2}$ D) 2

44. $x^{x^2-x-6} = 1$ tenglamaning ildizlari ko'paytmasini toping $(x > 0)$.

A) 6 B) -6 C) 3 D) $\emptyset$

45. O'zaro teng bo'lmagan x va y sonlari $x^2 + 24y = y^2 + 24x$ tenglikni qanoatlantirsa, $x + y$ ni toping.

A) 34 B) 12 C) 0 D) 24

46. Qavariq $ABCDEF$ oltiburchakda ichki burchaklar o'zaro teng. Agar $AB = 3$, $BC = 4$, $CD = 5$, $EF = 5$ bo'lsa, DE tomon uzunligini toping.

A) bir qiymatli aniqlab bo'lmaydi B) 3 C) 2 D) 5

47. Prizmaning qirralari soni 78 ga teng. Uning yoqlari sonini toping.

A) 78 B) 28 C) 26 D) bir qiymatli aniqlab bo'lmaydi

48. Hisoblang: $\cos\left(\text{arctg}\,\frac{1}{3} + \text{arctg}\,\frac{1}{2}\right)$

A) $\frac{\sqrt{2}}{2}$ B) $-\frac{\sqrt{2}}{2}$ C) $\frac{\sqrt{3}}{3}$ D) $-\frac{\sqrt{3}}{3}$

49. $3x^2 - 4\sqrt{x^2} + 1 = 0$ tenglama ildizlari yig'indisini toping.

A) 16 B) 2 C) 0 D) 4

50. $y = ln(6 + 2(sin^2 x - 3sin4x) + cos8x + cos2x)$ funksiyaning qiymatlar sohasiga tegishli butun nomanfiy sonlar nechta?

A) 4 ta B) 3 ta C) 2 ta D) 1 ta

51. [200; 300] kesmada 2, 3, 5 va 7 sonlariga bo'linganda qoldiq 1 ga teng bo'ladigan natural sonlar nechta?

A) 4 B) 1 C) 3 D) 2

52. Hisoblang: $\log_6\left(\sqrt{2-\sqrt{3}} + \sqrt{2+\sqrt{3}}\right)$

A) $\log_6\sqrt{3}$ B) $\frac{1}{2}$ C) 1 D) $\log_6 2$

53. $a_1, a_2, ..., a_8$ ketma-ketlikda ixtiyoriy uchta ketma-ket hadining yig'indisi 50 ga teng. Agar ketma-ketlikning uchinchi hadi 7 ga teng bo'lsa, birinchi va sakkizinchi hadlarining yig'indisi nechaga teng?

A) 7 B) 43 C) 47 D) 14

54. $y = 3cos4x + 2cos6x$ funksiyaning hosilasini toping.

A) $24sinx \cdot cos5x$ B) $24cosx \cdot cos5x$ C) $-24cosx \cdot sin5x$
D) $24sinx \cdot sin5x$

55. $\{x | x \in N, 2 \le x^2 \le 28\}$ to'plamni nechta usul bilan ikkita kesishmaydigan qism-to'plamlarga ajratish mumkin?

A) 12 B) 28 C) 8 D) 16

56. Agar $\text{ctg}^2\,\alpha = 1,5$ va $\alpha \in \left(0; \frac{\pi}{2}\right)$ bo'lsa, $\cos^2\alpha - \sin^2\alpha$ ni hisoblang.

A) $\frac{1}{4}$ B) $\frac{1}{5}$ C) $-\frac{1}{5}$ D) $\frac{1}{2}$

57. $y > 0$ bo'lsin. To'rtburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(1;0)$, $B(1;y)$, $C(2;y)$ va $D(4;0)$. To'rtburchak diagonallarining o'rtalari orasidagi masofani toping.

A) y ga bog'liq B) 2 C) $\sqrt{2}$ D) 5

58. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(-\frac{1}{2};10)$, $C(-1;0)$. Uchburchak yuzini toping.

A) 5 B) $4\sqrt{2}$ C) $3\sqrt{3}$ D) 4

59. $y = \ln\left(\text{arctg}\,2x + \text{arcctg}\,2x - \frac{\pi}{2} + 1\right)$ funksiyaning $x = \frac{1}{2}$ nuqtadagi qiymatini hisoblang.

A) 0 B) $\ln 2$ C) 1 D) $-\ln 2$

60. Ushbu $f(x) = \frac{2x-7}{x^2-7x+12}$ funksiyaning boshlang'ich funksiyasini toping.

A) $\ln(|x-3| \cdot |x-4|) + C$ B) $\ln|x-4| + C$
C) $\frac{2x^2}{x-3} + C$ D) $\ln(x-3) + C$

61. $y = f(x)$ funksiya maksimum nuqtasi x_0 bo'lsin. U holda qaysi tengsizlik x_0 ning qandaydir atrofidagi barcha x lar uchun o'rinli?

A) $f(x) \le f(x_0)$ B) $f(x) \ge f(x_0)$ C) $f(x) < f(x_0)$
D) $f(x) > f(x_0)$

62. Nomanfiy x, y sonlar uchun $a = 9x + \frac{1}{9}y$ va $b = 2\sqrt{xy}$ bo'lsin. Qaysi tengsizlik har doim o'rinli?

A) $a \le b$ B) $a \ge b$ C) $a < b$ D) $a > b$

a ning qanday qiymatida $(a-1)x^2+(2a+2)x+a-2=0$ kvadrat tenglama ikkita o'zaro teng ildizga ega bo'ladi?

A) 0,5 B) 0 C) 1 D) 0,2

4. $\sqrt[3]{x^{\log_3 \sqrt[3]{x}}} > 3$ tengsizlikning yechimi bo'lmaydigan eng katta va eng kichik juft sonlar ayirmasini toping.

A) *28* B) *26* C) *22* D) *24*

5. Kichkina koala daraxt barglarini 10 soatda yeb tugatadi, otasi ham, onasi ham undan 2 marta tez yeydi. Ular bitta daraxtni necha soatda yeb tugatadi?

A) *2* B) *5* C) *3* D) *4*

6. Agar barcha x, y lar uchun $x^3+4x^2y+axy^2+3xy-bx^cy+7xy^2+dxy+y^2=x^3+y^2$ ayniyat bajarilsa, $a+b+c$ ni toping. $(c>1)$

A) -4 B) -2 D) *3*

7. Ingliz tilidagi qaysi so'zlardan bit atamasi hosil qilingan?

A) *binom digital* B) *binary digit* C) *binary disk* D) *bitmap digit*

8. 22012, 12202 butun sonlarni barchasini yozish mumkin bo'lgan eng kichik asosli sanoq sistemasida shu sonlar raqamlarining yig'indisini hisoblang.

A) *1110* B) *112* C) *24* D) *32*

9. proba.txt fayli joylashgan katalogni ko'rsating: $C:\backslash doc\backslash 1\backslash proba.txt$

A) *proba* B) *1* C) *doc* D) $C:\backslash$

10. $A1$=-5, $A2$=0, $B1$=8, $B2$=2 bo'lsin. Natijasi 15 ga teng bo'ladigan formulani aniqlang.

A) $=$ СРЗНАЧ$(A1:B2)*A1$
B) $=$ СУММ$(-A1+B2;A2+B1)$
C) $=$ ЕСЛИ$(A1+2>B1-1;B2;A2)$
D) $=$ ЦЕЛОЕ$(A1/B2)+A2-B1$

11. Internetdagi ma'lumotlarni tarmoqda uzatish qoidalari ... deyiladi.

A) *promouterlar* B) *dasturlar* C) *provayderlar* D) *protokollar*

12. Paskal tilida quyidagi dastur bajarilishi natijasida ekranga chiqariladigan axborotlarni aniqlang:

```
Label a;
Var k,b,c:string[6];
Begin K:='20'; B:= '14'; write( 'T'); goto a; C:= '01.08.';
a:write(C:2); write(K:3,B:2); end.
```

A) *T01.08. 2014* B) *T01.08* C) *T012014* D) *T 2014*

105-variant

MATEMATIKA (INFORMATIKA BILAN)

37. Agar $\begin{cases} x^2+(y+a)^2-1=0 \\ x^2+y=b \end{cases}$ tenglamalar sistemasi yagona yechimga ega bo'lsa, $a+b$ ni toping.

A) *bir qiymatli aniqlanmaydi* B) *0* C) *-1* D) *1*

38. Ushbu $f(x)=\dfrac{x-6}{x-5}$ funksiyaning boshlang'ich funksiyasini toping.

A) $\ln(x-5)^2+C$ B) $x-\ln|x-5|+C$ C) $\dfrac{2x^2}{(x-5)^2}+C$

D) $x+\ln|x-5|+C$

39. $D_1(f)$ to'plamda berilgan $f(x)$ va $D_2(g)$ to'plamda berilgan $g(x)$ funksiyalarning yig'indisi deb ... $\varphi(x)=f(x)+g(x)$ funksiyaga aytiladi.

A) $D_1(f)\cap D_2(g)$ *to'plamda berilgan, bunda* $D_1(f)\cup D_2(g)=\emptyset$

B) $D_1(f)\cup D_2(g)$ *to'plamda berilgan, bunda* $D_1(f)\cap D_2(g)\neq\emptyset$

C) $D_1(f)\cap D_2(g)$ *to'plamda berilgan, bunda* $D_1(f)\cap D_2(g)\neq\emptyset$

D) $D_1(f)\cup D_2(g)$ *to'plamda berilgan, bunda* $D_1(f)\cap D_2(g)=\emptyset$

40. $\sin 7x\cdot\cos 11x=0,5\sin 18x$ tenglamani yeching.

A) $\dfrac{\pi}{4}+\pi n,\ n\in Z$

B) $(-1)^n\dfrac{\pi}{4}+\dfrac{\pi n}{2},\ n\in Z$

C) $(-1)^n\dfrac{\pi}{3}+\pi n,\ n\in Z$

D) $\dfrac{\pi n}{4},\ n\in Z$

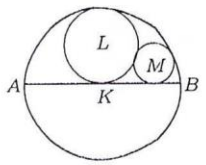
41. Beshta a_1, a_2, a_3, a_4, a_5 tub sonlar ayirmasi 6 ga teng bo'lgan arifmetik progressiyani tashkil qiladi. a_1+a_4 ni toping.

A) *22* B) *34* C) *40* D) *28*

42. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(4;0)$, $C(0;4)$. O'tkir burchaklar medianalari orasidagi o'tmas burchak kosinusini toping.

A) $-\dfrac{4}{5}$ B) $-\dfrac{5}{7}$ C) $-\dfrac{4}{7}$ D) $-\dfrac{3}{5}$

43. AB kesma K aylananing diametri bo'lsin. L aylana K aylanaga hamda AB to'g'ri chiziqqa K aylananing markazida urinadi; M aylana K va L aylanaga hamda AB to'g'ri chiziqqa urinadi (chizmaga qarang). Agar M doira yuzasi 2 ga teng bo'lsa, L doira yuzasini toping.



A) *8* B) *12* C) *4* D) *aniqlab bo'lmaydi*

44. Asoslarining radiuslari 2 va 4 ga teng bo'lgan kesik konus va unga tengdosh silindrning balandliklari bir xil. Silindr asosining radiusini toping.

A) $\sqrt{9\frac{2}{3}}$ B) $\sqrt{7}$ C) $\sqrt{9\frac{1}{3}}$ D) $\sqrt{11}$

45. $\left|\dfrac{|x+2|-|x|}{\sqrt{4-x^2}}\right|\geq 0$ tengsizlikning yechimi bo'lmaydigan eng katta manfiy butun yechimini toping.

A) -2 B) -4 C) -1 D) -3

46. $\log_{\frac{1}{9}}\log_{\frac{1}{4}}\frac{x+4}{2x-1}<0$ tengsizlikni qanoatlantiradigan eng kichik va eng katta butun sonlar ayirmasini toping.

A) -3 B) -4 C) -2 D) *0*

47. Asosi a ga, yon tomoni b ga teng bo'lgan teng yonli uchburchakning yon tomoniga tushirilgan balandlik uzunligini toping.

A) $h_b=\dfrac{b}{a}\sqrt{4b^2-2a^2}$ B) $h_b=\dfrac{b}{2a}\sqrt{4b^2-a^2}$

C) $h_b=\dfrac{a}{b}\sqrt{4b^2-2a^2}$ D) $h_b=\dfrac{a}{2b}\sqrt{4b^2-a^2}$

48. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(-1;3)$, $C(-2;0)$. Uchburchak yuzini toping.

A) *2* B) $2\sqrt{3}$ C) *3* D) $2\sqrt{2}$

49. 60° ga teng bo'lgan A burchakka aylana ichki chizilgan. Bu aylana burchak tomonlariga B va C nuqtalarda urinadi. Agar BC=1 bo'lsa, ABC uchburchak perimetrini toping.

A) *5* B) *bir qiymatli aniqlab bo'lmaydi* C) *3* D) *6*

105-variant

50. ABC o'tkir burchakli uchburchak berilgan. Uchburchakning BC tomonini C uchidan boshlab hisoblanganda 2:3 nisbatda bo'luvchi AN to'g'ri chiziq o'tkazilgan. Agar ABN uchburchakning yuzi 9 ga teng bo'lsa, ABC uchburchakning yuzini toping.

A) *18* B) *21* C) *12* D) *15*

51. Ifodani soddalashtiring: $\sin 10\alpha - 2\sin^2 5\alpha + 1$

A) $\sqrt{2}\cos(10\alpha - 45°)$

B) $\sqrt{2}\cos(5\alpha - 45°)$

C) $-\sqrt{2}\sin(5\alpha - 45°)$

D) $\sqrt{2}\sin(10\alpha - 45°)$

52. $y = \frac{1}{\sqrt{x}}$; $y = 0$; $x = 1$; $x = 4$ chiziqlar bilan chegaralangan shaklning yuzini toping.

A) *8* B) *2* C) *4* D) *0,5*

53. $a = (0,2)^{\frac{1}{2}\log_5 2 - \log_{25} 4}$ bo'lsa, $\log_2 a$ ni hisoblang.

A) *0,5* B) $\log_2 5$ C) *0,25* D) *1*

54. $y = \ln(\sin^2 x + \cos^2 x)$ funksiyaning $x = \frac{1}{2}$ nuqtadagi hosilasining qiymatini toping.

A) $\ln 2$ B) *1* C) $-\ln 2$ D) *0*

55. Agar barcha x, y lar uchun $x^3 + 4x^2y + axy^2 + 3xy - bx^cy + 7xy^2 + dxy + y^2 = x^3 + y^2$ ayniyat bajarilsa, $a + b + c$ ni toping. $(c > 1)$

A) *−1* B) *−2* C) *3* D) *−4*

56. Poyezd 5 minutda 9 kilometr masofani, motosikl 6 minutda 9 kilometr masofani bosib o'tdi. Motosiklchining tezligi poyezd tezligining necha foizini tashkil etadi?

A) $63\frac{1}{3}\%$ B) $83\frac{1}{3}\%$ C) *80%* D) $81\frac{2}{3}\%$

57. Funksiya nollari yig'indisini toping.
$y = (x - \sqrt{5} + \sqrt{3})(\sqrt{5} + \sqrt{3} + x)$

A) $-2\sqrt{3}$ B) $2\sqrt{3}$ C) $-2\sqrt{2}$ D) $-2\sqrt{5}$

58. 2435 va 2436 sonlarining umumiy natural bo'luvchilari nechta?

A) *4* B) *2* C) *1* D) *0*

59. Tenglamani yeching: $1 = 2sin\left(4x + \frac{\pi}{6}\right)$

A) $(-1)^k\frac{\pi}{24} - \frac{\pi}{24} + \frac{\pi k}{4};\ k \in Z$

B) $(-1)^k\frac{\pi}{2} + \frac{\pi}{24} + \pi k;\ k \in Z$

C) $(-1)^k\frac{\pi}{6} - \frac{\pi}{6} + \pi k;\ k \in Z$

D) $\frac{\pi}{24} + \frac{\pi k}{4};\ k \in Z$

60. Hisoblang: $\operatorname{tg} 50° \cdot \operatorname{tg} 10° \cdot \operatorname{tg} 110°$.

A) -1 B) *1* C) $-\frac{\sqrt{3}}{3}$ D) $-\sqrt{3}$

61. O'zaro teng bo'lmagan x va y sonlari $x^2 - 24x = y^2 - 24y$ tenglikni qanoatlantirsa, $x + y$ ni toping.

A) *12* B) *24* C) *0* D) *34*

62. $\{x | x \in N, x^2 < 25\}$ to'plamni nechta usul bilan ikkita kesishmaydigan qism-to'plamlarga ajratish mumkin?

A) *4* B) *8* C) *16* D) *25*

63. $y = 3cos4x + 2cos6x$ funksiyaning hosilasini toping.

A) $24cosx \cdot cos5x$ B) $24sinx \cdot sin5x$ C) $-24cosx \cdot sin$
D) $24sinx \cdot cos5x$

64. Ixtiyoriy x, y haqiqiy sonlar uchun $a = 9x^2 + \frac{1}{9}y^2$ va $b = 2|xy|$ bo'lsin. Qaysi tengsizlik har doim o'rinli?

A) $a > b$ B) $a \geq b$ C) $a < b$ D) $a \leq b$

65. $y = 4\sin^2 2x + 4\sqrt{3}\sin x \cos x + 1,5\cos 4x + 1,5 - 2\sqrt{3}$ funksiyaning qiymatlar sohasiga tegishli tub sonlar nechta

A) *2 ta* B) *3 ta* C) *0* D) *1 ta*

66. $SABC$ uchburchakli piramidaning S uchidagi yassi burchaklari to'g'ri burchak. SO – piramida balandigi. A va BOC uchburchaklar yuzalari mos ravishda 16 va 4 ga teng. ASB uchburchak yuzasining BSC uchburchak yuzasiga nisbatini toping.

A) *aniqlab bo'lmaydi* B) $\sqrt{2}$ C) 2 D) *3*

67. Axborotni aniq bir qoidalar asosida qayta ishlash uchun qulay bo'lgan belgilar bilan almashtirish jarayoni ... deyil

A) *belgilash* B) *formatlash* C) *tahrirlash* D) *kodlas*

68. A= "Monitor – axborotni kiritish qurilmasi", B= "$1010_2 = A_{16}$", C= "1536 bayt=1,5 Kbayt" mulohazalar qiymati asosida quyidagi mantiqiy ifoda qiymatini aniqlan $A \wedge (\neg B \vee C)$

A) *Sodda mulohazalardan ba'zilarini qiymatini aniqlab bo'lmaydi*

B) *Rost*

C) *Mantiqiy ifoda xato yozilgan*

D) *Yolg'on*

69. Qanday dasturlar majmuasi aniq bir predmet sohasi bo'yic masalalar yechishga mo'ljallangan?

A) *tizim (sistema)li dasturiy ta'minot*
B) *dasturlar yaratish vositalari*
C) *yordamchi dasturiy ta'minot*
D) *amaliy dasturiy ta'minot*

70. $A1$=−4, $A2$=1, $B1$=6, $B2$=4 bo'lsin. Natijasi 24 ga teng bo'ladigan formulani aniqlang.

A) *=МАКС(ABS(A1*A2);ABS(B1*B2))*
B) *=МИН(ABS(A1);B2;ABS(B1*A2))*
C) *=ЕСЛИ(A1*B2<0;A2+5;B2+9)*
D) *=ЕСЛИ(A1*B2>=0;A2+9;B2+5)*

71. HTML tilida markerlangan ro'yxatlarni berish uchun qand teglar ishlatiladi?

A) ... B) ... C) <tr>...</tr>
D) <tt>...</tt>

72. Paskal dasturlash tilida berilgan ushbu ifodaning qiymatini toping.
trunc(sqrt(abs(trunc(4.5)-sqrt(400) *round(1.5))))

A) *5* B) *6* C) *4* D) *7*

71 Web brauzerda matnning ko'rinishi quyidagicha bo'lishi uchun uning HTML kodi qanday bo'lishi kerak?
Bikvadrat tenglama $ax^4+bx^2+c=0$ ko'rinishida bo'ladi.

A) * <cite>Bikvadrat tenglama ax ⁴ +bx² +c=0 ko'rinishida bo'ladi.</cite> *

B) * Bikvadrat tenglama ax ⁴ +bx² +c=0 ko'rinishida bo'ladi. *

C) * Bikvadrat tenglama ax ⁴ +bx² +c=0 ko'rinishida bo'ladi. *

D) * Bikvadrat tenglama ax⁴ +bx² +c=0 ko'rinishida bo'ladi. *

72 Paskal. Quyidagi dasturning ekrandagi natijasini aniqlang.
var a, b, s: integer;
Begin a:=-2; s:=0; for b:=-10 to 6 do s:=s+a*b;
writeln (s); end.

A) *68* B) *54* C) *60* D) *52*

MATEMATIKA (INFORMATIKA BILAN)

37. $SABC$ uchburchakli piramidaning S uchidagi yassi burchaklari to'g'ri burchak. SO – piramida balandigi. va BOC uchburchaklar yuzalari mos ravishda 16 va 4 ga teng. ASB uchburchak yuzasining BSC uchburchak yuzasiga nisbatini toping.

A) *3* B) *2* C) $\sqrt{2}$ D) *aniqlab bo'lmaydi*

38. $|x^2+2x-8|=3a$ tenglama a ning qanday qiymatlarida haqiqiy yechimga ega emas?

A) $1<a<3$ B) $(0;3)$ C) $a<0$ D) $a>3$, $a=0$

39. $\int\limits_2^5 \frac{3x}{x-1}dx$ integralni hisoblang.

A) $2\ln 3e^3$ B) *5* C) $3\ln 4e$ D) $3\ln 4e^3$

40. a ning qanday butun qiymatida $y=-x^2+2x+a$ funksi faqat 4 ta nomanfiy butun qiymatga ega?

A) *0* B) *1* C) 2 D) *– 1*

41. $ABCD$ parallelogrammda CD tomonni D uchidan boshl hisoblaganda 1:2 nisbatda bo'luvchi AN to'g'ri chiziq o'tkazilgan. Agar ABC uchburchakning yuzi 12 ga teng bo'lsa, ANC uchburchakning yuzini toping.

A) *8* B) *4* C) $4\sqrt{2}$ D) *6*

42. Agar barcha x, y lar uchun $x^3+4x^2y+axy^2+3xy-bx^cy+7xy^2+dxy+y^2=x^3+$ ayniyatbajarilsa, $a-b+c+d$ ni toping. $(c>1)$

A) *–1* B) *–12* C) *2* D) *–10*

106-variant

43. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(5;0)$, $C(0;5)$. O'tkir burchaklar medianalari orasidagi o'tmas burchak kosinusini toping.

A) $-\frac{4}{7}$ B) $-\frac{3}{5}$ C) $-\frac{5}{7}$ D) $-\frac{4}{5}$

44. Qaysi jism(lar)ning simmetriya tekisliklari chekli sonda? 1) shar; 2) prizma; 3) konus

A) *1* B) *3* C) *2, 3* D) *2*

45. [2; 1000] kesmada 2, 3, 5 va 7 sonlariga bo'linganda qoldiq 1 ga teng bo'ladigan natural sonlar nechta?

A) B) *4* C) *1* D) *3*

46. $y = 1 + 2(sin^2x - 3sin4x) + cos8x + cos2x$ funksiyaning eng katta qiymatini toping.

A) *-5* B) *7,5* C) *5,5* D) *7*

47. $\left(\sqrt{5}-2\right)^{x^2} < \left(\sqrt{5}-2\right)^{2x}$ tengsizlikning eng kichik natural yechimini toping.

A) *1* B) *3* C) *4* D) *2*

48. Beshta a_1, a_2, a_3, a_4, a_5 tub sonlar ayirmasi 6 ga teng bo'lgan arifmetik progressiyani tashkil qiladi. $2a_1 + a_2$ ni toping.

A) *21* B) *27* C) *34* D) *37*

49. $a = -3$ bo'lsa, $\int\limits_a^{a+1} (ln(\sin^2 2x + \cos^2 2x) + 1)dx$ aniq integralni hisoblang.

A) $\frac{\ln 2-1}{2}$ B) *1* C) $\sqrt{2}$ D) $2\sqrt{2}$

50. $\log_{\frac{1}{5}} \log_{\frac{1}{4}} \frac{x+4}{2x-1} < 0$ tengsizlikni qanoatlantiradigan eng kichik butun sonni toping.

A) -10 B) *0* C) -5 D) -8

51. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(-1;-5)$, $C(-2;0)$. Uchburchak yuzini toping.

A) $4\sqrt{2}$ B) *5* C) *4* D) $3\sqrt{3}$

52. Rombning tomoni 6 ga, o'tkir burchagi 60° ga teng. Rombning tomonlari va kichik diagonaliga urinuvchi aylana radiusini toping.

A) $2\sqrt{3}$ B) $0,5\sqrt{3}$ C) $\sqrt{3}$ D) *3*

53. $y = 4sin6x - 3sin8x$ funksiyaning hosilasini toping.

A) $48sinx \cdot cos7x$ B) $48sinx \cdot sin7x$ C) $-48cosx \cdot sin7x$
D) $48cosx \cdot cos7x$

54. $\lg^2 x^2 = 4$ tenglama nechta yechimga ega?

A) *3* B) *1* C) *4* D) *2*

55. O'zaro teng bo'lmagan x va y sonlari $x^2 - 24x = y^2 - 24y$ tenglikni qanoatlantirsa, $x + y$ ni toping.

A) *0* B) *34* C) *24* D) *12*

56. Akvariumning bo'yi 130 sm, eni 90 sm, balandligi 70 sm. Suv sathi yuqoridan 10 sm pastda bo'lishi uchun akvariumga necha litr suv quyish kerak?

A) *702* B) *70,2* C) *704* D) *740*

57. Agar $\text{ctg}^2\alpha = \frac{1}{3}$ va $\alpha \in \left(0; \frac{\pi}{2}\right)$ bo'lsa, $\cos^2\alpha - \sin^2\alpha$ ni hisoblang.

A) $-\frac{1}{4}$ B) $-\frac{1}{2}$ C) $\frac{1}{2}$ D) $-\frac{1}{3}$

58. a va b natural sonlarning umumiy bo'luvchilari soni 5 ga teng bo'lsa, $a + 5b$ va b sonlarning umumiy bo'luvchilari nechta?

A) 5 B) *4* C) *bir qiymatli aniqlab bo'lmaydi* D) *1*

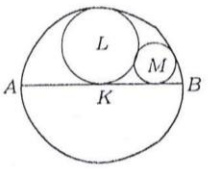
59. Tuyaning chanqoq holatidagi og'irligining 84 foizi suvdan iborat. Suv ichgandan keyin uning og'irligi 800 kg va og'irligining 85 foizi suvni tashkil qiladi. Tuyaning chanqoq holatidagi og'irligini (kg) toping.

A) *720* B) *715* C) *750* D) *680*

60. $(0,2)^{\frac{1}{2}\log_5 2 - \log_{25} 4}$ sonidan katta bo'lmagan natural sonlar nechta?

A) *3* B) *0* C) *2* D) *1*

61. AB kesma K aylananing diametri bo'lsin. L aylana K aylanaga hamda AB to'g'ri chiziqqa K aylananing markazida urinadi; M aylana K va L aylanaga hamda AB to'g'ri chiziqqa urinadi (chizmaga qarang). Agar M doira yuzasi 0,5 ga teng bo'lsa, L doira yuzasini toping.



A) *3* B) *4* C) *2* D) *aniqlab bo'lmaydi*

62. $y = \log_5(\text{arctg}\,3x + \text{arcctg}\,3x)$ funksiyaning $x = \frac{1}{2}$ nuqtadagi ikkinchi tartibli hosilasining qiymatini toping.

A) $-\log_5 2$ B) *0* C) $\log_5 2$ D) *1*

63. Hisoblang: $\cos\left(\text{arctg}\,\frac{1}{3} + \arcsin\frac{\sqrt{5}}{5}\right)$

A) $\frac{\sqrt{2}}{2}$ B) $-\frac{\sqrt{3}}{3}$ C) $-\frac{\sqrt{2}}{2}$ D) $\frac{\sqrt{3}}{3}$

64. Ikkita sonning yig'indisi 32 ga, kvadratlarining ayirmasi 192 ga teng. Shu ikkita sonning kvadratlari yig'indisini toping.

A) 530 B) 630 C) 570 D) 480

65. $\{x | x \in N, x^2 < 25\}$ to'plamni nechta usul bilan ikkita kesishmaydigan qism-to'plamlarga ajratish mumkin?

A) *16* B) *25* C) *8* D) *4*

66. $y = f(x)$ funksiya D to'plamda noqat'iy kamayuvchi bo'lsin. D to'plamdan olingan ixtiyoriy a, b elementlari uchun $(a < b)$ quyidagi munosabatlardan qaysi biri o'rinli?

A) $f(a) < f(b)$ B) $f(a) \le f(b)$ C) $f(b) \le f(a)$
D) $f(b) = f(a)$

67. Faqat axborot ko'rinishlari berilgan javobni anqilang.

A) *nur, grafik, tovush* B) *harorat, tasvir, ko'z*
C) *belgi, ko'rsatkich, eshitish* D) *quloq, o'yin, rasm*

68. 761, 138, 268, 147 butun sonlarni barchasini yozish mumkin bo'lgan eng kichik asosli sanoq sistemasida shu sonlar yig'indisini aniqlang.

A) *1314* B) *1560* C) *11A2* D) *1436*

69. Qaysi javobda Windows operatsion tizim (sistema)ida katalog nomi noto'g'ri berilgan?

A) *Document/25* B) *Document+25* C) *Document-25*
D) *Document_25*

70. $A1$=-9, $A2$=0, $B1$=7, $B2$=5 bo'lsin. Natijasi 21 ga teng bo'ladigan formulani aniqlang.

A) $=$ЗНАК$(A1 - B2 + A2 + B1) * 5$
B) $=$СЧЕТЕСЛИ$(A1 : B2;" > -1") * 7$
C) $=$ЦЕЛОЕ$(A1 + A2/B2 - B1)$
D) $=$ОСТАТ$(A1 + B2; A2 + B1)$

107-variant

MATEMATIKA (INFORMATIKA BILAN)

37. Ifodaning eng katta qiymatini toping: $\frac{1}{8}\cos 4\alpha + \sin^2 2\alpha$

A) *0,875* B) *1* C) *1,125* D) *0,75*

38. ABC o'tkir burchakli uchburchak berilgan. Uchburchakning BC tomonini C uchidan boshlab hisoblanganda 1:2 nisbatda bo'luvchi AN to'g'ri chiziq o'tkazilgan. Agar ABN uchburchakning yuzi 8 ga teng bo'lsa, ABC uchburchakning yuzini toping.

A) *16* B) *12* C) *18* D) *14*

39. $a = -5$ bo'lsa, $\int\limits_a^{a+1} (\sin^2 2x + \cos^2 2x)dx$ aniq integralni hisoblang.

A) $\sqrt{2}$ B) $\frac{\sqrt{2}-1}{2}$ C) $2\sqrt{2}$ D) *1*

40. Agar $\vec{a}(-4;8;-12)$ va $\vec{b}(-6;-3;9)$ berilgan bo'lsa, $\frac{\vec{a}}{2}$ va $\frac{\vec{b}}{3}$ vektorlar orasidagi burchak kosinusini toping.

A) $-\frac{9}{13}$ B) $-\frac{9}{11}$ C) $-\frac{9}{14}$ D) $-\frac{9}{16}$

41. Teng yonli ABC uchburchakning AC asosida D nuqta shunday olinganki AD=21, DC=23 tengliklar bajariladi. ABD va DBC uchburchaklarga ichki chizilgan aylanalar BD to'g'ri chiziqqa mos ravishda M va N nuqtalarda urinadilar. MN kesma uzunligini toping.

A) $\sqrt{3}$ B) $\sqrt{2}$ C) *1* D) *2*

42. Teng yonli trapetsiya diagonallari o'zaro perpendikular. Uning balandligi 1 ga teng bo'lsa, yuzini toping.

A) *3* B) *1* C) *bir qiymatli aniqlab bo'lmaydi* D) *2*

43. $\int\limits_2^3 \frac{3x}{x-1}dx$ integralni hisoblang.

A) *1* B) $3\ln 3e$ C) *3* D) $3\ln 2e$

44. $\{x|x \in N, 2 \le x^2 \le 31\}$ to'plamni nechta usul bilan ikkita kesishmaydigan qism-to'plamlarga ajratish mumkin?

A) *31* B) 8 C) *16* D) *12*

45. $f(x) = 4x^2 + ax + 103$ kvadrat uchhad uchun $f(1) + f(4) + f(6) + f(7) - f(2) - f(3) - f(5) - f(8)$ ni hisoblang.

A) *0* B) *a ga bog'liq* C) *1* D) *−1*

46. $5 \cdot 0,2^{\lg x} > 0,04^{\lg 2}$ tengsizlikni qanoatlantiruvchi eng katta va eng kichik natural sonlar ko'paytmasini toping.

A) *39* B) *40* C) *41* D) *38*

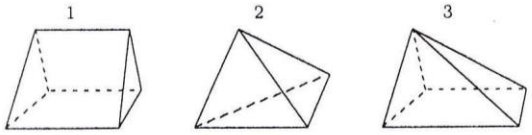
47. Hisoblang: $\cos\left(2\,\text{arcctg}\,\frac{1}{5}\right)$

A) $\frac{12}{13}$ B) $-\frac{11}{13}$ C) $-\frac{12}{13}$ D) 1

48. $y = \ln(\sin^2 3x + \cos^2 3x)$ funksiyaning $x = \frac{1}{2}$ nuqtadagi hosilasining qiymatini toping.

A) $\ln 2$ B) $-\ln 2$ C) *1* D) *0*

49. Quyidagi ko'pyoqlardan qaysi birida 5 ta yoq, 8 ta qirra bor?



A) *1* B) *3* C) *2* D) *2, 3*

50. Tenglamani yeching. $19 + 5\sqrt{3,2-x} = 4 + 5x$

A) $2,5 - 1,5\sqrt{0,2}$ B) $2,5 - 1,5\sqrt{0,2}$; $2,5 + 1,5\sqrt{0,2}$
C) $2,5 + 3\sqrt{0,2}$ D) $2,5 + 1,5\sqrt{0,2}$

51. O'zaro teng bo'lmagan x va y sonlari $x^2 + 26y = y^2 + 26x$ tenglikni qanoatlantirsa, $x + y$ ni toping.

A) *0* B) *24* C) *26* D) *16*

52. $y = \ln x$ funksiya grafigi berilgan bo'lib, uni parallel ko'chirish yordamida $y = \ln(x-a) - b$ funksiya grafigi hosil qilingan. Bunday parallel ko'chirishda koordinata boshi qanday nuqtaga ko'chadi? Bunda, $x > a$, $x > 0$

A) $N(a;b)$ B) $N(b;a)$ C) $N(a;-b)$ D) $N(-a;b)$

53. $3 \ge \frac{2-8x-x^2}{x^2-1}$ tengsizlikni qanoatlantiruvchi eng katta butun manfiy sonni toping.

A) *−2* B) *−3* C) *−5* D) *−1*

54. $\left|1 + \frac{4-x}{3}\right| = 7$ tenglamani yeching.

A) $-22; -20$ B) $-21; 22$ C) $-22; 20$ D) $-20; 22$

55. $y = ln(-6sin^2 x + \frac{3}{4}cos^2 2x + 6\frac{1}{4})$ funksiyaning qiymatlar sohasi quyidagi qaysi oraliqqa tegishli?

A) (0; 2) B) (−1; 1,2) C) (0,5; 4) (−1; 2)

56. $y = 7sin5x + 5sin7x$ funksiyaning hosilasini toping.

A) $70cosx \cdot cos6x$ B) $70sinx \cdot cos6x$ C) $70sinx \cdot sin6x$
D) $-70cosx \cdot sin6x$

57. $\frac{\sqrt{3}}{2}$ radiusli sferaga muntazam to'rtburchakli piramida ichki chizilgan. Uchidagi yassi burchak 45° ga teng bo'lsa, piramida yon sirtining yuzini toping.

A) *4* B) $2\sqrt{2}$ C) *2* D) *3*

58. $y > 0$ bo'lsin. To'rtburchaknıng uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(1;0)$, $B(1;y)$, $C(-5;y)$ va $D(-7;0)$. To'rtburchak diagonallarining o'rtalari orasidagi masofani toping.

A) *y ga bog'liq* B) $\sqrt{2}$ C) *1* D) *2*

59. $a_1, a_2, ..., a_8$ ketma-ketlikda ixtiyoriy uchta ketma-ket hadining yig'indisi 30 ga teng. Agar ketma-ketlikning uchinchi hadi 9 ga teng bo'lsa, birinchi va sakkizinchi hadlarining yig'indisi nechaga teng?

A) *22* B) *18* C) *21* D) *9*

60. Poyezd 4 minutda 8 kilometr masofani, motosikl 6 minutda 8 kilometr masofani bosib o'tdi. Motosiklchining tezligi poyezd tezligining necha foizini tashkil etadi?

A) *70%* B) $65\frac{2}{3}\%$ C) $66\frac{2}{3}\%$ D) $53\frac{1}{3}\%$

61. Ifodani soddalashtiring: $\frac{\sqrt{x}-\sqrt{y}}{\sqrt[4]{x}-\sqrt[4]{y}}+\frac{\sqrt[4]{xy}-\sqrt{x}}{\sqrt[4]{x}-\sqrt[4]{y}}$

A) $2\sqrt[4]{x}+\sqrt[4]{y}$ B) $\sqrt[4]{x}$ C) $2\sqrt[4]{y}-\sqrt[4]{x}$ D) $\sqrt[4]{y}$

62. Qirralari 13, 11 va 17 bo'lgan parallelepiped qirrasi 1 ga teng bo'lgan kubchalardan tashkil topgan. Parallelepipeddan 1 kubcha qalinligidagi tashqi sirtni olib tashlash uchun nechta kubcha olinishi kerak?

A) *946* B) *944* C) *511* D) *513*

63. Hisoblang: $\log_{64}\left(0,(3)^{\log_3\left(1+\frac{1}{2}+\frac{1}{2^2}+\frac{1}{2^3}+\cdots\right)}\right)$

A) $-\frac{1}{6}$ B) $\frac{1}{6}$ C) *1* D) $-\frac{1}{3}$

64. a va b natural sonlarning eng katta umumiy bo'luvchisi 2 ga teng bo'lsa, $a+2b$ va b sonlarning eng katta umumiy bo'luvchisi nechaga teng?

A) *1* B) *2* C) *bir qiymatli aniqlab bo'lmaydi* D) *4*

65. [50; 200] kesmada 3 ga bo'linganda qoldiq 1 ga, 4 ga bo'linganda qoldiq 2 ga, 5 ga bo'linganda qoldiq 3 ga va 6 ga bo'linganda qoldiq 4 ga teng bo'ladigan natural sonlar nechta?

A) *1* B) *2* C) *0* D) *3*

66. Agar $|x-2|=\frac{x}{2}+a$ tenglama bitta yechimga ega bo'lsa, a ning qiymatini toping.

A) *-3* B) *-2* C) *-1* D) *2*

67. Quyidagilardan qaysi biri axborot ko'rinishi hisoblanadi?

A) *karrali, dolzarb* B) *grafikli, tovushli*
C) *uzlukli, uzluksiz* D) *tushunarli, ishonchli*

68. 761, 138, 268, 147 butun sonlarni barchasini yozish mumkin bo'lgan eng kichik asosli sanoq sistemasida shu sonlar yig'indisini aniqlang.

A) *1436* B) *1314* C) *11A2* D) *1560*

69. Qanday dastur Operatsion sistema (tizim)ni faollashtiradi?

A) *BIOS* B) *Boot Record* C) *Total Commander*
D) *Command.com*

70. MS Excel dasturida formulaning natijasini aniqlang:
$A1=-12;\ B1=15;\ =ABS(A1)+B1*\text{ЗНАК}(A1)$

A) *-27* B) *27* C) *3* D) *-3*

71. Qanday xizmatlar Internet orqali ikki kishining o'zaro yuzma-yuz ovozli suhbatini amalga oshirish imkonini beradi?

A) *PHP, ICQ, chat* B) *Skype, ICQ, Mail.ru Agent*
C) *Mapple, Skype, ICQ*
D) *Outlook Express, Mail.ru Agent, ICQ*

72. Paskal tilida quyidagi dastur lavhasi bajarilgach S o'zgaruvchi qiymatini aniqlang:
A:= '12345'; S:=0; IF Pos('34',A)>0 Then begin Delete(A,2,2);S:= Pos('34',A); end Else Write(S);

A) *0* B) *3* C) *34* D) *4*

108-variant

MATEMATIKA (INFORMATIKA BILAN)

37. Agar $f(x) = 3^x \cdot x$ bo'lsa, $f'(x) > 0$ tengsizlikni yeching.

A) $(-\infty; -\log_3 e)$ B) $(-\log_3 e; \infty)$ C) $(-2\log_3 e; \infty)$ D) $(-\log_3 e; e)$

38. $y = f(x)$ funksiya grafigi berilgan bo'lib, uni parallel ko'chirish yordamida $y = f(x-a) + b$ funksiya grafigi hosil qilingan. Bunday parallel ko'chirishda koordinata boshi qanday nuqtaga ko'chadi?

A) $N(-a; -b)$ B) $N(a; b)$ C) $N(a; -b)$ D) $N(-a; b)$

39. Teng yonli ABC uchburchakning AC asosida D nuqta shunday olinganki AD=21, DC=23 tengliklar bajariladi. ABD va DBC uchburchaklarga ichki chizilgan aylanalar BD to'g'ri chiziqqa mos ravishda M va N nuqtalarda urinadilar. MN kesma uzunligini toping.

A) $\sqrt{3}$ B) *1* C) *2* D) $\sqrt{2}$

40. Bir savat olma 20000 so'm, bir savat nok 30000 so'm, bir savat olxo'ri 40000 so'm turadi. Sakkiz savat mevaning bahosi 230000 so'm bo'lsa, ulardan eng ko'pi bilan nechtasida olxo'ri bo'lishi mumkin?

A) *1* B) *2* C) *3* D) *4*

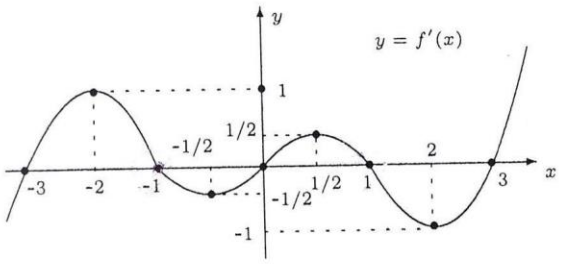
41. Parallelepipedning asoslari tomoni 2 ga teng kvadratlardan, barcha yon yoqlari romblardan iborat. Yuqori asosining uchlaridan biri ostki asosining barcha uchlaridan baravar uzoqlikda joylashgan. Parallelepipedning hajmini toping.

A) $4\sqrt{2}$ B) *6* C) *8* D) $2\sqrt{2}$

42. $y = \cos 2x$; $y = 0$; $x = -\frac{\pi}{6}$; $x = \frac{\pi}{3}$ chiziqlar bilan chegaralangan shaklning yuzini toping.

A) $\frac{\sqrt{3}}{2}$ B) *1* C) *0,5* D) $\frac{\sqrt{3}}{4}$

43. Rasmda $y = f'(x)$ funksiya grafigi tasvirlangan. $y = f(x)$ funksiya maksimum nuqtalarini toping.



A) $-1; 1$ B) $-2; \frac{1}{2}$ C) $-3; 0; 3$ D) $-3; -1; 0; 1; 3$

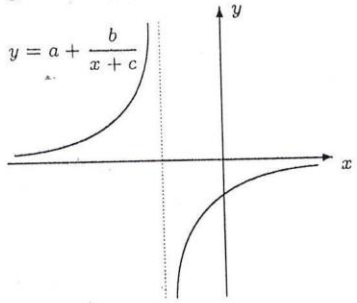
44. Sharga asosining tomoni $5\sqrt{2}$ ga, balandligi 5 ga teng bo'lgan muntazam to'rtburchakli piramida ichki chizilgan. Shar radiusini toping.

A) *10* B) *5* C) *2,5* D) *2,25*

45. [200; 700] kesmada 2, 3, 5 va 7 sonlariga bo'linganda qoldiq 1 ga teng bo'ladigan natural sonlar nechta?

A) *4* B) *3* C) *2* D) *1*

46. Rasmda $y = a + \frac{b}{x+c}$ funksiya grafigi tasvirlangan. Quyidagilardan qaysi biri noto'g'ri?



A) $bc - a > 0$ B) $a^2 + bc < 0$ C) $ac = 0$ D) $a^4 - bc > 0$

47. $y > 0$ bo'lsin. To'rtburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(1; 0)$, $B(1; y)$, $C(4; y)$ va $D(6; 0)$. To'rtburchak diagonallarining o'rtalari orasidagi masofani toping.

A) *2* B) *y ga bog'liq* C) *1* D) $\sqrt{2}$

48. a va b natural sonlarning eng katta umumiy bo'luvchisi 5 ga teng bo'lsa, $a + 2b$ va b sonlarning eng katta umumiy bo'luvchisi nechaga teng?

A) *4* B) *1* C) *bir qiymatli aniqlab bo'lmaydi* D) *5*

49. ABC uchburchakning BC tomoniga AD to'g'ri chiziq shunday o'tkazilganki, natijada AC asosli teng yonli ADC uchburchak hosil bo'lgan. Agar ABC va ABD uchburchaklar perimetrlari mos ravishda 47 va 33 ga teng bo'lsa, AC tomon uzunligini toping.

A) *11* B) *14* C) *12* D) *13*

108-variant

50 $\cos(2\operatorname{arctg}2)$ ni hisoblang.

A) 0,6 B) 0,25 C) −0,6 D) −0,4

51 $a=5$ bo'lsa, $\int_a^{a+1}(ln(\sin^2 2x+\cos^2 2x)+1)dx$ aniq integralni hisoblang.

A) $2\sqrt{2}$ B) $\sqrt{2}$ C) 1 D) $\frac{\ln 2-1}{2}$

52. $4-x<\sqrt{6-x}$ tengsizlikning yechimlaridan iborat bo'lgan eng kichik natural sonni toping.

A) 3 B) 4 C) 5 D) 6

53. $5\cdot 0,2^{\lg x}>0,04^{\lg 2}$ tengsizlikni qanoatlantiruvchi eng katta va eng kichik natural sonlar nisbatini toping.

A) 39 B) 20 C) 40 D) 18,5

54. $|x^2+2x-8|=3a$ tenglama 4 ta haqiqiy yechimga ega bo'ladigan a ning barcha natural qiymatlari yig'indisini toping.

A) 3 B) 1 C) 2 D) 6

55. Agar barcha x, y lar uchun $x^3+4x^2y+axy^2+3xy-bx^cy+7xy^2+dxy+y^2=x^3+y^2$ ayniyat bajarilsa, $c+d$ ni toping. $(c>1)$

A) −4 B) 3 C) −2 D) −1

56. Hisoblang: $\operatorname{ctg}^2\left(arcsin\frac{1}{\sqrt{5}}\right)-5$

A) $\frac{1}{2}$ B) $-\frac{1}{2}$ C) $-\frac{2}{3}$ D) −1

57. Hisoblang: $\log_3\left(\sqrt[3]{3\cdot\sqrt[4]{9\cdot\sqrt{27}}}\right)+\log_3\left(\sqrt{3\sqrt[3]{27\cdot\sqrt[4]{9}}}\right)$

A) $\frac{41}{24}$ B) $\frac{32}{21}$ C) $\frac{37}{12}$ D) $\frac{35}{12}$

58. Kichik asosi 4 ga teng bo'lgan teng yonli trapetsiyaga radiusi 4 ga teng bo'lgan aylana ichki chizilgan. Trapetsiyaning yuzini toping.

A) 54 B) 48 C) 96 D) 80

59. $a_1, a_2, ..., a_8$ ketma-ketlikda ixtiyoriy uchta ketma-ket hadining yig'indisi 50 ga teng. Agar ketma-ketlikning uchinchi hadi 9 ga teng bo'lsa, birinchi va sakkizinchi hadlarining yig'indisi nechaga teng?

A) 48 B) 18 C) 41 D) 9

60. Asosi a ga, yon tomoni b ga teng bo'lgan teng yonli uchburchakning yon tomoniga tushirilgan bissektrisa uzunligini toping.

A) $l_b=\frac{b}{a+b}\sqrt{ab+2b^2}$ B) $l_b=\frac{a}{a+b}\sqrt{ab+2b^2}$

C) $l_b=\frac{b}{a+b}\sqrt{2a^2+ab}$ D) $l_b=\frac{a}{a+b}\sqrt{2a^2+ab}$

61. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(-1;-4)$, $C(-2;0)$. Uchburchak yuzini toping.

A) $3\sqrt{2}$ B) 4 C) 3 D) $2\sqrt{3}$

62. Tenglamani yeching: $1=2sin\left(4x+\frac{\pi}{6}\right)$

A) $\frac{\pi}{24}+\frac{\pi k}{4};\ k\in Z$

B) $(-1)^k\frac{\pi}{6}-\frac{\pi}{6}+\pi k;\ k\in Z$

C) $(-1)^k\frac{\pi}{2}+\frac{\pi}{24}+\pi k;\ k\in Z$

D) $(-1)^k\frac{\pi}{24}-\frac{\pi}{24}+\frac{\pi k}{4};\ k\in Z$

63. 5 ta elementli to'plamni nechta usul bilan ikkita kesishmaydigan qism-to'plamlarga ajratish mumkin?

A) 5 B) 16 C) 32 D) 10

64. $7^{\sin^2 x}+7^{\cos^2 x}=8$ tenglamaning $[0;2\pi]$ kesmadagi ildizlari yig'indisini toping.

A) 630° B) 900° C) 360° D) 270°

65. O'zaro teng bo'lmagan x va y sonlari $x^2+46y=y^2+46x$ tenglikni qanoatlantirsa, $x+y$ ni toping.

A) 46 B) 0 C) 24 D) 23

66. $y=3\sin(2x+\frac{\pi}{4})$ funksiya nechta butun qiymatlarni qabul qiladi?

A) cheksiz ko'p B) 0 C) 7 D) 6

67. Eng kichik axborot uzatish birligini ko'rsating.

A) belgi B) bod C) bit D) bayt

68. Quyidagi mantiqiy tenglamaning yechimlari sonini aniqlang: $\neg A\wedge\neg B\vee C=$ yolg'on

A) 4 B) 1 C) 5 D) 3

69. Qaysi javobda faqat arxivlangan fayllar kengaytmasi berilgan?

A) .zip, .jpg, .rar B) .awi, .com, .bac C) .htm, .arj, .txt
D) .zip, .rar, .arj

70. A1=−3, B1=8, B2=2 bo'lsin. Quyidagi formula natijasi 1 ga teng bo'lishi uchun A2 katakka kiritilishi kerak bo'lgan qiymatni aniqlang.
=ЕСЛИ(И(A1+B2<=A2*B1;A1*B1<>0); A1+B2+B1−A2;A1*B1+B2+A2)

A) 6 B) 4 C) 8 D) 3

71. Web brauzerda matnning ko'rinishi quyidagicha bo'lishi uchun uning HTML kodi qanday bo'lishi kerak?
Bikvadrat tenglama $ax^4+bx^2+c=0$ ko'rinishida bo'ladi.

A) <cite>Bikvadrat tenglama ax ⁴ +bx² +c=0 ko'rinishida bo'ladi.</cite>

B) Bikvadrat tenglama ax ⁴ +bx² +c=0 ko'rinishida bo'ladi.

C) Bikvadrat tenglama ax ⁴ +bx² +c=0 ko'rinishida bo'ladi.

D) Bikvadrat tenglama ax⁴ +bx² +c=0 ko'rinishida bo'ladi.

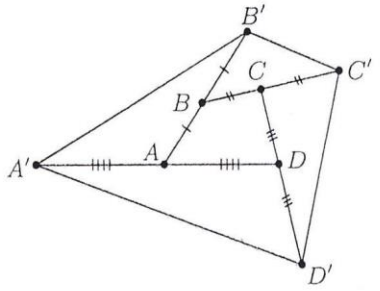
72. Paskal tilining quyidagi takrorlash operatoridagi takrorlanishlar sonini aniqlang:
For i:=2016 downto 2000 do write('talaba');

A) 18 B) 17 C) 0 D) 16

109-variant

MATEMATIKA (INFORMATIKA BILAN)

37. $ABCD$ to'rtburchakning har bir tomoni chizmada ko'rsatilgandek o'z uzunligiga teng uzunlikda davom ettirilgan. Agar $A'B'C'D'$ to'rtburchak yuzasi 15 ga teng bo'lsa, $ABCD$ to'rtburchak yuzasini toping.



A) 4 B) 4,5 C) 5 D) 3

38. Agar $\operatorname{tg}\alpha = \frac{1}{2}$ bo'lsa, $\frac{4\sin 4\alpha \cdot \cos 2\alpha}{(1-\cos 2\alpha)(1+\cos 4\alpha)}$ ni hisoblang.

A) 4 B) 8 C) -4 D) 2

39. $\log_2(2^x - 1) \cdot \log_2(2^{x+2} - 4) = -1$ tenglamani yeching.

A) $x = \log_2 3 - 1$ B) $x = \log_2 3 + 1$ C) $x = \log_2 9$
D) $x = \log_2 12$

40. $y = \log_2(\operatorname{arctg} 2x + \operatorname{arcctg} 2x)$ funksiyaning $x = \frac{1}{2}$ nuqtadagi ikkinchi tartibli hosilasining qiymatini toping.

A) $\log_2 3$ B) $-\log_2 2$ C) 0 D) 1

41. Kvadratga ikkita aylana ichki chizilgan. Radiusi 2 ga teng bo'lgan birinchi aylana kvadratning ikkita qo'shni tomonlariga urinadi, radiusi 6 ga teng bo'lgan ikkinchi aylana kvadratning qolgan ikkita tomoni va birinchi aylanaga urinadi. Kvadratning tomonini toping.

A) $4(\sqrt{2}-1)$ B) $4(\sqrt{2}+2)$ C) $2,5(\sqrt{2}+1)$
D) $2(\sqrt{2}+1)$

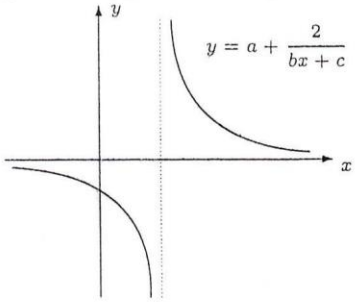
42. Arifmetik progressiyani tashkil etuvchi hadlari $\begin{cases} a_2^2 = a_8 \\ a_6 - a_3 = 36 \end{cases}$ tenglamalar sistemasini qanoatlantirsa, a_2 ning musbat qiymatini toping.

A) 10 B) 8 C) 11 D) 9

43. $a = -5$ bo'lsa, $\int_a^{a+1} (\sin^2 2x + \cos^2 2x)dx$ aniq integralni hisoblang.

A) $\sqrt{2}$ B) $\frac{\sqrt{2}-1}{2}$ C) $2\sqrt{2}$ D) 1

44. Rasmda $y = a + \frac{2}{bx+c}$ funksiya grafigi tasvirlangan. Quyidagilardan qaysi biri noto'g'ri?



A) $b - c + a > 0$ B) $a^3 - b^2 < 0$ C) $c - b > 0$
D) $bc + ab^2 < 0$

45. ABC uchburchakning BC tomoniga AD to'g'ri chiziq shunday o'tkazilganki, natijada AC asosli teng yonli ADC uchburchak hosil bo'lgan. Agar ABC va ABD uchburchaklar perimetrlari mos ravishda 42 va 27 ga teng bo'lsa, AC tomon uzunligini toping.

A) 15 B) 11 C) 14 D) 12

46. Sonning 8 foizi 40 foizining necha foizini tashkil qiladi?

A) 5 B) 15 C) 25 D) 20

47. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(-4;0)$, $C(0;-4)$. O'tkir burchaklar medianalari orasidagi o'tmas burchak kosinusini toping.

A) $-\frac{5}{7}$ B) $-\frac{4}{7}$ C) $-\frac{3}{5}$ D) $-\frac{4}{5}$

48. $[0;\ 500]$ kesmada 3 ga bo'linganda qoldiq 1 ga, 4 ga bo'linganda qoldiq 2 ga, 5 ga bo'linganda qoldiq 3 ga va 6 ga bo'linganda qoldiq 4 ga teng bo'ladigan natural sonlar nechta?

A) 5 B) C) 6 D) 7

49. $\alpha + \beta + \gamma = \pi$, $\sin\frac{\alpha}{2}\sin\frac{\beta}{2}\sin\frac{\gamma}{2} = -\frac{1}{4}$ bo'lsa, $\cos\alpha + \cos\beta + \cos\gamma$ ning qiymatini toping.

A) -1 B) 0 C) 2 D) 1

50. $\{x | x \in N, 2 \le x^2 \le 33\}$ to'plamning nechta qism-to'plamlari mavjud?

A) 5 B) 16 C) 32 D) 33

51. $\log_{0,5}(4^x - 5 \cdot 2^x + 6) \ge -1$ tengsizlikni qanoatlantiradigan barcha butun sonlar yig'indisini toping.

A) 0 B) 4 C) -1 D) 2

52. a va b natural sonlarning umumiy bo'luvchilari soni 5 ga teng bo'lsa, $a + 2b$ va b sonlarning umumiy bo'luvchilari nechta?

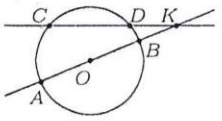
A) *bir qiymatli aniqlab bo'lmaydi* B) 5 C) 4 D) 1

53. R radiusli sferaga muntazam to'rtburchakli piramida ichki chizilgan. Uchidagi yassi burchak 45° ga teng bo'lsa, piramida yon sirtining yuzini toping.

A) $4R^2$ B) $2R^2$ C) $3R^2$ D) $2R^2\sqrt{2}$

109-variant

Rasmga qarab noto'g'ri tasdiqni aniqlang.

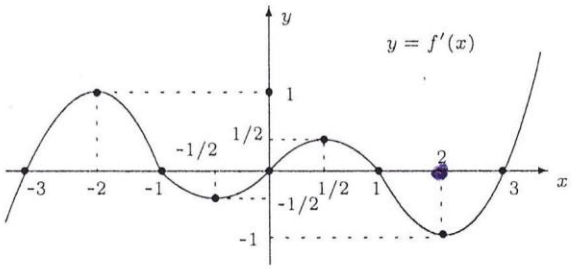


A) *AB kesma uzunligi CD kesma uzunligidan katta*
B) *AB – aylana diametri*
C) *CD kesma uzunligi AB kesma uzunligidan katta*
D) *AB va CD to'g'ri chiziqlar kesishish nuqtasi, markazi O nuqtada bo'lgan doira tashqarisida joylashgan*

5. Agar $y = -2x^2 - ax + b$ parabola (-3; 5) va (-1; 5) nuqtalardan o'tsa, a va b ni toping.
A) $a = 8, b = -1$ B) $a = 3, b = -4$ C) $a = -3, b = -4$
D) $a = -4, b = 4$

6. $\left|\frac{x^2 - 5x + 4}{x^2 - 4}\right| \le 1$ tengsizlikni nechta tub son qanoatlantirmaydi?
A) *1* B) *3* C) *0* D) *2*

7. Rasmda $y = f'(x)$ funksiya grafigi tasvirlangan. $y = f(x)$ funksiya grafigiga $x_0 = 2$ nuqtada o'tkazilgan urinmaning burchak koeffitsiyentini toping.



A) 0 B) −1 C) 1 D) 3

8. Asoslarining radiuslari 5 va 6 ga teng bo'lgan kesik konus va unga tengdosh silindrning balandliklari bir xil. Silindr asosining radiusini toping.
A) $\sqrt{29}$ B) $\sqrt{30\frac{1}{3}}$ C) $\sqrt{30\frac{2}{3}}$ D) $\sqrt{31}$

9. $y = \ln x$ funksiya grafigi berilgan bo'lib, uni parallel ko'chirish yordamida $y = \ln(x + a) - b$ funksiya grafigi hosil qilingan. Bunday parallel ko'chirishda koordinata boshi qanday nuqtaga ko'chadi? Bunda, $x > -a$, $x > 0$
A) $N(-a; -b)$ B) $N(a; b)$ C) $N(-a; b)$ D) $N(a; -b)$

10. $x^3 - (\sqrt{6} + 1)x^2 + 6$ ko'phadni ko'paytuvchilarga ajrating.
A) $(x + \sqrt{6})(x^2 + x + \sqrt{6})$ B) $(x + \sqrt{6})(x^2 - x + \sqrt{6})$
C) $(x - \sqrt{6})(x^2 - x - \sqrt{6})$ D) $(x - \sqrt{6})(x^2 + x - \sqrt{6})$

11. O'zaro teng bo'lmagan x va y sonlari $x^2 - 46x = y^2 - 46y$ tenglikni qanoatlantirsa, $x + y$ ni toping.
A) *23* B) *24* C) *46* D) *0*

12. $|x - 2| = 3 - |x + 1|$ tenglamani yeching.
A) $[-2; 2]$ B) $(-\infty; -1] \cup [2; +\infty)$ C) $[-1; 1]$
D) $[-1; 2]$

13. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0; 0)$, $B(-1; -1)$, $C(-2; 0)$. Uchburchak yuzini toping.
A) *2* B) $\sqrt{3}$ C) $\sqrt{2}$ D) *1*

14. Ushbu $f(x) = \frac{2x + 1}{x^2 + x - 12}$ funksiyaning boshlang'ich funksiyasini toping.
A) $\ln(x - 3) + C$ B) $\ln|x + 4| + C$
C) $\frac{2x^2}{(x - 3)(x + 4)} + C$ D) $\ln(|x - 3| \cdot |x + 4|) + C$

15. $3^{(-2^x)} = 2$ tenglamani yeching.
A) $\emptyset$ B) $\log_2 \log_3 \frac{1}{2}$ C) $\log_3 \log_2 3$ D) $\log_2 \log_3 2$

16. Hisoblang: $\log_5 \frac{7 \cdot 3^{n+1} - 8 \cdot 3^{n-1}}{3^n + 8 \cdot 3^{n-1}}$
A) *0* B) $\log_5 2$ C) *-1* D) *1*

17. 1 Mbayt necha Kbitni tashkil qiladi?
A) *1000 kbit* B) *10240 kbit* C) *1240 kbit* D) *1024 kbit*

18. *D*095, 209*A* butun sonlarni barchasini yozish mumkin bo'lgan eng kichik asosli sanoq sistemasida shu sonlar yig'indisini hisoblang va natijani o'nlik sanoq sistemasida tasvirlang.
A) *33204* B) *41427* C) *61743* D) *50910*

19. ... – bu kompyuter va uning qurilmalari ishini boshqaruvchi foydalanuvchi bilan muloqotni tashkil etuvchi dasturdir.
A) *Utilitlar* B) *Operatsion tizim (sistema)*
C) *Drayverlar* D) *Antiviruslar*

20. *A*1=−8, *A*2=−1, *B*1=8, *B*2=5 bo'lsin. Natijasi -11 ga teng bo'ladigan formulani aniqlang.
A) = ЦЕЛОЕ(*A*1/*B*2) + *A*2 − *B*1
B) = СУММ(−*A*1 + *B*2; *A*2 + *B*1)
C) = ЕСЛИ(*A*1 + 2 > *B*1 − 1; *B*2; *A*2)
D) = СРЗНАЧ(*A*1 : *B*2) ∗ *A*1

21. Brauzerda "x^3" yozuvini aks ettirish uchun teglar to'g'ri berilgan javobni ko'rsating.
A) *x³* B) *x<u>3</u>* C) *x3*
D) *x₃*

22. Quyidagi Paskal dasturi lavhasi har qanday a, b va c qiymatda ham ma'lumotlarni chiqarish protsedurasi izohiga mos keladigan javob chiqarishi uchun ∗ o'rniga yozilishi kerak bo'lgan shartni aniqlang:
Readln(a,b,c); max:=a; If max<b Then max:=b;
If ∗ Then max:=c;
WriteLn('Berilgan uchta sondan kattasi= ',max);
A) *c>max* B) *c<b* C) *c>b;* D) *max>c;*

110-variant

MATEMATIKA (INFORMATIKA BILAN)

37. a ning qanday qiymatida $(a-1)x^2+(2a+2)x+a-2=0$ kvadrat tenglama ikkita o'zaro teng ildizga ega bo'ladi?
A) 0,2 B) 1 C) 0 D) 0,5

38. $\{x|x\in N, -6<x<5\}$ to'plamning nechta qism-to'plamlari mavjud?
A) *32* B) *11* C) *4* D) *16*

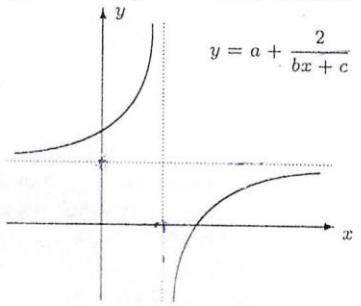
39. $k\in N$ da $S_k=x^k+y^k$ darajali yig'indi, $\sigma_1=x+y$, $\sigma_2=xy$ bo'lsa, u holda quyidagi qaysi munosabat doim o'rinli?
A) $S_4=S_3\sigma_2+S_2\sigma_1$ B) $S_4=S_3\sigma_2-S_2\sigma_1$
C) $S_4=S_3\sigma_1+S_2\sigma_2$ D) $S_4=S_3\sigma_1-S_2\sigma_2$

40. $a=(0,2)^{\frac{1}{2}\log_5\sqrt{2}-\log_{25}2}$ bo'lsa, $\log_2 a$ ni hisoblang.
A) *1* B) *0,25* C) *0,5* D) $\log_2 5$

41. $\lg^2 x^2=4$ tenglamaning barcha manfiy ildizlari yig'indisini toping.
A) $-10,1$ B) -10 C) $-10,01$ D) -100

42. Hisoblang: $\cos 50^\circ\cdot\cos 10^\circ\cdot\cos 110^\circ$.
A) *1* B) $\frac{1}{8}$ C) $-\frac{\sqrt{3}}{8}$ D) -1

43. Rasmda $y=a+\frac{2}{bx+c}$ funksiya grafigi tasvirlangan. Quyidagilardan qaysi biri doim o'rinli?



A) $ac<0$ B) $bc+a<0$ C) $bc-a^2<0$ D) $ab+c<0$

44. $\left(\left(\sqrt[5]{7^3}\right)^{\frac{x}{4}}-\sqrt{\frac{x}{3}}\right)^{\frac{x}{4}+\sqrt{\frac{x}{3}}}=\sqrt[4]{7^7}$ tenglamaning ildizlari yig'indisini toping.
A) *10* B) *9* C) *1* D) *16*

45. Asoslarining radiuslari 6 va 7 ga teng bo'lgan kesik konus va unga tengdosh silindrning balandliklari bir xil. Silindr asosining radiusini toping.
A) $\sqrt{42\frac{2}{3}}$ B) $\sqrt{42\frac{1}{3}}$ C) $\sqrt{37}$ D) $\sqrt{41}$

46. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(-1;3)$, $C(-2;0)$. Uchburchak yuzini toping.
A) *3* B) $2\sqrt{3}$ C) $2\sqrt{2}$ D) *2*

47. ABC o'tkir burchakli uchburchak berilgan. Uchburchakning BC tomonini C uchidan boshlab hisoblanganda 1:2 nisbatda bo'luvchi AN to'g'ri chiziq o'tkazilgan. Agar ANC uchburchakning yuzi 2 ga teng bo'lsa, ABC uchburchakning yuzini toping.
A) *3* B) *9* C) *4* D) *6*

48. $a=1$ bo'lsa, $\int_a^{a+1}(ln(\sin^2 3x+\cos^2 3x)+1)dx$ aniq integralni hisoblang.
A) *1* B) $\sqrt{2}$ C) $\frac{\ln 2-1}{3}$ D) $2\sqrt{2}$

49. To'g'ri burchakli ABC uchburchakning C to'g'ri burchagini CH balandlik va CM mediana teng uch qismga bo'ladi. Agar CHM uchburchak yuzasi 5 ga teng bo'lsa, ABC uchburchak yuzasini toping.
A) $20\sqrt{3}$ B) *15* C) *20* D) $16\sqrt{3}$

50. $\log_{3,5}\left(\sqrt{2x+3}-x\right)>0$ tengsizlikni yeching.
A) $[0;2)$ B) $[-1,5;\sqrt{2})$ C) $[3;5)$ D) $(0;2)$

51. Agar barcha x, y lar uchun $x^3+4x^2y+axy^2+3xy-bx^cy+7xy^2+dxy+y^2=x^3+y^2$ ayniyat bajarilsa, a ni toping. $(c>1)$
A) *2* B) *−3* C) *−7* D) *4*

52. $y=7cos5x-5cos7x$ funksiyaning hosilasini toping.
A) $70cosx\cdot cos6x$ B) $70sinx\cdot cos6x$ C) $-70cosx\cdot sin6x$
D) $70sinx\cdot sin6x$

110-variant

Asosi a ga, yon tomoni b ga teng bo'lgan teng yonli uchburchakning yon tomoniga tushirilgan mediana uzunligini toping.

A) $m_b = \frac{a}{2}\sqrt{a^2+2b^2}$ B) $m_b = \frac{1}{2}\sqrt{2a^2+b^2}$

C) $m_b = \frac{a}{2}\sqrt{2a^2+b^2}$ D) $m_b = \frac{1}{2}\sqrt{a^2+2b^2}$

54. O'zaro teng bo'lmagan x va y sonlari $x^2+24y = y^2+24x$ tenglikni qanoatlantirsa, $x+y$ ni toping.

A) *12* B) *24* C) *34* D) *0*

55. $y = \log_7(\sin^2 3x + \cos^2 3x)$ funksiyaning $x = \frac{1}{2}$ nuqtadagi ikkinchi tartibli hosilasining qiymatini toping.

A) *1* B) $\log_7 2$ C) $-\log_7 2$ D) *0*

56. Poyezd 3 minutda 6 kilometr masofani, motosikl 4 minutda 6 kilometr masofani bosib o'tdi. Motosiklchining tezligi poyezd tezligining necha foizini tashkil etadi?

A) *87%* B) *70%* C) *75%* D) *73%*

57. $\int_0^1 \frac{3x}{3x+1}dx$ integralni hisoblang.

A) *3* B) $\ln\frac{e}{\sqrt[3]{4}}$ C) $\ln\frac{e}{2}$ D) $\ln 4e$

58. Agar $a = 2-\sqrt{3}$ ga teng bo'lsa, $\sqrt{12}$ ni a orqali ifodalang.

A) $4-2a$ B) $4+2a$ C) $10-a$ D) $2+a$

59. Beshta a_1, a_2, a_3, a_4, a_5 tub sonlar ayirmasi 6 ga teng bo'lgan arifmetik progressiyani tashkil qiladi. $4a_1+a_3$ ni toping.

A) *37* B) *29* C) *34* D) *39*

60. $\log_{\frac{1}{9}}\log_{\frac{1}{4}}\frac{x+4}{2x-1} < 0$ tengsizlikni qanoatlantiradigan eng kichik va eng katta butun sonlar ayirmasini toping.

A) -4 B) *0* C) -2 D) -3

61. $y = \log_5\left(\operatorname{arctg} x + \operatorname{arcctg} x - \frac{\pi}{2} + 1\right)$ funksiyaning $x = \frac{1}{2}$ nuqtadagi qiymatini hisoblang.

A) *0* B) $\log_5 2$ C) *1* D) $-\log_5 2$

62. Soddalashtiring: $\sqrt{22+12\sqrt{2}} + \frac{2\sqrt{2}-1}{\sqrt{2}+1}$

A) $7+\sqrt{2}$ B) *9* C) *7* D) $9+\sqrt{2}$

63. $y > 0$ bo'lsin. To'rtburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(1;0)$, $B(1;y)$, $C(-8;y)$ va $D(-10;0)$. To'rtburchak diagonallarining o'rtalari orasidagi masofani toping.

A) *1* B) *2* C) $\sqrt{2}$ D) *y ga bog'liq*

64. To'g'ri burchakli uchburchak gipotenuzasiga tushirilgan balandligi 4 ga, to'g'ri burchak bissektrisasi 5 ga teng. Uchburchakning yuzini toping.

A) $57\frac{1}{7}$ B) $42\frac{1}{7}$ C) *28* D) *52*

65. $y = f(x)$ funksiya D to'plamda kamayuvchi bo'lsin. D to'plamdan olingan ixtiyoriy a, b elementlari uchun $(a > b)$ quyidagi munosabatlardan qaysi biri o'rinli?

A) $f(b) \le f(a)$ B) $f(b) < f(a)$ C) $f(a) < f(b)$
D) $f(a) = f(b)$

66. Muntazam uchburchakli piramida asosining tomonidan unga ayqash yon qirraga perpendikular bo'lgan tekislik o'tkazilgan. Kesuvchi tekislik yon qirrani uchidan hisoblaganda 3:2 nisbatda kesadi. Asos tomoni $9\sqrt{2}$ ga teng bo'lsa, piramida yon sirtining yuzini toping.

A) *243* B) *121,5* C) *202,5* D) *162*

67. Kitobda 128 ta sahifa mavjud. Agar har bir sahifada 32 ta satr va har bir satrda 64 ta belgi bo'lsa, bu kitob necha megabayt axborot hajmiga ega?

A) *0,125* B) *0,25* C) *0,5* D) *0,24*

68. $5C9$, $6AC$ butun sonlarni barchasini yozish mumkin bo'lgan eng kichik asosli sanoq sistemasida shu sonlar raqamlarining yig'indisini hisoblang.

A) *46* B) *3C* C) *42* D) *39*

69. Mutlaqo tekin tarqatiladigan dasturlar – bu ...

A) *Software* B) *Hardware* C) *Shareware* D) *Freeware*

70. MS Excel dasturida formulaning natijasini aniqlang:
$A1 = -12$; $B1 = 15$; $= -1 * ABS(A1) + B1 * 3HAK(-1 * A1)$

A) *27* B) *-27* C) *3* D) *-3*

71. Berilgan teglardan qaysi biri HTML tilidagi hujjatda tagchiziqli shrift turini ishlatish uchun qo'llaniladi?

A) <U> ... </U> B) <B> ... </B>
C) <Em> ... </Em> D) <P> ... </P>

72. Paskal. Quyidagi dasturning ekrandagi natijasini aniqlang.

```
var a, b: integer; s:real;
Begin a:=2; s:=1; for b:=1 to 6 do s:=s+a*b;
writeln (s:5:2); end.
```

A) *43.00* B) *-41* C) *-41.00* D) *43*

111-variant

MATEMATIKA (INFORMATIKA BILAN)

37. To'g'ri tenglikni aniqlang. $(a \in R,\ \frac{m}{n} \in Q)$

A) $(a+1)^{-1} = \frac{1}{a+1}$

B) $\sqrt{(a^2+1)^2} = a^2+1$

C) $\sqrt{(a+1)^2} = a+1$

D) $(a+1)^{\frac{m}{n}} = \sqrt[n]{(a+1)^m}$

38. $\log_{3,5}\left(\sqrt{2x+3} - x\right) > 0$ tengsizlikni qanoatlantiradigan butun sonlar ko'paytmasini toping.

A) -1 B) 0 C) -2 D) 4

39. Agar $\vec{a}(-4;8;-12)$ va $\vec{b}(-6;-3;9)$ berilgan bo'lsa, $\frac{\vec{a}}{2}$ va $\frac{\vec{b}}{3}$ vektorlar orasidagi burchak kosinusini toping.

A) $-\frac{9}{11}$ B) $-\frac{9}{14}$ C) $-\frac{9}{16}$ D) $-\frac{9}{13}$

40. Agar $f(x) = 13^x \cdot 3x$ bo'lsa, $f'(x) > 0$ tengsizlikni yeching.

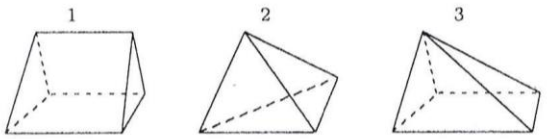
A) $(-\infty; -\log_{13} e)$ B) $(-\log_{13} e; \infty)$ C) $(-2\log_{13} e; \infty)$ D) $(-\log_{13} e; e)$

41. Hisoblang:

$$\log_{2\sqrt{2}}\left(\left(1+\frac{1}{2}\right)\cdot\left(1+\frac{1}{3}\right)\cdot\left(1+\frac{1}{4}\right)\cdots\left(1+\frac{1}{15}\right)\right)$$

A) 2 B) $\frac{1}{2}$ C) -3 D) 3

42. Quyidagi ko'pyoqlardan qaysi birida 4 ta yoq bor?



A) *1, 3* B) *1* C) *3* D) *2*

43. $\frac{\operatorname{tg} 38^\circ \cdot (1 - \operatorname{tg}^2 19^\circ)}{4 \operatorname{tg} 19^\circ}$ ni hisoblang.

A) -2 B) $0,5$ C) -1 D) 2

44. $\alpha = 30^\circ$, $a = (\operatorname{tg}\alpha)^{\operatorname{tg}\alpha}$, $b = (\operatorname{tg}\alpha)^{\operatorname{ctg}\alpha}$, $c = (\operatorname{ctg}\alpha)^{\operatorname{tg}\alpha}$, $d = (\operatorname{ctg}\alpha)^{\operatorname{ctg}\alpha}$ bo'lsa, quyidagilardan qaysi biri o'rinli?

A) $d > c > a > b$ B) $d > c > b > a$ C) $c > d > a > b$ D) $d > a > c > b$

45. Geometrik progressiya n-hadi $b_n = \frac{\sqrt{3}}{2} \cdot 5^{n-4}$ ga teng. Progressiyaning maxrajini toping.

A) *0,2* B) -5 C) *5* D) *0,5*

46. $ABCD$ parallelogrammda CD tomonni D uchidan boshlab hisoblaganda 2:3 nisbatda bo'luvchi AN to'g'ri chiziq o'tkazilgan. Agar ANC uchburchakning yuzi 18 ga teng bo'lsa, parallelogramning yuzini toping.

A) *45* B) *30* C) $30\sqrt{2}$ D) *60*

47. Juft natural n son beshta natural bo'luvchiga (1 va n bilan birga) ega. $10n$ son nechta natural bo'luvchiga ega?

A) *10* B) *12* C) *5* D) *8*

48. $y = f(x)$ funksiya D to'plamda noqat'iy kamayuvchi bo'lsin. D to'plamdan olingan ixtiyoriy a, b elementlari uchun $(a < b)$ quyidagi munosabatlardan qaysi biri o'rinli?

A) $f(b) \le f(a)$ B) $f(a) < f(b)$ C) $f(b) = f(a)$ D) $f(a) \le f(b)$

49. $y = \frac{1}{x^2}$; $y = 0$; $x = 1$; $x = 2$ chiziqlar bilan chegaralangan shaklning yuzini toping.

A) *2* B) *4* C) *0,5* D) *2,5*

50. Ushbu $f(x) = \frac{2x}{x+1}$ funksiyaning boshlang'ich funksiyasini toping.

A) $\ln(x+1)^2 + C$ B) $2x - 2\ln|x+1| + C$

C) $\frac{2x^2}{(x+1)^2} + C$ D) $\frac{2}{(x+1)^2} + C$

51. $y = 3\sin(2x + \frac{\pi}{4})$ funksiya nechta butun qiymatlarni qabul qiladi?

A) *0* B) *7* C) *6* D) *cheksiz ko'p*

52. Poyezd 5 minutda 10 kilometr masofani, motosikl 6 minutda 10 kilometr masofani bosib o'tdi. Motosiklchining tezligi poyezd tezligining necha foizini tashkil etadi?

A) *80%* B) $81\frac{2}{3}\%$ C) $83\frac{1}{3}\%$ D) $63\frac{1}{3}\%$

111-variant

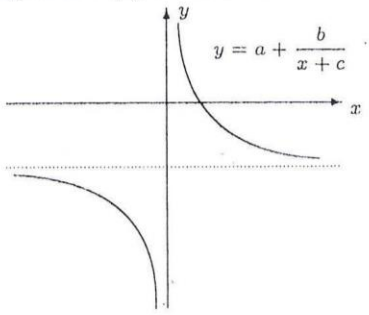
$\begin{cases} \frac{1}{3x} - \frac{1}{2y} = \frac{1}{3} \\ \frac{1}{9x^2} - \frac{1}{4y^2} = \frac{1}{4} \end{cases}$ tenglamalar sistemasining barcha x va y lari uchun $x+y$ ning qiymatini toping.

A) $3\frac{12}{65}$ B) $2\frac{51}{65}$ C) $2\frac{12}{65}$ D) $3\frac{1}{65}$

4. 60° ga teng bo'lgan A burchakka aylana ichki chizilgan. Bu aylana burchak tomonlariga B va C nuqtalarda urinadi. Agar BC=3 bo'lsa, $AB+AC$ ni toping.

A) *3* B) *bir qiymatli aniqlab bo'lmaydi* C) *6* D) *4*

5. Rasmda $y = a + \frac{b}{x+c}$ funksiya grafigi tasvirlangan. Quyidagilardan qaysi biri doim o'rinli?



A) $ca + 4b < 0$ B) $b^3 - c^3 < 0$ C) $c + a < 0$
D) $3a + 5b < 0$

56. $ABCD$ tetraedrning D uchidagi barcha yassi burchaklar to'g'ri. Shu tetraedrga kub shunday ichki chizilganki, kubning bitta uchi D nuqtada, unga qarama-qarshi uchi esa ABC yoqda yotibdi. Agar DA=1, DB=4 va DC = 5 bo'lsa, kub qirrasining uzunligini toping.

A) $\sqrt{2}$ B) $\frac{17}{19}$ C) $\frac{13}{12}$ D) $\frac{20}{29}$

57. $\frac{x^3+y^3+z^3-3xyz}{x^2+y^2+z^2-xy-xz-yz}$ ifodani soddalashtiring.

A) $x+y+z$ B) $x-y+z$ C) $x-y-z$ D) $x+y-z$

58. $y = 4sin6x + 3sin8x$ funksiyaning hosilasini toping.

A) $48cosx \cdot cos7x$ B) $-48cosx \cdot sin7x$ C) $48sinx \cdot cos7x$
D) $48sinx \cdot sin7x$

59. $\log_2^4 x - \log_{0,5}^2 \frac{x^3}{8} + 9\log_2 \frac{32}{x^2} < 4\log_{0,5}^2 x$ tengsizlikning eng katta va eng kichik butun yechimlari ko'paytmasini toping.

A) *32* B) *42* C) *40* D) *35*

60. k ning qanday qiymatlarida $\frac{1}{x+1} = 1-k$ tenglama manfiy yechimga ega?

A) $k<1$ B) $k \le 0$ C) $k>0; k<1$ D) $k<0; k>1$

61. To'g'ri burchakli uchburchak gipotenuzasiga tushirilgan balandligi 6 ga, to'g'ri burchak bissektrisasi 7 ga teng. Uchburchakning yuzini toping

A) *148* B) $76\frac{11}{23}$ C) $76\frac{16}{23}$ D) $75\frac{16}{25}$

62 $\{x | x \in N, -6 < x \le 5\}$ to'plamni nechta usul bilan ikkita kesishmaydigan qism-to'plamlarga ajratish mumkin?

A) *11* B) *8* C) *32* D) *16*

63 Agar barcha x, y lar uchun $x^3+4x^2y+axy^2+3xy-bx^cy+7xy^2+dxy+y^2 = x^3+y^2$ ayniyat bajarilsa, $|a+b+c|(a-b-c+d)$ ni toping. $(c>1)$

A) -16 B) *2* C) -10 D) *4*

64. Parallepipedning asoslari tomoni 4 ga teng kvadratlardan, barcha yon yoqlari romblardan iborat. Yuqori asosining uchlaridan biri ostki asosining barcha uchlaridan baravar uzoqlikda joylashgan. Parallelepipedning hajmini toping.

A) $32\sqrt{2}$ B) *8* C) $16\sqrt{2}$ D) $8\sqrt{2}$

65. $y>0$ bo'lsin. To'rtburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(1;0)$, $B(1;y)$, $C(-9;y)$ va $D(-11;0)$. To'rtburchak diagonallarining o'rtalari orasidagi masofani toping.

A) *y ga bog'liq* B) $\sqrt{2}$ C) *2* D) *1*

66. Agar $|x+4| = \frac{x}{2} + a$ tenglama a parametrning nechta natural qiymatida yechimga ega emas?

A) *3* B) *1* C) *2* D) *0*

67. 1 Mbayt necha Kbitni tashkil qiladi?

A) *1024 kbit* B) *10240 kbit* C) *1000 kbit* D) *1240 kbit*

68. 30, 340, 241, 212 butun sonlarni barchasini yozish mumkin bo'lgan eng kichik asosli sanoq sistemasida shu sonlar yig'indisini aniqlang.

A) *1423* B) *1153* C) *1303* D) *2203*

69. ... – kompyuterga o'rnatilgan dasturiy ta'minotni o'chirish jarayonidir.

A) *Deinstallyatsiya* B) *Arxivlash* C) *Defragmentatsiya*
D) *Installyatsiya*

70. $A1$=–3, $A2$=1, $B1$=9, $B2$=4 bo'lsin. Natijasi –8,25 ga teng bo'ladigan formulani aniqlang.

A) *=ЕСЛИ(A1+2>B1-1;B2;A2)*
B) *=СУММ(-A1+B2;A2+B1)*
C) *=ЦЕЛОЕ(A1/B2) +A2-B1*
D) *=СРЗНАЧ(A1:B2) *A1*

71. Berilgan teglardan qaysi biri HTML tilidagi hujjatda tagchiziqli shrift turini ishlatish uchun qo'llaniladi?

A) <B> ... </B> B) <U> ... </U>
C) <Em> ... </Em> D) <P> ... </P>

72. Paskal dasturlash tilida berilgan ushbu ifodaning qiymatini toping.

trunc(sqrt(sqr(abs(trunc(4.3)-sqrt(100) *round(1,6)))))

A) *4* B) *7* C) *5* D) *6*

112-variant

MATEMATIKA (INFORMATIKA BILAN)

37. $\int_2^5 \frac{3x}{x-1}dx$ integralni hisoblang.

A) $2\ln 3e^3$ B) $3\ln 4e^3$ C) 5 D) $3\ln 4e$

38. $y = \log_5(\sin^2 3x + \cos^2 3x)$ funksiyaning $x = \frac{1}{2}$ nuqtadagi hosilasining qiymatini toping.

A) 1 B) $\log_5 2$ C) 0 D) $-\log_5 2$

39. To'g'ri burchakli trapetsiyaning asoslari 5 va 1 ga teng. Unga ichki chizilgan aylana radiusini toping.

A) $\frac{5}{6}$ B) $0{,}5$ C) $\frac{1}{6}$ D) $0{,}2$

40. Nechta tub son $|x^2 - 2x| \le x$ tengsizlikning yechimi bo'ladi?

A) 3 B) 0 C) 2

41. Hisoblang:

$$\log_{2\sqrt{2}}\left(\left(1-\frac{1}{2}\right)\cdot\left(1-\frac{1}{3}\right)\cdot\left(1-\frac{1}{4}\right)\cdots\left(1-\frac{1}{64}\right)\right)$$

A) -2 B) -3 C) -4 D) 1

42. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(-1;-2)$, $C(-2;0)$. Uchburchak yuzini toping.

A 2 B) $2\sqrt{2}$ C) $2\sqrt{3}$ D) 3

43. a va b natural sonlarning eng katta umumiy bo'luvchisi 5 ga teng bo'lsa, $a + 5b$ va b sonlarning eng katta umumiy bo'luvchisi nechaga teng?

A) 1 B) 4 C) 5 D) *bir qiymatli aniqlab bo'lmaydi*

44. $\{x|x \in N, 6 \le x^2 \le 40\}$ to'plamning nechta qism-to'plamlari mavjud?

A) 16 B) 32 C) 5 D) 8

45. $\frac{\cos^2 3x - \cos^2 5x}{\sin 8x}$ ifodani soddalashtiring.

A) 1 B) $\sin 4x$ C) $-\sin 2x$ D) $\sin 2x$

46. $D_1(f)$ to'plamda $f(x)$ va $D_2(g)$ to'plamda $g(x)$ funksiyalari berilgan bo'lsa, quyidagi qaysi sohada $f(x)$ va $g(x)$ funksiyalar ko'paytmasi aniqlangan bo'ladi?

A) $D_1(f) \cap D_2(g)$ *to'plamda berilgan, bunda* $D_1(f) \cup D_2(g) = \emptyset$

B) $D_1(f) \cup D_2(g)$ *to'plamda berilgan, bunda* $D_1(f) \cap D_2(g) \neq \emptyset$

C) $D_1(f) \cap D_2(g)$ *to'plamda berilgan, bunda* $D_1(f) \cap D_2(g) \neq \emptyset$

D) $D_1(f) \cup D_2(g)$ *to'plamda berilgan, bunda* $D_1(f) \cap D_2(g) = \emptyset$

47. Parallelepipedning asoslari tomoni 4 ga teng kvadratlardan, barcha yon yoqlari romblardan iborat. Yuqori asosining uchlaridan biri ostki asosining barcha uchlaridan baravar uzoqlikda joylashgan. Parallelepipedning hajmini toping.

A) $16\sqrt{2}$ B) $32\sqrt{2}$ C) 8 D) $8\sqrt{2}$

48. 123451234512345123451234512345 sonida 10 ta raqam shunday o'chirilganki, hosil bo'lgan son eng katta bo'ldi. Shu sonning 4-raqamini toping.

A) 3 B) 4 C) 5 D) 2

49. $|x+5|^{x^2-1} \ge 1$ tengsizlikni qanoatlantirmaydigan eng katta butun sonni toping.

A) -2 B) 3 C) -1 D) 0

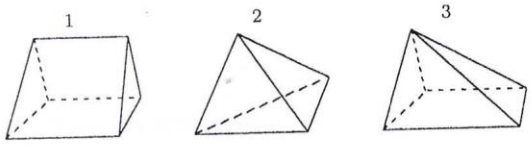
50. $a = 2$ bo'lsa, $\int_a^{a+1} (ln(\sin^2 2x + \cos^2 2x) + 1)dx$ aniq integralni hisoblang.

A) $2\sqrt{2}$ B) $\sqrt{2}$ C) $\frac{\ln 2-1}{2}$ D) 1

51. $\begin{cases} \frac{a-b}{b} = \frac{3}{2}, \\ sin\frac{\pi}{2} - \frac{b}{a} = c \end{cases}$ bo'lsa, $c-$?

A) $\frac{3}{5}$ B) $\frac{2}{5}$ C) 8 D) $\frac{4}{5}$

52. Quyidagi ko'pyoqlardan qaysi birida 5 ta yoq, 9 ta qirra va 6 ta uchi bor?



A) 1, 3 B) 3 C) 1 D) 2

53. $\begin{cases} \frac{1}{3x} - \frac{1}{2y} = \frac{1}{3} \\ \frac{1}{9x^2} - \frac{1}{4y^2} = \frac{1}{4} \end{cases}$ tenglamalar sistemasining barcha x va y lari uchun $x + y$ ning qiymatini toping.

A) $3\frac{12}{65}$ B) $2\frac{51}{65}$ C) $2\frac{12}{65}$ D) $3\frac{1}{65}$

54. $\log_3 2 \cdot \log_4 3 \cdot \log_5 4 \cdot \ldots \log_{10} 9$ hisoblang.

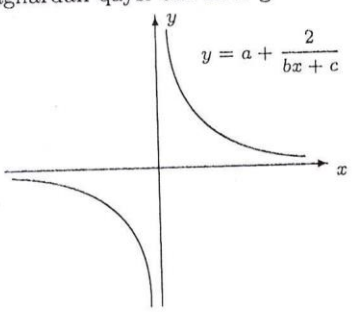
A) 2 B) $\frac{9}{10}$ C) $\lg 2$ D) $\log_9 2$

55. Agar $a > 3$, $b > 5$ bo'lsa, quyidagilardan qaysilari doim o'rinli?

1) $2a + 3b > 21$; 2) $2a + 3b > 36 - ab$; 3) $2a^2 + 3b^2 > 94$; 4) $2a^2 + 3b^2 > 93$; 5) $a(1 + b) > 19$

A) 1, 2, 3 B) 1, 2, 4 C) 3, 4, 5 D) 2, 4, 5

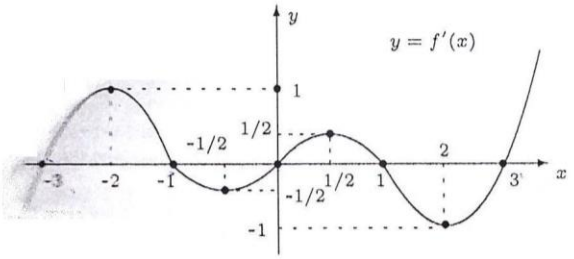
56. Rasmda $y = a + \frac{2}{bx+c}$ funksiya grafigi tasvirlangan. Quyidagilardan qaysi biri noto'g'ri?



A) $a = 0$ B) $bc - ab = 0$ C) $b - c > 0$ D) $b - a^2c^2 <$

112-variant

[illegible] $y = f'(x)$ funksiya grafigi tasvirlangan. $f'(x) = 0$ [illegible] yechimlari o'rta arifmetigini toping. $(x \in [-3;3])$



A) 0 B) 1,5 C) 1 D) 2

58. Agar x quyidagi tenglamani qanoatlantirsa, $\operatorname{tg} 4x$ ning barcha qiymatlari ko'paytmasini toping.
$1 + \cos 4x - 3\sin 2x = 0$
A) 0 B) -3 C) -1 D) $\sqrt{3}$

59. $3(\sin^4\alpha + \cos^4\alpha) - 2(\sin^6\alpha + cos^6\alpha)$ ifodaning $\alpha = -105°$ bo'lgandagi qiymatini toping.
A) $\frac{\sqrt{2}}{2}$ B) *1* C) $\frac{\sqrt{3}}{2}$ D) $\sqrt{3}$

60. $y > 0$ bo'lsin. To'rtburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(0;y)$, $C(10;y)$ va $D(12;0)$. To'rtburchak diagonallarining o'rtalari orasidagi masofani toping.
A) $\sqrt{2}$ B) *2* C) *y ga bog'liq* D) *1*

61. $y = \ln\left(\operatorname{arctg} 2x + \operatorname{arcctg} 2x - \frac{\pi}{2} + 1\right)$ funksiyaning $x = \frac{1}{2}$ nuqtadagi qiymatini hisoblang.
A) $-\ln 2$ B) *1* C) *0* D) $\ln 2$

62. Poyezd 3 minutda 8 kilometr masofani, motosikl 4 minutda 8 kilometr masofani bosib o'tdi. Motosiklchining tezligi poyezd tezligining necha foizini tashkil etadi?
A) *75%* B) *67%* C) *77%* D) *73%*

63. To'g'ri burchakli uchburchakning bir kateti 6 ga teng. Uning medianalari kesishish nuqtasidan ikkinchi katetigacha bo'lgan masofani toping.
A) *2* B) *1,5* C) *1,2* D) *3*

64. Geometrik progressiya n-hadi $b_n = \frac{1}{3} \cdot 5^{n+1}$ ga teng.
Progressiyaning maxrajini toping.
A) *0,2* B) -5 C) *5* D) *0,5*

65. R radiusli sferaga muntazam to'rtburchakli piramida ichki chizilgan. Uchidagi yassi burchak $45°$ ga teng bo'lsa, piramida yon sirtining yuzini toping.
A) $4R^2$ B) $3R^2$ C) $2R^2\sqrt{2}$ D) $2R^2$

66. Teng yonli ABC uchburchakning AC asosida D nuqta shunday olinganki AD=23, DC=25 tengliklar bajariladi. ABD va DBC uchburchaklarga ichki chizilgan aylanalar BD to'g'ri chiziqqa mos ravishda M va N nuqtalarda urinadilar. MN kesma uzunligini toping.
A) $\sqrt{2}$ B) *1* C) $\sqrt{3}$ D) *2*

67. Qanday qurilmani Semyuel Morze ixtro qilgan?
A) *telefon* B) *telefaks* C) *elektromagnit telegraf*
D) *televizor*

68. Tenglik o'rinli bo'lishi uchun sonlarning asosi qanday bo'lishi kerak? $24123_{(x)}+3210_{(x)}=30333_{(x)}$
A) *Yettilik* B) *To'qqizlik* C) *Sakkizlik* D) *Oltilik*

69. Superkompyuterlarda foydalaniladigan ko'p foydalanuvchili operatsion tizim (sistema)ni toping
A) *WINDOWS 95* B) *MS-DOS* C) *WINDOWS XP*
D) *UNIX*

70. MS Excel dasturida quyidagi formulaning natijasini aniqlang: $= ABS(-12) + 15 * 3HAK(-12)$
A) *27* B) *-27* C) *3* D) *-3*

71. Qanday texnologiya tasvirli va tovushli axborotlarni olis masofalardan qisqa vaqtda uzatishga imkoniyat beradi?
A) *E-mail* B) *World Wide Web* C) *Internet Protocol*
D) *Uniform Resourse locator*

72. Paskal dasturlash tilida berilgan ushbu ifodaning qiymatini toping.
trunc(sqrt(sqr(abs(trunc(4.3)-sqrt(100) *round(1.6)))))
A) *5* B) *4* C) *6* D) *7*

113-variant

MATEMATIKA (INFORMATIKA BILAN)

37. Hisoblang: $(1+\operatorname{tg}10^\circ)(1+\operatorname{tg}11^\circ)(1+\operatorname{tg}34^\circ)(1+\operatorname{tg}35^\circ)$

A) *4* B) *16* C) *8* D) *2*

38. $y>0$ bo'lsin. To'rtburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(0;y)$, $C(-4;y)$ va $D(-6;0)$. To'rtburchak diagonallarining o'rtalari orasidagi masofani toping.

A) *y ga bog'liq* B) *1* C) *2* D) $\sqrt{2}$

39. [200; 800] kesmada 2, 3, 5 va 7 sonlariga bo'linganda qoldiq 1 ga teng bo'ladigan natural sonlar nechta?

A) *4* B) *1* C) *3* D) *2*

40. Agar barcha x, y lar uchun $x^3+4x^2y+axy^2+3xy-bx^cy+7xy^2+dxy+y^2=x^3+y^2$ ayniyat bajarilsa, $a+c$ ni toping. $(c>1)$

A) -3 B) -5, C) *4* D) *2*

41. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(-1;1)$, $C(-2;0)$. Uchburchak yuzini toping.

A) $\sqrt{3}$ B) *2* C) *1* D) $\sqrt{2}$

42. Hisoblang: $\log_2\left(\dfrac{1+\sqrt{7}}{\sqrt{4+\sqrt{7}}}-\dfrac{1-\sqrt{5}}{\sqrt{3-\sqrt{5}}}\right)$

A) *1,5* B) *1* C) *-1,2* D) *0*

43. $\int\limits_1^2 \frac{x}{x+1}dx$ integralni hisoblang.

A) $\ln 2e$ B) $\ln 3e$ C) $\ln\dfrac{2e}{3}$ D) *1*

44. $y=\log_7(\sin^2 3x+\cos^2 3x)$ funksiyaning $x=\dfrac{2016\pi}{6}$ nuqtadagi qiymatini hisoblang.

A) $\log_7 2$ B) *1* C) $-\log_7 2$ D) *0*

45. O'zaro teng bo'lmagan x va y sonlari $x^2-46x=y^2-46y$ tenglikni qanoatlantirsa, $x+y$ ni toping.

A) *23* B) *0* C) *46* D) *24*

46. $\log_2(2\sqrt{x+5}+5)+\log_{0,5}(-x-0,5)=1$ tenglamaning manfiy butun yechimlari nechta?

A) *2* B) *1* C) *0* D) *3*

47. $y=\sin x$ funksiya grafigi berilgan bo'lib, uni parallel ko'chirish yordamida $y=\sin(x+a)+b$ funksiya grafigi hosil qilingan. Bunday parallel ko'chirishda koordinata boshi qanday nuqtaga ko'chadi?

A) $N(-a;b)$ B) $N(b;a)$ C) $N(a;-b)$ D) $N(a;b)$

48. Ikkita sonning yig'indisi 32 ga, kvadratlarining ayirmasi 192 ga teng. Shu ikkita sonning kvadratlari yig'indisini toping.

A) 570 B) 480 C) 630 D) 530

49. Tenglamani yeching. $19+5\sqrt{3,2-x}=4+5x$

A) $2,5-1,5\sqrt{0,2}$; $2,5+1,5\sqrt{0,2}$
B) $2,5+1,5\sqrt{0,2}$
C) $2,5-1,5\sqrt{0,2}$
D) $2,5+3\sqrt{0,2}$

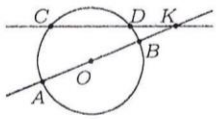
50. $\left|\dfrac{|x+2|-|x|}{\sqrt{4-x^2}}\right|\geq 0$ tengsizlikni qanoatlantirmaydigan eng katta manfiy va eng kichik natural sonlar nisbatini toping.

A) -4 B) -1 C) -3 D) *0*

51. $5\cdot 0,2^{\lg x}>0,04^{\lg 2}$ tengsizlikni qanoatlantiruvchi barcha natural sonlar yig'indisini toping.

A) *780* B) *820* C) *380* D) *760*

52. Rasmga qarab noto'g'ri tasdiqni aniqlang.



A) *AB kesma uzunligi CD kesma uzunligidan katta*
B) *AD kesma uzunligi AB kesma uzunligidan katta*
C) *AB va CD to'g'ri chiziqlar kesishish nuqtasi, markazi O nuqtada bo'lgan doira tashqarisida joylashgan*
D) *AB – aylana diametri*

53. Teng yonli ABC uchburchakning AC asosida D nuqta shunday olinganki AD=13, DC=15 tengliklar bajariladi. ABD va DBC uchburchaklarga ichki chizilgan aylanalar BD to'g'ri chiziqqa mos ravishda M va N nuqtalarda urinadilar. MN kesma uzunligini toping.

A) *2* B) $\sqrt{3}$ C) *1* D) $\sqrt{2}$

54. a va b natural sonlarning umumiy bo'luvchilari soni 6 ga teng bo'lsa, $a+2b$ va b sonlarning umumiy bo'luvchilari nechta?

A) *1* B) *4* C) *bir qiymatli aniqlab bo'lmaydi* D) *6*

55. $y=\ln(\sin^2 3x+\cos^2 3x)$ funksiyaning $x=\dfrac{1}{2}$ nuqtadagi hosilasining qiymatini toping.

A) $-\ln 2$ B) $\ln 2$ C) *0* D) *1*

56. Bir savat olma 20000 so'm, bir savat nok 30000 so'm, bir savat olxo'ri 40000 so'm turadi. Sakkiz savat mevaning bahosi 230000 so'm bo'lsa, ulardan eng ko'pi bilan nechtasida olxo'ri bo'lishi mumkin?

A) *3* B) *2* C) *1* D) *4*

57. $y=ln(6+2(sin^2x-3sin4x)+cos8x+cos2x)$ funksiyaning qiymatlar sohasiga tegishli nomusbat butun sonlar nechta?

A) *cheksiz ko'p* B) *2 ta* C) *4 ta* D) *3 ta*

58. $a=4$ bo'lsa, $\int\limits_a^{a+1}(ln(\sin^2 2x+\cos^2 2x)+1)dx$ aniq integralni hisoblang.

A) $2\sqrt{2}$ B) *1* C) $\sqrt{2}$ D) $\frac{\ln 2-1}{2}$

59. Arifmetik progressiya n-hadi $a_n=-\dfrac{n+4}{5}$ ga teng. Progressiyaning ayirmasini toping.

A) -1 B) $-0,2$ C) $-0,5$ D) -2

60. Parallelepipedning asoslari tomoni 4 ga teng kvadratlardan, barcha yon yoqlari romblardan iborat. Yuqori asosining uchlaridan biri ostki asosining barcha uchlaridan baravar uzoqlikda joylashgan. Parallelepipedning hajmini toping.

A) $16\sqrt{2}$ B) *8* C) $32\sqrt{2}$ D) $8\sqrt{2}$

113-variant

61. ABC uchburchakning BC tomoniga AD to'g'ri chiziq shunday o'tkazilganki, natijada AC asosli teng yonli ADC uchburchak hosil bo'lgan. Agar ABC va ABD uchburchaklar perimetrlari mos ravishda 51 va 40 ga teng bo'lsa, AC tomon uzunligini toping.

A) *12* B) *14* C) *17* D) *11*

62. $ABCD$ tetraedrning D uchidagi barcha yassi burchaklar to'g'ri. Shu tetraedrga kub shunday ichki chizilganki, kubning bitta uchi D nuqtada, unga qarama-qarshi uchi esa ABC yoqda yotibdi. Agar DA=3, DB=4 va DC = 8 bo'lsa, kub qirrasining uzunligini toping.

A) $\frac{17}{19}$ B) $\frac{24}{17}$ C) $\frac{11}{12}$ D) $\sqrt{2}$

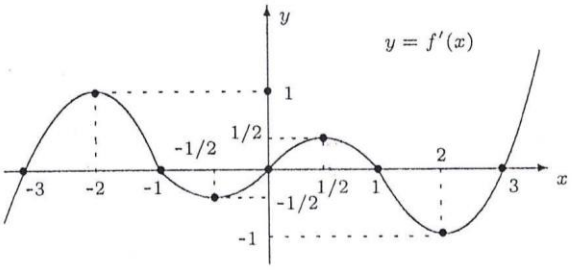
63. $\{x|x \in N, 7 \leq x^2 \leq 41\}$ to'plamning nechta qism-to'plamlari mavjud?

A) *16* B) *8* C) *32* D) *5*

64. To'g'ri burchakli ABC uchburchak gipotenuzasiga tushirilgan CD balandlik bilan BCD va ACD uchburchaklarga bo'lingan. Shu uchburchaklarga ichki chizilgan aylanalar radiuslari mos ravishda 7 va 24 ga teng. CD balandlikni toping.

A) *58* B) *54* C) $44\sqrt{2}$ D) *56*

65. Rasmda $y = f'(x)$ funksiya grafigi tasvirlangan. $y = f(x)$ funksiyaning $-3 < x \leq 0$ oraliqdagi o'sish oralig'ini toping.



A) $(-1;0)$ B) $(-3;-1)$ C) $(-\infty;-3)$ D) $(-3;0)$

66. Agar $\text{ctg}^2\,\alpha = \frac{1}{3}$ va $\alpha \in \left(0;\frac{\pi}{2}\right)$ bo'lsa, $\cos^2\alpha - \sin^2\alpha$ ni hisoblang.

A) $-\frac{1}{2}$ B) $-\frac{1}{3}$ C) $-\frac{1}{4}$ D) $\frac{1}{2}$

67. Ingliz tilidagi qaysi so'zlardan bit atamasi hosil qilingan?

A) *binary disk* B) *binary digit* C) *binom digital*
D) *bitmap digit*

68. Olimpiadada 100 kishi qatnashdi. Ulardan 54 tasi o'g'il bola va 13 tasi qizbola. Hisoblash bajarilgan sanoq sistemasida 444+333 amali natijasini aniqlang.

A) *1110* B) *1221* C) *1332* D) *777*

69. Mutlaqo tekin tarqatiladigan dasturlar – bu ...

A) *Shareware* B) *Freeware* C) *Hardware* D) *Software*

70. MS Excel. A1=10; B1=14; B2=6 bo'lsa, =MAKC(A1-B2;A2-B1) funksiyaning natijasi 7 ga teng bo'lishi uchun A2 katakda qanday son bo'lishi kerak?

A) *20* B) *19* C) *21* D) *18*

71. Qanday xizmatlar Internet orqali ikki kishining o'zaro yuzma-yuz ovozli suhbatini amalga oshirish imkonini beradi?

A) *Mapple, Skype, ICQ*
B) *Outlook Express, Mail.ru Agent, ICQ*
C) *Skype, ICQ, Mail.ru Agent* D) *PHP, ICQ, chat*

72. Paskal. Quyidagi dastur natijasini aniqlang.

```
Var x, y, z : Real;
Begin y:=-1; x:=0;
IF (x>=0) and (1+Sqrt(x) <>0) THEN
Begin z:=Sqr(1+y+x)/(1+Sqrt(x));
Write('Z=', z:5:2); end
ELSE Write('Hisoblab bo'lmaydi'); End.
```

A) *Hisoblab bo'lmaydi*
B) *Z= 0.00*
C) *Z= 2.00*
D) *Kompilyatsiyada xatolik xabari chiqadi*

114-variant

MATEMATIKA (INFORMATIKA BILAN)

37. O'zaro teng bo'lmagan x va y sonlari $x^2 - 36y = y^2 + 36x$ tenglikni qanoatlantirsa, $x + y$ ni toping.

A) 24 B) 0 C) 36 D) 18

38. Agar $\vec{a}(-4; 8; -12)$ va $\vec{b}(-6; -3; 9)$ berilgan bo'lsa, $\frac{\vec{a}}{2}$ va $\frac{\vec{b}}{3}$ vektorlar orasidagi burchak kosinusini toping.

A) $-\frac{9}{16}$ B) $-\frac{9}{13}$ C) $-\frac{9}{14}$ D) $-\frac{9}{11}$

39. $y = 3cos4x + 2cos6x$ funksiyaning hosilasini toping.

A) $24cosx \cdot cos5x$ B) $24sinx \cdot cos5x$ C) $24sinx \cdot sin5x$
D) $-24cosx \cdot sin5x$

40. $\log_5(5^x - 24) = 2 - x$ tenglamani yeching.

A) $\emptyset$ B) 3 C) 2 D) 1

41. Prizmaning qirralari soni 69 ga teng. Uning yoqlari sonini toping.

A) *bir qiymatli aniqlab bo'lmaydi* B) 23 C) 25 D) 69

42. Ixtiyoriy x, y haqiqiy sonlar uchun $a = 5x^2 + \frac{1}{5}y^2$ va $b = 2|xy|$ bo'lsin. Qaysi tengsizlik har doim o'rinli?

A) $a > b$ B) $a \geq b$ C) $a < b$ D) $a \leq b$

43. $\frac{x-4}{x-5} + \frac{6x-30}{x-4} = 5$ tenglamani yeching.

A) 5,5; 6 B) -5,5; 6 C) -5,5; -6 D) 6,5; 6

44. $y = \sqrt{x^2} + |2x - 4| + 1$ funksiyaning eng kichik qiymatini toping.

A) 3 B) 4 C) 2 D) 5

45. $4 + \frac{2}{5^x - 1} = \frac{3}{5^{x-1}}$ tenglamaning kichik ildizini toping.

A) $\log_5 3$ B) $1 - \log_5 4$ C) 1 D) $\log_5 6\frac{1}{4}$

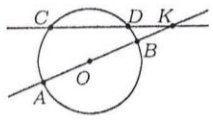
46. Poyezd 5 minutda 10 kilometr masofani, motosikl 6 minutda 10 kilometr masofani bosib o'tdi. Motosiklchining tezligi poyezd tezligining necha foizini tashkil etadi?

A) $81\frac{2}{3}\%$ B) 80% C) $63\frac{1}{3}\%$ D) $83\frac{1}{3}\%$

47. $y > 0$ bo'lsin. To'rtburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(1; 0)$, $B(1; y)$, $C(9; y)$ va $D(11; 0)$. To'rtburchak diagonallarining o'rtalari orasidagi masofani toping.

A) 1 B) 2 C) *y ga bog'liq* D) $\sqrt{2}$

48. Rasmga qarab noto'g'ri tasdiqni aniqlang.



A) *AB va CD to'g'ri chiziqlar kesishish nuqtasi, markazi O nuqtada bo'lgan doira tashqarisida joylashgan*
B) *ODK siniq chiziq uzunligi OK kesma uzunligidan kichik*
C) *AB – aylana diametri*
D) *AB kesma uzunligi CD kesma uzunligidan katta*

49. $5 \cdot 0,2^{\lg x} > 0,04^{\lg 2}$ tengsizlikni yeching.

A) [1; 40] B) (10; 50] C) (10; 50) D) (0; 40)

50. $3 \geq \frac{2 - 8x - x^2}{x^2 - 1}$ tengsizlikni qanoatlantiruvchi eng katta butun manfiy sonni toping.

A) -3 B) -1 C) -2 D) -5

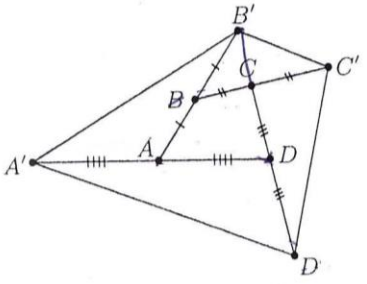
51. $y = \log_3(\sin^2 x + \cos^2 x)$ funksiyaning $x = \frac{1}{2}$ nuqtadagi ikkinchi tartibli hosilasining qiymatini toping.

A) $-\log_3 2$ B) 0 C) $\log_3 2$ D) 1

52. [100; 500] kesmada 2, 3, 5 va 7 sonlariga bo'linganda qoldiq 1 ga teng bo'ladigan natural sonlar nechta?

A) 2 B) 3 C) 1 D) 4

53. $ABCD$ to'rtburchakning har bir tomoni chizmada ko'rsatilgandek o'z uzunligiga teng uzunlikda davom ettirilgan. Agar $A'B'C'D'$ to'rtburchak yuzasi 25 ga teng bo'lsa, $ABCD$ to'rtburchak yuzasini toping.



A) 4,5 B) 6 C) 4 D) 5

54. $(0,2)^{\frac{1}{2}\log_5 2 - \log_{25} 4}$ ni hisoblang.

A) $\frac{\sqrt{2}}{2}$ B) $\sqrt[4]{2}$ C) $\sqrt{2}$ D) 2

55. $\frac{\cos^2 3x - \cos^2 5x}{\sin 8x}$ ifodani soddalashtiring.

A) 1 B) $-\sin 2x$ C) $\sin 2x$ D) $\sin 4x$

56. $y = \cos x$ funksiya grafigi berilgan bo'lib, uni parallel ko'chirish yordamida $y = \cos(x - a) + b$ funksiya grafigi hosil qilingan. Bunday parallel ko'chirishda koordinata boshi qanday nuqtaga ko'chadi?

A) $N(a; -b)$ B) $N(a; b)$ C) $N(b; a)$ D) $N(-a; b)$

57. C nuqta – AB kesmaning o'rtasi. AC va BC kesmalarda mos ravishda M, N nuqtalar shunday olinganki, $AM{:}MC{=}CN{:}NB$ munosabat bajariladi. Agar AB kesma uzunligi 18 ga teng bo'lsa, MN kesma uzunligini toping.

A) 4 B) 9 C) 12 D) 10

114-variant

58. Sharga asosining tomoni 4 ga, balandligi 8 ga teng bo'lgan muntazam to'rtburchakli piramida ichki chizilgan. Shar radiusini toping.
A) 4 B) 4,5 C) $2\sqrt{2}$ D) 3,75

59. Agar barcha x, y lar uchun
$x^3+4x^2y+axy^2+3xy-bx^cy+7xy^2+dxy+y^2=x^3+y^2$
ayniyat bajarilsa, $a-c$ ni toping. $(c>1)$
A) -9 B) 4 C) 2 D) -7

60. ABC uchburchakning BC tomonidan D nuqta tanlab olingach tomoni 3 ga teng muntazam ABD uchburchak hosil bo'ldi. Agar CD=1 bo'lsa, AC tomon uzunligini toping.
A) $\sqrt{17}$ B) 6 C) 13 D) $\sqrt{13}$

61. $\{x|x\in N, x^2<20\}$ to'plamni nechta usul bilan ikkita kesishmaydigan qism-to'plamlarga ajratish mumkin?
A) 8 B) 20 C) 4 D) 16

62. a_1, a_2, ..., a_8 ketma-ketlikda ixtiyoriy uchta ketma-ket hadining yig'indisi 50 ga teng. Agar ketma-ketlikning uchinchi hadi 8 ga teng bo'lsa, birinchi va sakkizinchi hadlarining yig'indisi nechaga teng?
A) 8 B) 42 C) 44 D) 16

63. $\int\left(x^2+\sqrt[3]{x}-7\right)dx$ ni hisoblang.
A) $\frac{x^3}{3}+\frac{4x\sqrt[3]{x}}{3}-\frac{7x}{3}+C$
B) $x^3+\frac{\sqrt[3]{x}}{4}-7x+C$
C) $x^3+\frac{x\sqrt[3]{x}}{4}-7x+C$
D) $\frac{x^3}{3}+\frac{3x\sqrt[3]{x}}{4}-7x+C$

64. $y=ln(6+2(sin^2x-3sin4x)+cos8x+cos2x)$ funksiyaning qiymatlar sohasiga tegishli butun nomanfiy sonlar nechta?
A) 2 ta B) 3 ta C) 4 ta D) 1 ta

65. Ifodaning eng kichik qiymatini toping: $\frac{1}{4}\cos 2\alpha+\cos^2\alpha$
A) $-0,25$ B) $-1,5$ C) -1 D) $0,25$

66. $y=x^3$; $y=0$; $x=-3$; $x=1$ chiziqlar bilan chegaralangan shaklning yuzini toping.
A) 21 B) 20,5 C) 10,75 D) 24

67. Qaysi atamalar axborotning xususiyatlari hisoblanadi?
A) *ishonchli, analog* B) *analog, diskret* C) *qisqa, foydali*
D) *diskret, qimmatli*

68. 196, 426, A53, 925 butun sonlarni barchasini yozish mumkin bo'lgan eng kichik asosli sanoq sistemasida shu sonlar yig'indisini aniqlang.
A) 1C67 B) 2600 C) 2389 D) 2178

69. Operatsion tizim (sistema) lar qaysi bandda noto'g'ri ko'rsatilgan?
A) *DOPPIX, Corel Draw* B) *UNIX, MS DOS*
C) *UNIX, PS/2* D) *Winows, Linux*

70. A1=–9, B1=7, B2=3 bo'lsin. Quyidagi formula natijasi –36 ga teng bo'lishi uchun A2 katakka kiritilishi kerak bo'lgan qiymatni aniqlang.
=ЕСЛИ(И(A1+B2<A2*B1;A1*A2<>0);
A1*B2–B1–A2;A1*B1–B2+A2)
A) –1 B) 0 C) 4 D) 2

71. Internetdagi ma'lumotlarni tarmoqda uzatish qoidalari ... deyiladi.
A) *promouterlar* B) *protokollar* C) *provayderlar*
D) *dasturlar*

72. Paskal tilida quyidagi dastur lavhasi bajarilgach s2 o'zgaruvchi qiymatini aniqlang:
s1:='paskal'; s2:='maktab'; s3:='hayot';a:=length(s1);
str(a,b); s2:=s3+b+s1; delete(s2,3,4);
A) *haypaskal* B) *hayot6paskal* C) *hapaskal* D) *yot6*

115-variant

MATEMATIKA (INFORMATIKA BILAN)

37. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(-1;-5)$, $C(-2;0)$. Uchburchak yuzini toping.

A) 5 B) $4\sqrt{2}$ C) 4 D) $3\sqrt{3}$

38. Berilgan ABC uchburchakda E nuqta – AC tomonning o'rtasi. BC tomonda D nuqta shunday olinganki, $2BD{=}DC$ munosabat o'rinli. AD va BE to'g'ri chiziqlar F nuqtada kesishsin. Agar $FDCE$ to'rtburchakning yuzasi 20 ga teng bo'lsa, BDF uchburchak yuzasini toping.

A) 4 B) 7,5 C) 3 D) 5

39. Ushbu $f(x)=\dfrac{2x-7}{x^2-7x+12}$ funksiyaning boshlang'ich funksiyasini toping.

A) $\dfrac{2x^2}{x-3}+C$ B) $\ln(x-3)+C$ C) $\ln|x-4|+C$

D) $\ln(|x-3|\cdot|x-4|)+C$

40. $ABCD$ parallelogrammning AD tomonidan P nuqta shunday olinganki, $AP{:}AD{=}1{:}5$. AC va BP to'g'ri chiziqlar Q nuqtada kesishsa, $\dfrac{AC}{AQ}$ ni toping.

A) 5 B) $5\sqrt{2}$ C) 6 D) $4\sqrt{3}$

41. To'g'ri tenglikni aniqlang.

A) $\left(5^{\log_{25}9}-\log_{\frac{1}{3}}27\right)^{((\sin^2 18^\circ+\sin^2 468^\circ)\sqrt[3]{2}-\sqrt{3})}=0$

B) $\sqrt{(x-2)^2}=|x-2|$

C) $\dfrac{4(2a^2-a-1)}{5(2a+1)}=\dfrac{4}{5}(a-1),\ a\in R$

D) $(-124)^{\frac{7}{3}}=\sqrt[3]{124^7}$

42. $\log_{x^2}\sqrt[6]{3}=\dfrac{1}{12}$ tenglamaning ildizlari absissa o'qidan qanda uzunlikdagi kesma ajratadi?

A) 0 B) 3 C) 2 D) 6

43. $y=\ln\left(\operatorname{arctg}3x+\operatorname{arcctg}3x-\dfrac{\pi}{2}+1\right)$ funksiyaning $x=\dfrac{1}{2}$ nuqtadagi qiymatini hisoblang.

A) 0 B) $-\ln 2$ C) 1 D) $\ln 2$

44. Parallelepipedning asoslari tomoni $\sqrt{2}$ ga teng kvadratlardan, barcha yon yoqlari romblardan iborat. Yuqori asosining uchlaridan biri ostki asosining barcha uchlaridan baravar uzoqlikda joylashgan. Parallelepipedning hajmini toping.

A) $\sqrt{2}$ B) 2 C) 1 D) 4

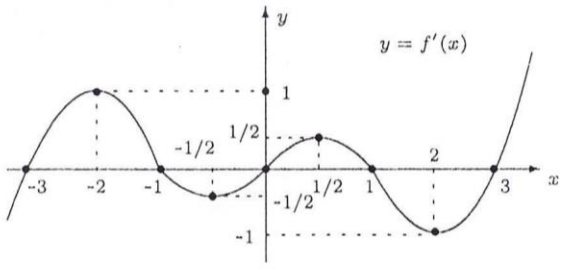
45. $(x-2)\cdot\sqrt{x^2-2x-12}=6x-12$ tenglama ildizlari yig'indisini toping.

A) 4 B) 10 C) -4 D) 2

46. R radiusli sferaga muntazam to'rtburchakli piramida ichki chizilgan. Uchidagi yassi burchak 30° ga teng bo'lsa, piramida yon sirtining yuzini toping.

A) $2R^2$ B) $2R^2\sqrt{3}$ C) $R^2\sqrt{3}$ D) $3R^2\sqrt{3}$

47. Rasmda $y=f'(x)$ funksiya grafigi tasvirlangan. $y=f(x)$ funksiyaning grafigiga $x_0=-2$ nuqtasida o'tkazilgan urinmaning burchak koeffitsiyentini toping.



A) 1 B) -2 C) 0 D) -1

48. $\sqrt[3]{x^{\log_3\sqrt[3]{x}}}>3$ tengsizlikning yechimi bo'lmaydigan eng katt va eng kichik juft sonlar yig'indisini toping.

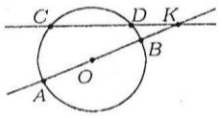
A) 24 B) 28 C) 30 D) 26

49. $a=3$ bo'lsa, $\int_a^{a+1}(ln(\sin^2 2x+\cos^2 2x)+1)dx$ aniq integ hisoblang.

A) 1 B) $2\sqrt{2}$ C) $\frac{\ln 2-1}{2}$ D) $\sqrt{2}$

115-variant

50. Rasmga qarab noto'g'ri tasdiqni aniqlang.



A) AB – *aylana diametri*
B) AB *va* CD *to'g'ri chiziqlar kesishish nuqtasi, markazi* O *nuqtada bo'lgan doira tashqarisida joylashgan*
C) AB *kesma uzunligi* CD *kesma uzunligidan katta*
D) CD *kesma uzunligi* AB *kesma uzunligidan katta*

51. $y = f(x)$ funksiya D to'plamda noqat'iy o'suvchi bo'lsin. D to'plamdan olingan ixtiyoriy a, b elementlari uchun $(a > b)$ quyidagi munosabatlardan qaysi biri o'rinli?
A) $f(a) < f(b)$ B) $f(b) \le f(a)$ C) $f(a) \le f(b)$
D) $f(b) = f(a)$

52. $\dfrac{\operatorname{tg}\left(\pi - \dfrac{\pi}{12}\right) + \sqrt{3}}{\sqrt{3}\operatorname{tg}\dfrac{13\pi}{12} + 1}$ ni hisoblang.

A) 1 B) 0 C) $\dfrac{1}{\sqrt{3}}$ D) $\sqrt{3}$

53. Agar $\alpha = 75^\circ$ va $\beta = 90^\circ$ bo'lsa,
$\sin\alpha \cdot \sin(\beta - \alpha) + \sin^2\left(\dfrac{\beta}{2} - \alpha\right)$ ni hisoblang.

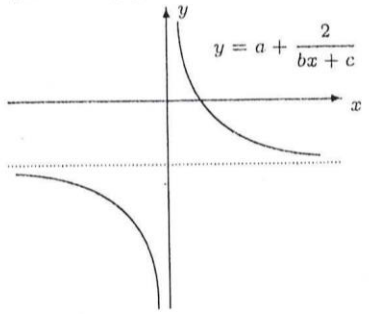
A) $\dfrac{1}{2}$ B) $\dfrac{\sqrt{2}}{4}$ C) $\dfrac{2-\sqrt{3}}{4}$ D) $\dfrac{1}{4}$

54. $a = (0,2)^{\frac{1}{2}\log_5\sqrt{2} - \log_{25}2}$ bo'lsa $\log_2 a$ ni hisoblang.
A) *0,25* B) $\log_2 5$ C) *1* D) *0,5*

55. [2; 500] kesmada 2, 3, 5 va 7 sonlariga bo'linganda qoldiq 1 ga teng bo'ladigan natural sonlar nechta?
A) *3* B) *1* C) *2* D) *4*

56. $y > 0$ bo'lsin. To'rtburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(0;y)$, $C(10;y)$ va $D(12;0)$. To'rtburchak diagonallarining o'rtalari orasidagi masofani toping.
A) *1* B) $\sqrt{2}$ C) *2* D) *y ga bog'liq*

57. Rasmda $y = a + \dfrac{2}{bx + c}$ funksiya grafigi tasvirlangan. Quyidagilardan qaysi biri doim o'rinli?



A) $cb + a > 0$ B) $b^3 - a^5 > 0$ C) $ca + ab > 0$
D) $a^3 - b^3 > 0$

58. Agar $f(x) = 11^x \cdot 7x$ bo'lsa, $f'(x) > 0$ tengsizlikni yeching.
A) $(-\log_{11} e; \infty)$ B) $(-\log_{11} e; e)$ C) $(-\infty; -\log_{11} e)$
D) $(-2\log_{11} e; \infty)$

59. Teng yonli trapetsiyaning diagonali uning o'tkir burchagi bissektrisasidir. Trapetsiyaning asoslari uzunliklari 3 : 4 kabi nisbatda, perimetri esa 13 ga teng. Trapetsiyaning o'rta chizig'ini toping.
A) *4* B) *3,6* C) *3,2* D) *3,5*

60. Agar barcha x, y lar uchun
$x^3 + 4x^2y + axy^2 + 3xy - bx^cy + 7xy^2 + dxy + y^2 = x^3 + y^2$
ayniyat bajarilsa, $a - b$ ni toping. $(c > 1)$
A) -11 B) -3 C) *2* D) -1

61. $\left|\dfrac{|x+2| - |x|}{\sqrt{4-x^2}}\right| \ge 0$ tengsizlikni qanoatlantirmaydigan eng katta manfiy va eng kichik natural sonlar nisbatini toping.
A) -4 B) *0* C) -3 D) -1

62. $x = -y$, $z = 3$ bo'lsa, $\dfrac{x^3 + y^3 + z^3 - 3xyz}{x^2 + y^2 + z^2 - xy - xz - yz}$ ifodaning qiymatini toping.
A) *0* B) *1* C) *3* D) -3

63. Beshta a_1, a_2, a_3, a_4, a_5 tub sonlar ayirmasi 6 ga teng bo'lgan arifmetik progressiyani tashkil qiladi. $a_2 + a_4$ ni toping.
A) *34* B) *40* C) *28* D) *22*

64. $\{x | x \in N, 2 \le x^2 \le 30\}$ to'plamni nechta usul bilan ikkita kesishmaydigan qism-to'plamlarga ajratish mumkin?
A) *8* B) *12* C) *30* D) *16*

65. Poyezd 4 minutda 8 kilometr masofani, motosikl 6 minutda 8 kilometr masofani bosib o'tdi. Motosiklchining tezligi poyezd tezligining necha foizini tashkil etadi?
A) $53\frac{1}{3}\%$ B) *70%* C) $66\frac{2}{3}\%$ D) $65\frac{2}{3}\%$

66. $\sqrt{4^{x-2} + \dfrac{15}{4^{2-x}}} = 16$ tenglamaning haqiqiy ildizlari yig'indisini toping
A) *5,5* B) *4* C) *5* D) *4,5*

67. To'g'ri tenglikni ko'rsating:
A) *1 Mbit=1024 Kbit* B) *1 Kbit=1000 bit*
C) *1 Kbit=1024 bayt* D) *1 Kbit=1 bayt*

68. Tenglik o'rinli bo'lishi uchun sonlarning asosi qanday bo'lish kerak? $24123_{(x)} + 3210_{(x)} = 30333_{(x)}$
A) *To'qqizlik* B) *Oltilik* C) *Yettilik* D) *Sakkizlik*

69. Qaysi javobda faqat arxivlangan fayllar kengaytmasi berilgan?
A) *.htm, .arj, .txt* B) *.zip, .jpg, .rar* C) *.zip, .rar, .arj*
D) *.awi, .com, .bac*

70. MS Excel dasturida formulaning natijasini aniqlang:
$A1 = 16$; $B1 = -12$;
$= -1 * \text{КОРЕНЬ}(A1) + \text{ЗНАК}(-1 * B1)$
A) *–8* B) *8* C) *3* D) *–3*

71. Rasm joylashtirish tegi to'g'ri ko'rsatilgan qatorni tanlang.
A) *<img src="fayl nomi">* B) *<a href="fayl nomi">*
C) *<frame src="fayl nomi">* D) *<img scr="fayl nomi">*

72. Paskal tilida quyidagi dastur lavhasi takrorlanish operatoridagi takrorlanishlar sonini aniqlang:
I:=0; Repeat I:=I+1
Until 0>I;
A) *2 marta* B) *1 marta* C) *0 marta* D) *cheksiz marta*

116-variant

MATEMATIKA (INFORMATIKA BILAN)

37. $y > 0$ bo'lsin. To'rtburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(2;0)$, $B(2;y)$, $C(0;y)$ va $D(-2;0)$. To'rtburchak diagonallarining o'rtalari orasidagi masofani toping.

A) 2 B) *y ga bog'liq* C) $\sqrt{2}$ D) 1

38. O'zaro teng bo'lmagan x va y sonlari $x^2 + 26y = y^2 + 26x$ tenglikni qanoatlantirsa, $x + y$ ni toping.

A) 24 B) 0 C) 16 D) 26

39. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(1;-2)$, $C(1;0)$. Uchburchak yuzini toping.

A) $\sqrt{2}$ B) $\sqrt{3}$ C) 2 D) 1

40. $\{x | x \in N, 2 \le x^2 \le 38\}$ to'plamning nechta qism-to'plamlari mavjud?

A) 5 B) 32 C) 16 D) 38

41. $y = \log_3(\operatorname{arctg} 2x + \operatorname{arcctg} 2x)$ funksiyaning $x = \frac{1}{2}$ nuqtadagi ikkinchi tartibli hosilasining qiymatini toping.

A) 0 B) 1 C) $-\log_3 2$ D) $\log_3 2$

42. $y = f(x)$ funksiya D to'plamda yuqoridan chegaralangan bo'lsin. U holda qaysi munosabat ixtiyoriy $x \in D$ uchun o'rinli?

A) *biror* K *haqiqiy soni uchun* $f(x) < K$
B) *biror* K *haqiqiy soni uchun* $|f(x)| > K$
C) *biror* K *musbat haqiqiy soni uchun* $|f(x)| > K$
D) *biror* K *musbat haqiqiy soni uchun* $|f(x)| < K$

43. Tenglamani yeching:
$2^{x-2} + 2^{x-3} + 2^{x-4} = 224$

A) 9 B) 7 C) 11 D) 10

44. $\begin{cases} x^2 + xy + y^2 = 13 \\ x + y + xy = 7 \end{cases}$ tenglamalar sistemasini qanoatlantiruvchi barcha x va y larning yig'indisini toping.

A) 8 B) 0 C) 1 D) -8

45. R radiusli sferaga muntazam to'rtburchakli piramida ichki chizilgan. Piramida yon sirtining yuzining eng katta qiymatini toping.

A) R^2 B) $5R^2$ C) $4R^2$ D) $6R^2$

46. $60°$ ga teng bo'lgan A burchakka aylana ichki chizilgan. Bu aylana burchak tomonlariga B va C nuqtalarda urinadi. Agar BC=3 bo'lsa, $AB + AC$ ni toping.

A) 6 B) 3 C) *bir qiymatli aniqlab bo'lmaydi* D) 4

47. $\int_2^3 \frac{3x}{x-1} dx$ integralni hisoblang.

A) $3\ln 3e$ B) 3 C) $3\ln 2e$ D) 1

48. Soddalashtiring: $\sqrt{22 + 12\sqrt{2}} + \frac{2\sqrt{2} - 1}{\sqrt{2} + 1}$

A) $9 + \sqrt{2}$ B) 9 C) 7 D) $7 + \sqrt{2}$

49. Musbat x, y sonlar uchun $a = x + y$ va $b = 2\sqrt{xy}$ bo'lsin. Qaysi tengsizlik har doim o'rinli?

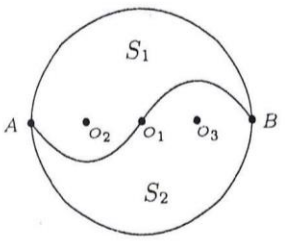
A) $a \le b$ B) $a \ge b$ C) $a < b$ D) $a > b$

50. Agar barcha x, y lar uchun
$x^3 + 4x^2y + axy^2 + 3xy - bx^cy + 7xy^2 + dxy + y^2 = x^3 + y$
ayniyat bajarilsa, $b - c$ ni toping. $(c > 1)$

A) 2 B) -4 C) 3 D) -2

51. Hisoblang: $\log_6\left(\sqrt{2 - \sqrt{3}} + \sqrt{2 + \sqrt{3}}\right)$

A) 1 B) $\log_6 2$ C) $\log_6 \sqrt{3}$ D) $\frac{1}{2}$



52. Rasmda AB katta aylana diametri, O_1 katta aylana markazi, O_2 va O_3 kichik aylana markazlari bo'lib, ular uchun $AO_1 : O_1O_2 = O_2O_3 : O_3B$ tenglik o'rinli. S_1 va S_2 sohalar perimetrlari yig'indisini ifodalaydigan son S_1 soha yuzini ifodalaydigan sondan 25% ga kichik bo'lsa, S_1 va S_2 sohalar yuzlari yig'indisini toping.

A) $56,(8)\pi$ B) $113,(7)\pi$ C) $100,(3)\pi$ D) $170,(6)\pi$

53. Agar $|x + 2| = \frac{x}{2} + a$ tenglama a parametrning nechta natural qiymatida yechimga ega emas?

A) 3 B) 0 C) 1 D) 2

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$\alpha+\beta+\gamma=\pi$, $\cos\alpha\cos\beta\cos\gamma=-\frac{1}{2}$ bo'lsa,
$\sin^2\alpha+\sin^2\beta+\sin^2\gamma$ ning qiymatini toping.

A) $\sqrt{2+\sqrt{2}}$ B) 2 C) $-\sqrt{2}$ D) 1

Beshta a_1, a_2, a_3, a_4, a_5 tub sonlar ayirmasi 6 ga teng bo'lgan arifmetik progressiyani tashkil qiladi. $4a_1+a_3$ ni toping.

A) 39 B) 29 C) 34 D) 37

Hisoblang: $\operatorname{ctg}45^\circ\cdot\operatorname{ctg}15^\circ\cdot\operatorname{ctg}105^\circ$.

A) $\frac{\sqrt{2}}{4}$ B) $-\frac{\sqrt{2}}{4}$ C) 1 D) -1

Asoslarining radiuslari 3 va 4 ga teng bo'lgan kesik konus va unga tengdosh silindrning balandliklari bir xil. Silindr asosining radiusini toping.

A) $\sqrt{13}$ B) $\sqrt{17}$ C) $\sqrt{12\frac{2}{3}}$ D) $\sqrt{12\frac{1}{3}}$

$\log_{\frac{1}{9}}\log_{\frac{1}{4}}\frac{x+4}{2x-1}<0$ tengsizlikni qanoatlantiradigan eng katta va eng kichik butun sonlar yig'indisini toping.

A) -13 B) -10 C) -12 D) -14

$y=2cos2x-cos4x$ funksiyaning hosilasini toping.

A) $-8cosx\cdot sin3x$ B) $8sinx\cdot cos3x$ C) $8sinx\cdot sin3x$
D) $8cosx\cdot cos3x$

Qaysi jism(lar)ning simmetriya o'qlari chekli sonda?
1) shar; 2) prizma; 3) konus; 4) kub

A) 1 B) 2, 3 C) 3, 4 D) 2, 3, 4

$y=-6sin^2x+\frac{3}{4}cos^2 2x+2\frac{1}{4}$ funksiyaning qiymatlar sohasiga tegishli manfiy butun sonlar nechta?

A) 3 ta B) 4 ta C) 5 ta D) 2 ta

Poyezd 3 minutda 6 kilometr masofani, motosikl 4 minutda 6 kilometr masofani bosib o'tdi. Motosiklchining tezligi poyezd tezligining necha foizini tashkil etadi?

A) 73% B) 87% C) 70% D) 75%

$y=\log_5(\sin^2 3x+\cos^2 3x)$ funksiyaning $x=\frac{2016\pi}{6}$ nuqtadagi qiymatini hisoblang.

A) $-\log_5 2$ B) 0 C) 1 D) $\log_5$

Ushbu $f(x)=\frac{x+3}{x+4}$ funksiyaning boshlang'ich funksiyasini toping.

A) $\frac{2x^2}{(x+4)^2}+C$ B) $x+4\ln|x+4|+C$
C) $x-\ln|x+4|+C$ D) $\ln(x+4)^2+C$

$\log^2_{\frac{1}{5}}(9-x^2)-2\log_{\frac{1}{5}}(9-x^2)-8\le 0$ tengsizlikning barcha natural yechimlari yig'indisini toping.

A) 3 B) 6 C) 10 D) 15

Radiusi 3 ga teng bo'lgan doiraga tashqi chizilgan teng yonli trapetsiyaning asosidagi burchagi 30° ga teng. Trapetsiyaning perimetrini toping.

A) 44 B) 64 C) 48 D) 32

Ingliz tilidagi qaysi so'zlardan bit atamasi hosil qilingan?

A) *binom digital* B) *binary disk* C) *bitmap digit*
D) *binary digit*

*D*095, 209*A* butun sonlarni barchasini yozish mumkin bo'lgan eng kichik asosli sanoq sistemasida shu sonlar yig'indisini hisoblang va natijani o'nlik sanoq sistemasida tasvirlang.

A) 61743 B) 33204 C) 50910 D) 41427

Qanday dasturlar majmuasi aniq bir predmet sohasi bo'yicha masalalar yechishga mo'ljallangan?

A) *yordamchi dasturiy ta'minot*
B) *dasturlar yaratish vositalari*
C) *amaliy dasturiy ta'minot*
D) *tizim (sistema)li dasturiy ta'minot*

*A*1=-3, *B*1=6, *B*2=3 bo'lsin. Quyidagi formula natijasi 2 ga teng bo'lishi uchun *A*2 katakka kiritilishi kerak bo'lgan qiymatni aniqlang.
=ЕСЛИ(И(*A*1+*B*2<=*A*2**B*1;*A*1**B*1<>0);
*A*1+*B*2+*B*1−*A*2;*A*1**B*1+*B*2+*A*2)

A) 4 B) 2 C) 6 D) 1

Qanday teg yordamida HTML hujjatning tanasi aks ettiriladi?

A) <HEAD> ...</HEAD> B) <HTML> ... </HTML>
C) <BODY> ... </BODY>
D) <TITLE> ... </TITLE>

Quyidagi to'plamni Paskal tilida yozilishini aniqlang:
$X^2+Y^2<R^2, y\ge 0, x<a$

A) (X*X+Y*Y)<R*R) and (y>=0) and Not(x>A)
B) (x*x+sqr(y)<r*r) and (x<a) and Not(y<0)
C) (x*x+sqr(y)<sqr(r)) and (x<=a) or (y>0)
D) (sqr(x)+sqr(y)<sqr(r)) or (x<a) or (y>=0)

MATEMATIKA (INFORMATIKA BILAN)

37. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(-1;2)$, $C(-2;0)$. Uchburchak yuzini toping.

A) $2\sqrt{2}$ B) 3 C) $2\sqrt{3}$ D) 2

38. $y = 4\cos^2 x + \sin^2 x$ funksiya butun qiymatlari yig'indisini toping.

A) 9 B) *bunday qiymatlar cheksiz ko'p*
C) *bunday qiymatlar mavjud emas* D) 10

39. Agar $\operatorname{ctg}^2\alpha = \frac{1}{2}$ va $\alpha \in \left(0; \frac{\pi}{2}\right)$ bo'lsa, $\cos^2\alpha - \sin^2\alpha$ ni hisoblang.

A) $-\frac{1}{4}$ B) $-\frac{1}{3}$ C) $\frac{1}{2}$ D) $-\frac{1}{2}$

40. $a = -b$, $c = -2$ bo'lsa, $\dfrac{c(a-b)^3 + a(b-c)^3 + b(c-a)^3}{c^2(b-a) + a^2(c-b) + b^2(a-c)}$ ifodaning qiymatini toping.

A) 0 B) 2 C) -2 D) 1

41. $a = -3$ bo'lsa, $\int\limits_a^{a+1} (\sin^2 3x + \cos^2 3x)dx$ integralni hisoblang.

A) $\sqrt{2}$ B) $\frac{\sqrt{2}-1}{3}$ C) 1 D) $2\sqrt{2}$

42. Beshta a_1, a_2, a_3, a_4, a_5 tub sonlar ayirmasi 6 ga teng bo'lgan arifmetik progressiyani tashkil qiladi. a_4 ni toping.

A) 23 B) 13 C) 11 D) 17

43. $y > 0$ bo'lsin. To'rtburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(2;0)$, $B(2;y)$, $C(0;y)$ va $D(-2;0)$. To'rtburchak diagonallarining o'rtalari orasidagi masofani toping.

A) 1 B) 2 C) *y ga bog'liq* D) $\sqrt{2}$

44. $\dfrac{1}{|x+1|-1} \geq \dfrac{2}{|x+1|-2}$ tengsizlikning eng kichik butun yechimini toping.

A) 0 B) 1 C) -2 D) -1

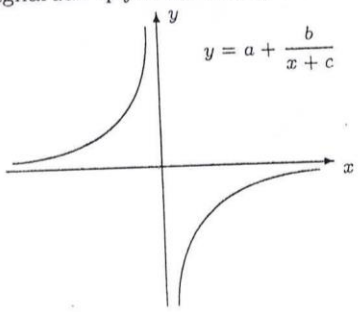
45. $(0,2)^{\frac{1}{2}\log_5 2 - \log_{25} 4}$ ni hisoblang.

A) $\sqrt{2}$ B) $\frac{\sqrt{2}}{2}$ C) $\sqrt[4]{2}$ D) 2

46. Radiusi 3 ga teng bo'lgan doiraga tashqi chizilgan teng yonli trapetsiyaning asosidagi burchagi $30°$ ga teng. Trapetsiyaning perimetrini toping.

A) 44 B) 64 C) 32 D) 48

47. Rasmda $y = a + \dfrac{b}{x+c}$ funksiya grafigi tasvirlangan. Quyidagilardan qaysi biri noto'g'ri?



A) $bc - a^2 = 0$ B) $ac = 0$ C) $b - a = 0$ D) $c(a-b) = 0$

48. Agar $a > 3$, $b > 5$ bo'lsa, quyidagilardan qaysilari doim o'rinli?
1) $2a + 3b > 21$; 2) $2a + 3b > 36 - ab$; 3) $2a^2 + 3b^2 > 94$;
4) $2a^2 + 3b^2 > 93$; 5) $a(1+b) > 19$

A) 2, 4, 5 B) 1, 2, 3 C) 3, 4, 5 D) 1, 2, 4

49. 123451234512345123451234512345 sonida 10 ta raqam shunday o'chirilganki, hosil bo'lgan son eng katta bo'ldi. Shu sonning 4-raqamini toping.

A) 5 B) 4 C) 2 D) 3

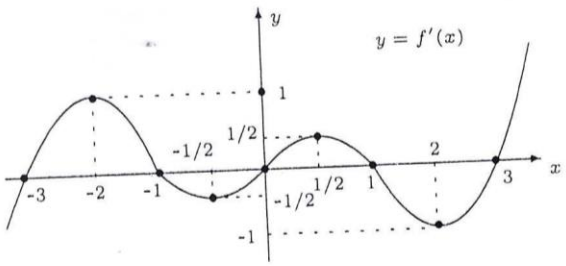
50. Akvariumning bo'yi 80 sm, eni 50 sm, balandligi 40 sm. Suv sathi yuqoridan 10 sm pastda bo'lishi uchun akvariumga necha litr suv quyish kerak?

A) 12 B) 140 C) 120 D) 160

51. C nuqta – AB kesmaning o'rtasi. AC va BC kesmalarda mos ravishda M, N nuqtalar shunday olinganki, $AM{:}MC{=}CN{:}NB$ munosabat bajariladi. Agar AB kesma uzunligi 12 ga teng bo'lsa, MN kesma uzunligini toping.

A) 6 B) 2 C) 3 D) 4

52. Rasmda $y = f'(x)$ funksiya grafigi tasvirlangan. $f'(x) = 0$ tenglama yechimlari o'rta arifmetigini toping. $(x \in [-3;3])$



A) 1,5 B) 1 C) 2 D) 0

53. $\left|1 + \dfrac{4-x}{3}\right| = 7$ tenglamani yeching.

A) $-22; -20$ B) $-21; 22$ C) $-20; 22$ D) $-22; 20$

54. $y = \log_7(\sin^2 x + \cos^2 x)$ funksiyaning $x = \frac{1}{2}$ nuqtadagi ikkinchi tartibli hosilasining qiymatini toping.

A) 1 B) $-\log_7 2$ C) 0 D) $\log_7 2$

55. $\{x | x \in N, x^2 \leq 27\}$ to'plamning nechta qism-to'plamlari mavjud?

A) 27 B) 16 C) 32 D) 5

56. $2\log_2\left(\sqrt{4x+5} - 1\right) > \log_2\left(\sqrt{4x+5} + 11\right)$ tengsizlikni yeching.

A) $(5; +\infty)$ B) $\left(-\frac{5}{4}; 0\right)$ C) $(0; 5)$ D) $\left(-\frac{1}{4}; 0\right)$

7. Uchta teng kesmalardan tashkil topgan shakl eng ko'pi bilan nechta simmetriya o'qiga ega bo'lishi mumkin?
A) 3 B) 5 C) 4 D) 6

8. Agar x quyidagi tenglamani qanoatlantirsa, $\operatorname{tg} 4x$ ning barcha qiymatlari ko'paytmasini toping.
$1 + \cos 4x - 3\sin 2x = 0$
A) 0 B) -3 C) $\sqrt{3}$ D) -1

9. Muntazam uchburchakli piramida asosining tomonidan unga ayqash yon qirraga perpendikular bo'lgan tekislik o'tkazilgan. Kesuvchi tekislik yon qirrani uchidan hisoblaganda 3:2 nisbatda kesadi. Asos tomoni $2\sqrt{2}$ ga teng bo'lsa, piramida yon sirtining yuzini toping.
A) 15 B) 12 C) 8 D) 10

10. $y = \sin x$ funksiya grafigi berilgan bo'lib, uni parallel ko'chirish yordamida $y = \sin(x - a) - b$ funksiya grafigi hosil qilingan. Bunday parallel ko'chirishda koordinata boshi qanday nuqtaga ko'chadi?
A) $N(a; b)$ B) $N(a; -b)$ C) $N(b; a)$ D) $N(-a; b)$

11. Ixtiyoriy x, y haqiqiy sonlar uchun $a = \dfrac{4x^2 + y^2}{2}$ va $b = 2|xy|$ bo'lsin. Qaysi tengsizlik har doim o'rinli?
A) $a < b$ B) $a > b$ C) $a \geq b$ D) $a \leq b$

12. Poyezd 4 minutda 8 kilometr masofani, motosikl 6 minutda 8 kilometr masofani bosib o'tdi. Motosiklchining tezligi poyezd tezligining necha foizini tashkil etadi?
A) $66\frac{2}{3}\%$ B) $53\frac{1}{3}\%$ C) $65\frac{2}{3}\%$ D) 70%

13. $a = -2$ bo'lsa, $\int_a^{a+1} (ln(\sin^2 3x + \cos^2 3x) + 1)dx$ aniq integralni hisoblang.
A) $2\sqrt{2}$ B) $\sqrt{2}$ C) $\frac{\ln 2 - 1}{3}$ D) 1

14. Agar $\alpha = 15°$ va $\beta = 30°$ bo'lsa, $\sin\alpha \cdot \sin(\beta - \alpha) + \sin^2\left(\dfrac{\beta}{2} - \alpha\right)$ ni hisoblang.
A) $\frac{1}{4}$ B) 1 C) $\dfrac{\sqrt{3} - 2}{4}$ D) $\dfrac{2 - \sqrt{3}}{4}$

15. Asosi a ga, yon tomoni b ga teng bo'lgan teng yonli uchburchakning yon tomoniga tushirilgan mediana uzunligini toping.
A) $m_b = \dfrac{a}{2}\sqrt{2a^2 + b^2}$ B) $m_b = \dfrac{1}{2}\sqrt{2a^2 + b^2}$
C) $m_b = \dfrac{a}{2}\sqrt{a^2 + 2b^2}$ D) $m_b = \dfrac{1}{2}\sqrt{a^2 + 2b^2}$

16. $|1 - x^2| = |2x + 2|$ tenglama yechimlari ayirmasining modulini toping.
A) 4 B) 2 C) 1 D) 3

17. Qanday qurilmani Semyuel Morze ixtro qilgan?
A) *televizor* B) *telefaks* C) *elektromagnit telegraf* D) *telefon*

18. 627, 3134 butun sonlarni barchasini yozish mumkin bo'lgan eng kichik asosli sanoq sistemasida shu sonlar raqamlarining yig'indisini hisoblang.
A) 32 B) 26 C) 35 D) 28

19. Superkompyuterlarda foydalaniladigan ko'p foydalanuvchili operatsion tizim (sistema)ni toping
A) *MS-DOS* B) *WINDOWS XP* C) *WINDOWS 95* D) *UNIX*

20. MS Excel dasturida formulaning natijasini toping:
$A1 = 0,001$; $B1 = 15$; $C1 = 16$;
$=$ ДЛСТР($A1$) + ЗНАК($B1$) * КОРЕНЬ($C1$)
A) 9 B) 4,001 C) 5 D) 1

21. Brauzerda "x^3" yozuvini aks ettirish uchun teglar to'g'ri berilgan javobni ko'rsating.
A) x<u>3</u> B) x³
C) x₃ D) x3

22. Paskal tilida quyidagi dastur bajarilishi natijasida ekranga chiqariladigan axborotlarni aniqlang:
Label a;
Var k,b,c:string[6];
Begin K:='20'; B:= '14'; write('T'); goto a; C:= '01.08.';
a:write(C:2); write(K:3,B:2); end.
A) T01.08. 2014 B) T 2014 C) T01.08 D) T012014

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MATEMATIKA (INFORMATIKA BILAN)

37. Agar $|x-8| = \frac{x}{2} + a$ tenglama bitta yechimga ega bo'lsa, a ning qiymatini toping.
A) -4 B) -3 C) 8 D) -2

38. $y = \log_7\left(\operatorname{arctg} x + \operatorname{arcctg} x - \frac{\pi}{2} + 1\right)$ funksiyaning $x = \frac{1}{2}$ nuqtadagi qiymatini hisoblang.
A) $\log_7 2$ B) $-\log_7 2$ C) 0 D) 1

39. Hisoblang: $\cos 45° \cdot \cos 15° \cdot \cos 105°$.
A) 1 B) $\frac{\sqrt{2}}{8}$ C) -1 D) $-\frac{\sqrt{2}}{8}$

40. Agar $f(x) = 11^x \cdot 7x$ bo'lsa, $f'(x) > 0$ tengsizlikni yeching.
A) $(-2\log_{11} e; \infty)$ B) $(-\infty; -\log_{11} e)$ C) $(-\log_{11} e; e)$ D) $(-\log_{11} e; \infty)$

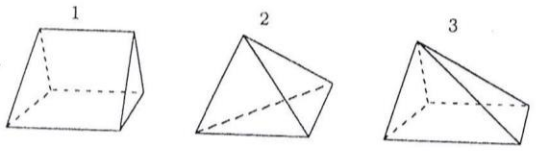
41. $y = f(x)$ funksiya D to'plamda kamayuvchi bo'lsin. D to'plamdan olingan ixtiyoriy a, b elementlari uchun $(a < b)$ quyidagi munosabatlardan qaysi biri o'rinli?
A) $f(b) = f(a)$ B) $f(b) < f(a)$ C) $f(a) \le f(b)$ D) $f(a) < f(b)$

42. Eratosfen g'alviri deb ataladigan usul nima uchun qo'llaniladi?
A) *1 soni na tub, na murakkab ekanligini isbotlashda*
B) *biror natural sondan katta bo'lmagan tub sonlarni aniqlashda*
C) *tub sonlar cheksiz ko'p ekanligini isbotlashda*
D) *n sonning bo'luvchilarini aniqlashda*

43. ABC o'tkir burchakli uchburchak berilgan. Uchburchak BC tomonini C uchidan boshlab hisoblanganda 2:3 nisbatda bo'luvchi AN to'g'ri chiziq o'tkazilgan. Agar ABC uchburchakning yuzi 20 ga teng bo'lsa, ANC uchburchakning yuzini toping.
A) 8 B) 12 C) 6 D) 5

44. $f(x) = 2x + \frac{2}{2x-1}$ egri chizig'ining Ox o'qiga parallel urinmalari urinish nuqtalari abssissalarining yig'indisini toping.
A) 0 B) -1 C) 2 D) 1

45. Quyidagi ko'pyoqlardan qaysi birida 6 ta qirra bor?

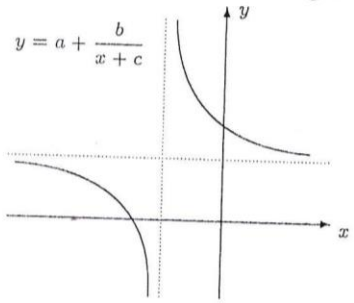


A) 1, 3 B) 3 C) 1 D) 2

46. $\{x | x \in N, x^2 < 35\}$ to'plamning nechta qism-to'plamlari mavjud?
A) 16 B) 5 C) 32 D) 35

47. $\log_{\frac{1}{9}} \log_{\frac{1}{4}} \frac{x+4}{2x-1} < 0$ tengsizlikni qanoatlantiradigan eng kichik va eng katta butun sonlar ayirmasini toping.
A) -4 B) -2 C) -3 D) 0

48. Rasmda $y = a + \frac{b}{x+c}$ funksiya grafigi tasvirlangan. Quyidagilardan qaysi biri doim to'g'ri?



A) $-a-b<c$ B) $ab-c<0$ C) $a^2-bc<0$ D) $a^3<b$

49. $y = 1 + \frac{1}{2}\cos x$; $y = 0$; $x = -\frac{\pi}{2}$; $x = \frac{\pi}{2}$ chiziqlar bilan chegaralangan shaklning yuzini toping.
A) $\pi + 2$ B) $\pi - 1$ C) π D) $\pi + 1$

50. Juft natural n son beshta natural bo'luvchiga (1 va n bilan birga) ega. $10n$ son nechta natural bo'luvchiga ega?
A) 12 B) 10 C) 5 D) 8

51. $\sqrt{3x - x^2 - 2} > 2 - 3x$ tengsizlikni yeching.
A) $[1; 2]$ B) $(0; 2]$ C) $\emptyset$ D) $(-\infty; 1] \cup [2; \infty)$

52. Sharga asosining tomoni $6\sqrt{2}$ ga, balandligi 12 ga teng bo'lgan muntazam to'rtburchakli piramida ichki chizilgan. Shar radiusini toping.
A) 7,5 B) 6,5 C) 6 D) 7

53. To'g'ri burchakli ABC uchburchakning C to'g'ri burchagini CH balandlik va CM mediana teng uch qismga bo'ladi. Agar CHM uchburchak yuzasi 4 ga teng bo'lsa, ABC uchburchak yuzasini toping.
A) $16\sqrt{3}$ B) $12\sqrt{3}$ C) 16 D) 12

118-variant

54. Qirralari 18, 14 va 16 bo'lgan parallelepiped qirrasi 1 ga teng bo'lgan kubchalardan tashkil topgan. Parallelepipeddan 1 kubcha qalinligidagi tashqi sirtni olib tashlash uchun nechta kubcha olinishi kerak?
A) *1336* B) *1344* C) *1434* D) *717*

55. Berilgan ABC uchburchakda E nuqta – AC tomonning o'rtasi. BC tomonda D nuqta shunday olinganki, $2BD{=}DC$ munosabat o'rinli. AD va BE to'g'ri chiziqlar F nuqtada kesishsin. Agar $FDCE$ to'rtburchakning yuzasi 25 ga teng bo'lsa, BDF uchburchak yuzasini toping.
A) *4,5* B) *5* C) *4* D) *6*

56. Tenglamani yeching: $1 = 2sin\left(4x + \frac{\pi}{6}\right)$

A) $\frac{\pi}{24} + \frac{\pi k}{4};\ k \in Z$

B) $(-1)^k\frac{\pi}{2} + \frac{\pi}{24} + \pi k;\ k \in Z$

C) $(-1)^k\frac{\pi}{24} - \frac{\pi}{24} + \frac{\pi k}{4};\ k \in Z$

D) $(-1)^k\frac{\pi}{6} - \frac{\pi}{6} + \pi k;\ k \in Z$

57. $y > 0$ bo'lsin. To'rtburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(0;y)$, $C(3;y)$ va $D(5;0)$. To'rtburchak diagonallarining o'rtalari orasidagi masofani toping.
A) $\sqrt{2}$ B) *y ga bog'liq* C) *1* D) *2*

58. Agar $\vec{a}(-4;3;5)$ va $\vec{b}(3;-4;\sqrt{2})$ berilgan bo'lsa, $\frac{|\vec{a}|}{\sqrt{2}} + \frac{|\vec{b}|}{\sqrt{3}}$ ni hisoblang.
A) *9* B) *8* C) *7* D) *5*

59. Beshta a_1, a_2, a_3, a_4, a_5 tub sonlar ayirmasi 6 ga teng bo'lgan arifmetik progressiyani tashkil qiladi. $4a_1 + a_3$ ni toping.
A) *29* B) *34* C) *39* D) *37*

60. $a = 4$ bo'lsa, $\int\limits_a^{a+1} (ln(\sin^2 2x + \cos^2 2x) + 1)dx$ aniq integralni hisoblang.
A) $\sqrt{2}$ B) $\frac{\ln 2-1}{2}$ C) $2\sqrt{2}$ D) *1*

61. O'zaro teng bo'lmagan x va y sonlari $x^2 + 24y = y^2 + 24x$ tenglikni qanoatlantirsa, $x + y$ ni toping.
A) *12* B) *34* C) *0* D) *24*

62. Poyezd 5 minutda 10 kilometr masofani, motosikl 6 minutda 10 kilometr masofani bosib o'tdi. Motosiklchining tezligi poyezd tezligining necha foizini tashkil etadi?
A) $63\frac{1}{3}\%$ B) $81\frac{2}{3}\%$ C) $83\frac{1}{3}\%$ D) *80%*

63. $\cos(2\operatorname{arctg} 2)$ ni hisoblang.
A) 0,6 B) −0,6 C) −0,4 D) 0,25

64. $x^4 + (b-4)x^2 - 4b = 0$ tenglamaning haqiqiy ildizlari ko'paytmasini toping. $(b \geq 0)$
A) -2 B) $b-2$ C) -4 D) b

65. Agar barcha x, y lar uchun $x^3 + 4x^2y + axy^2 + 3xy - bx^cy + 7xy^2 + dxy + y^2 = x^3 + y^2$ ayniyat bajarilsa, $b - c$ ni toping. $(c > 1)$
A) -4 B) -2 C) *2* D) *3*

66. $(0,2)^{\frac{1}{2}\log_5\sqrt{2}-\log_{25}2}$ ni hisoblang.
A) $\sqrt{2}$ B) $\sqrt[4]{2}$ C) $\frac{\sqrt{2}}{2}$ D) *2*

67. Qanday so'zlar asosida "texnoligiya" so'zi tashkil topgan?
A) *"compyuter" va "science"* B) *"techho" va "logos"*
C) *"techne" va "science"* D) *"techne" va "logos"*

68. Rim sanoq sistemasida to'g'ri tenglikni aniqlang.
A) $CDXXIX : XXXIX = IX$
B) $CCIX + XLIII = CCLIII$
C) $XIX \cdot XVII = CCCXXII$
D) $CCCIC - LXXVII = CCCXXII$

69. Qobiq dastur nomi ko'rsatilgan javobni aniqlang.
A) *Сетевое окружение (Tarmoq muhiti)*
B) *Мой компьютер (Mening kompyuterim)*
C) *Мои документы (Mening hujjatlarim)*
D) *Корзина (Savatcha)*

70. $A1{=}{-9}$, $B1{=}8$, $B2{=}5$ bo'lsin. Quyidagi formula natijasi -29 ga teng bo'lishi uchun $A2$ katakka kiritilishi kerak bo'lgan qiymatni aniqlang.
=ЕСЛИ(И($A1{+}B2{>=}A2{*}B1$;$A1{*}A2{<>}0$); $A1{*}B2{+}B1{-}A2$;$A1{*}B1{+}2{*}B2{-}A2$)
A) *−11* B) *−8* C) *−6* D) *−10*

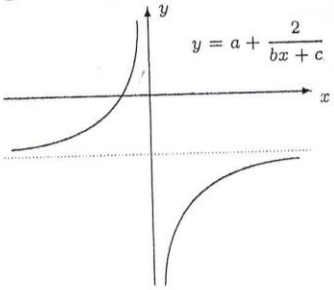
71. Rasm joylashtirish tegi to'g'ri ko'rsatilgan qatorni tanlang.
A) *<img scr="fayl nomi">* B) *<img src="fayl nomi">*
C) *<a href="fayl nomi">* D) *<frame src="fayl nomi">*

72. Quyidagi Paskal dasturi lavhasi har qanday a, b va c qiymatda ham ma'lumotlarni chiqarish protsedurasi izohiga mos keladigan javob chiqarishi uchun * o'rniga yozilishi kerak bo'lgan shartni aniqlang:
Readln(a,b,c); max:=a; If max<b Then max:=b;
If * Then max:=c;
WriteLn('Berilgan uchta sondan kattasi= ',max);
A) *c>b;* B) *max>c;* C) *c>max* D) *c<b*

119-variant

MATEMATIKA (INFORMATIKA BILAN)

37. Rasmda $y = a + \dfrac{2}{bx + c}$ funksiya grafigi tasvirlangan. Quyidagilardan qaysi biri doim o'rinli?



A) $-b^3 - a^3 > 0$ B) $b^2 + a > 0$ C) $ac^2 - b^4 > 0$
D) $a^4 + b > 0$

38. $\alpha + \beta + \gamma = \pi$, $\sin\dfrac{\alpha}{2}\sin\dfrac{\beta}{2}\sin\dfrac{\gamma}{2} = -\dfrac{1}{4}$ bo'lsa, $\cos\alpha + \cos\beta + \cos\gamma$ ning qiymatini toping.

A) *0* B) *1* C) *-1* D) *2*

39. $D_1(f)$ to'plamda berilgan $f(x)$ va $D_2(g)$ to'plamda berilgan $g(x)$ funksiyalarning yig'indisi deb ... $\varphi(x) = f(x) + g(x)$ funksiyaga aytiladi.

A) $D_1(f) \cup D_2(g)$ *to'plamda berilgan, bunda* $D_1(f) \cap D_2(g) = \emptyset$
B) $D_1(f) \cap D_2(g)$ *to'plamda berilgan, bunda* $D_1(f) \cup D_2(g) = \emptyset$
C) $D_1(f) \cap D_2(g)$ *to'plamda berilgan, bunda* $D_1(f) \cap D_2(g) \neq \emptyset$
D) $D_1(f) \cup D_2(g)$ *to'plamda berilgan, bunda* $D_1(f) \cap D_2(g) \neq \emptyset$

40. $a = -b$, $c = 1$ bo'lsa, $\dfrac{c(a-b)^3 + a(b-c)^3 + b(c-a)^3}{c^2(b-a) + a^2(c-b) + b^2(a-c)}$ ifodaning qiymatini toping.

A) *1* B) *-1* C) *2* D) *-2*

41. Ushbu $f(x) = \dfrac{x}{x-1}$ funksiyaning boshlang'ich funksiyasini toping.

A) $\dfrac{x}{(x-1)^2} + C$ B) $x + \ln|x-1| + C$ C) $\ln(x-1)^2 + C$
D) $\dfrac{2x^2}{(x-1)^2} + C$

42. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(-1;-1)$, $C(-2;0)$. Uchburchak yuzini toping.

A) $\sqrt{3}$ B) $\sqrt{2}$ C) *2* D) *1*

43. Agar $\log_{30} 90 = a$ bo'lsa, $\log_3 10$ ni a orqali ifodalang.

A) $\dfrac{2-a}{a+1}$ B) $\dfrac{a+2}{a+1}$ C) $\dfrac{a-2}{1-a}$ D) $\dfrac{a-2}{a+1}$

44. $a = -3$ bo'lsa, $\int\limits_a^{a+1} (\sin^2 3x + \cos^2 3x)dx$ integralni hisoblang.

A) *1* B) $2\sqrt{2}$ C) $\sqrt{2}$ D) $\dfrac{\sqrt{2}-1}{3}$

45. $y = \log_5(\sin^2 2x + \cos^2 2x)$ funksiyaning $x = \dfrac{1}{2}$ nuqtadagi hosilasining qiymatini toping.

A) *1* B) $-\log_5 2$ C) $\log_5 2$ D) *0*

46. $2 + \left(\dfrac{x}{x-1}\right)^4 - 3\left(\dfrac{x}{x-1}\right)^2 = 0$ tenglamaning ildizlari ko'paytmasini toping.

A) 2 B) 1 C) $4\dfrac{1}{2}$ D) $3\dfrac{1}{6}$

47. Samandar doskaga ikkita son yozdi. Uchinchi son sifatida u birinchi va ikkinchi sonlarning yig'indisini, to'rtinchi son sifatida ikkinchi va uchinchi sonlarning yig'indisini va h.k. yozdi, lekin yettinchi sonni yozmadi. So'ng dastlabki oltita sonni qo'shdi va bu yig'indini bilgan holda qo'shiluvchilardan birini aniq hisoblash mumkinligini ko'rdi. Bu qaysi qo'shiluvchi edi?

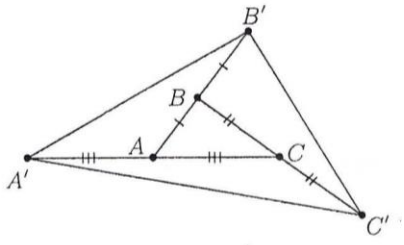
A) *uchinchi* B) *to'rtinchi* C) *beshinchi* D) *oltinchi*

48. [50; 250] kesmada 3 ga bo'linganda qoldiq 1 ga, 4 ga bo'linganda qoldiq 2 ga, 5 ga bo'linganda qoldiq 3 ga va 6 ga bo'linganda qoldiq 4 ga teng bo'ladigan natural sonlar nechta?

A) *1* B) 3 C) 2 D) *4*

119-variant

49. ABC uchburchakning har bir tomoni chizmada ko'rsatilgandek o'z uzunligiga teng uzunlikda davom ettirilgan. Agar $A'B'C'$ uchburchak yuzasi 28 ga teng bo'lsa, ABC uchburchak yuzasini toping.



A) 5 B) 3 C) 2 D) 4

50. $y > 0$ bo'lsin. To'rtburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(0;y)$, $C(-7;y)$ va $D(-9;0)$. To'rtburchak diagonallarining o'rtalari orasidagi masofani toping.

A) y ga bog'liq B) $\sqrt{2}$ C) 2 D) 1

51. ABC teng yonli uchburchakka aylana ichki chizilgan $(AB = BC)$. E nuqta aylananing AB tomonidagi urinish nuqtasi va $BE = 4$, $EA = 3$. ABC uchburchak yuzini toping.

A) $4\sqrt{10}$ B) 18 C) $6\sqrt{10}$ D) 12

52. $4 - x < \sqrt{6 - x}$ tengsizlikning yechimlaridan iborat bo'lgan eng kichik natural sonni toping.

A) 5 B) 3 C) 4 D) 6

53. $y = \ln\left(\operatorname{arctg} x + \operatorname{arcctg} x - \frac{\pi}{2} + 1\right)$ funksiyaning $x = \frac{1}{2}$ nuqtadagi qiymatini hisoblang.

A) 0 B) 1 C) $\ln 2$ D) $-\ln 2$

54. Qirralari 13, 11 va 17 bo'lgan parallelepiped qirrasi 1 ga teng bo'lgan kubchalardan tashkil topgan. Parallelepipeddan 1 kubcha qalinligidagi tashqi sirtni olib tashlash uchun nechta kubcha olinishi kerak?

A) 944 B) 513 C) 946 D) 511

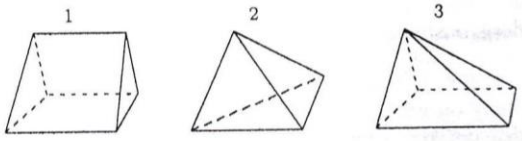
55. $ABCD$ tetraedrning D uchidagi barcha yassi burchaklar to'g'ri. Shu tetraedrga kub shunday ichki chizilganki, kubning bitta uchi D nuqtada, unga qarama-qarshi uchi esa ABC yoqda yotibdi. Agar DA=4, DB=5 va DC = 6 bo'lsa, kub qirrasining uzunligini toping.

A) $\frac{17}{19}$ B) $\frac{19}{12}$ C) $\sqrt{2}$ D) $\frac{60}{37}$

56. $60°$ ga teng bo'lgan A burchakka aylana ichki chizilgan. Bu aylana burchak tomonlariga B va C nuqtalarda urinadi. Agar BC=5 bo'lsa, AC ni toping.

A) 3 B) 4 C) *bir qiymatli aniqlab bo'lmaydi* D) 5

57. Quyidagi ko'pyoqlardan qaysi birida 4 ta yoq, 6 ta qirra bor?



A) 1 B) 2 C) 1, 2 D) 3

58. $a_1, a_2, \ldots, a_8$ ketma-ketlikda ixtiyoriy uchta ketma-ket hadining yig'indisi 40 ga teng. Agar ketma-ketlikning uchinchi hadi 9 ga teng bo'lsa, birinchi va sakkizinchi hadlarining yig'indisi nechaga teng?

A) 33 B) 9 C) 18 D) 31

59. Agar $f(x) = g(h(x))$ va $h(x) = 2x^2 - 3x$ funksiyalar berilgan va $f'(-1) = 14$ bo'lsa $g'(5)$ ni hisoblang.

A) -2 B) -35 C) 14 D) -7

60. Hisoblang: $\operatorname{ctg} 45° \cdot \operatorname{ctg} 15° \cdot \operatorname{ctg} 105°$.

A) -1 B) $\frac{\sqrt{2}}{4}$ C) $-\frac{\sqrt{2}}{4}$ D) 1

61. $\{x | x \in N, x^2 < 25\}$ to'plamning nechta qism-to'plamlari mavjud?

A) 25 B) 16 C) 32 D) 4

62. Agar $x^2 + 10y^2 = 7xy$ bo'lsa, $\frac{x}{y}$ nisbatning eng katta qiymatini toping.

A) 7 B) 4 C) 2 D) 5

63. Agar $a > 3$, $b > 5$ bo'lsa, quyidagilardan qaysilari doim o'rinli?

1) $2a + 3b > 21$; 2) $2a + 3b > 36 - ab$; 3) $(a + b)^2 > 65$;
4) $2a^2 + 3b^2 > 94$; 5) $3a + 2b > 19$

A) 3, 4, 5 B) 1, 2, 5 C) 2, 3, 5 D) 1, 2, 4

64. $\log_{0,5}(4^x - 5 \cdot 2^x + 6) \geq -1$ tengsizlikni qanoatlantiradigan eng kichik butun sonni toping.

A) 2 B) -2 C) 1 D) 0

65. Ixtiyoriy x, y haqiqiy sonlar uchun $a = 2x^2 + \frac{1}{2}y^2$ va $b = 2|xy|$ bo'lsin. Qaysi tengsizlik har doim o'rinli?

A) $a < b$ B) $a > b$ C) $a \geq b$ D) $a \leq b$

66. Agar $|x + 7| = \frac{x}{2} + a$ tenglama a parametrning nechta natural qiymatida yechimga ega emas?

A) 2 B) 3 C) 0 D) 1

67. Bir petabayt necha Mbayt ga teng?

A) 2^{35} *gigabayt* B) 2^{40} *gigabayt* C) 2^{30} *gigabayt* D) 2^{20} *gigabayt*

68. 1001, 101, 100 butun sonlarni barchasini yozish mumkin bo'lgan eng kichik asosli sanoq sistemasida shu sonlar yig'indisini aniqlang.

A) 1204 B) 10011 C) 10010 D) 1202

69. Hujjatning xossalari (Свойства) oynasida qanday ma'lumotlar beriladi?

A) *hujjatning nomi, turi, hajmi, joylashgan o'rni, papka atributlari*

B) *hujjatning nomi, turi, hajmi, joylashgan o'rni, hosil qilingan yorliqning joylashgan o'rni*

C) *hujjatning nomi, turi, hajmi, joylashgan o'rni, hosil qilingan va o'zgartirilgan vaqtlari, atributlari*

D) *hujjatning nomi, turi, hajmi, joylashgan o'rni, hosil qilingan va o'zgartirilgan vaqtlari, tez chaqirib olish buyrug'i*

70. $A1$=-7, $B1$=7, $B2$=2 bo'lsin. Quyidagi formula natijasi -57 ga teng bo'lishi uchun $A2$ katakka kiritilishi kerak bo'lgan qiymatni aniqlang.

=ЕСЛИ(И($A1+B2<A2*B1$;$A1*A2<>0$); $A1*B2-B1-A2$;$A1*B1-B2+A2$)

A) -9 B) -4 C) -8 D) -6

120-variant

MATEMATIKA (INFORMATIKA BILAN)

37. $7\sin^2 x - 8\sin x < 0$ tengsizlikning $[0; 2\pi]$ kesmadagi yechimlari to'plamini toping.

A) $\left[\frac{\pi}{6}; \frac{\pi}{3}\right] \cup \left[\frac{5\pi}{6}; \frac{4\pi}{3}\right]$

B) $\left(0; \frac{\pi}{2}\right] \cup \left[\frac{3\pi}{2}; 2\pi\right]$

C) $\left[\frac{\pi}{2}; \pi\right]$

D) $(0; \pi)$

38. $D_1(f)$ to'plamda $f(x)$ va $D_2(g)$ to'plamda $g(x)$ funksiyalari berilgan bo'lsa, quyidagi qaysi sohada $f(x)$ va $g(x)$ funksiyalar ko'paytmasi aniqlangan bo'ladi?

A) $D_1(f) \cup D_2(g)$ *to'plamda berilgan, bunda* $D_1(f) \cap D_2(g) \neq \emptyset$

B) $D_1(f) \cap D_2(g)$ *to'plamda berilgan, bunda* $D_1(f) \cap D_2(g) \neq \emptyset$

C) $D_1(f) \cap D_2(g)$ *to'plamda berilgan, bunda* $D_1(f) \cup D_2(g) = \emptyset$

D) $D_1(f) \cup D_2(g)$ *to'plamda berilgan, bunda* $D_1(f) \cap D_2(g) = \emptyset$

39. $y > 0$ bo'lsin. To'rtburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(0;y)$, $C(-6;y)$ va $D(-8;0)$. To'rtburchak diagonallarining o'rtalari orasidagi masofani toping.

A) *1* B) *y ga bog'liq* C) $\sqrt{2}$ D) *2*

40. $ABCD$ trapetsiyaning AD va BC asoslari mos ravishda 11 va 5 ga teng. Agar ACD uchburchakning yuzi 22 ga teng bo'lsa, berilgan trapetsiyaning yuzini toping.

A) *16* B) *32* C) *28* D) *36*

41. $a = (0,2)^{\frac{1}{2}\log_5 2 - \log_{25} 4}$ bo'lsa, $\log_2 a$ ni hisoblang.

A) *0,25* B) *1* C) $\log_2 5$ D) *0,5*

42. $|x^2 - 9x + 15| = 7$ tenglama yechimlari ayirmasining modulini toping

A) *8* B) *0* C) *7* D) *9*

43. Ifodani soddalashtiring: $\sin 6\alpha + 2\sin^2 3\alpha - 1$

A) $\sqrt{2}\cos(6\alpha - 45°)$

B) $\sqrt{2}\sin(6\alpha - 45°)$

C) $-\sqrt{2}\sin(3\alpha - 45°)$

D) $-\sqrt{2}\cos(3\alpha - 45°)$

44. A va B to'plamlarning birlashmasi qanday belgilanadi?

A) $A \cup B$ B) $A + B$ C) $A \cap B$ D) $A \triangle B$

45. $\{x | x \in N, x^2 < 35\}$ to'plamning nechta qism-to'plamlari mavjud?

A) *35* B) *32* C) *5* D) *16*

46. $a = -b$, $c = -2$ bo'lsa, $\frac{c(a-b)^3 + a(b-c)^3 + b(c-a)^3}{c^2(b-a) + a^2(c-b) + b^2(a-c)}$ ifodaning qiymatini toping.

A) *1* B) *0* C) *−2* D) *2*

47. Muntazam uchburchakli piramida asosining tomonidan un ayqash yon qirraga perpendikular bo'lgan tekislik o'tkazilgan. Kesuvchi tekislik yon qirrani uchidan hisoblaganda 3:2 nisbatda kesadi. Asos tomoni $2\sqrt{2}$ ga ten bo'lsa, piramida yon sirtining yuzini toping.

A) *8* B) *10* C) *15* D) *12*

48. $\log_{\frac{1}{9}} \log_{\frac{1}{4}} \frac{x+4}{2x-1} < 0$ tengsizlikni qanoatlantiradigan eng kich butun sonni toping.

A) *−10* B) *−5* C) *0* D) *−8*

49. $ABCD$ parallelogrammning AD tomonidan P nuqta shunday olinganki, $AP{:}AD{=}1{:}5$. AC va BP to'g'ri chiziql Q nuqtada kesishsa, $\frac{AC}{AQ}$ ni toping.

A) $5\sqrt{2}$ B) $4\sqrt{3}$ C) *6* D) *5*

50. Sonning 8 foizi 40 foizining necha foizini tashkil qiladi?

A) *5* B) *15* C) *20* D) *25*

51. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(-1;1)$, $C(-2;0)$ Uchburchak yuzini toping.

A) $\sqrt{2}$ B) *2* C) *1* D) $\sqrt{3}$

52. Ushbu $f(x) = \frac{x-1}{x+1}$ funksiyaning boshlang'ich funksiyasini toping.

A) $\ln(x+1)^2 + C$ B) $x - 2\ln|x+1| + C$

C) $\frac{2x^2}{(x+1)^2} + C$ D) $x + 2\ln|x+1| + C$

53. $\sqrt[3]{x-2} - \sqrt[3]{x-4} = -\sqrt[3]{3x-8}$ tenglama nechta butun musbat yechimga ega?

A) *2* B) *3* C) *0* D) *1*

54. Asoslarining radiuslari 4 va 6 ga teng bo'lgan kesik konus unga tengdosh silindrning balandliklari bir xil. Silindr asosining radiusini toping.

A) $\sqrt{29}$ B) $\sqrt{23}$ C) $\sqrt{25\frac{1}{3}}$ D) $\sqrt{25\frac{2}{3}}$

55. 1434 va 1435 sonlarining umumiy natural bo'luvchilari nechta?

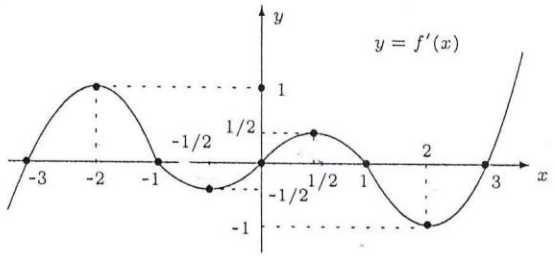
A) *3* B) *1* C) *0* D) *2*

56. $a_1, a_2, \ldots, a_8$ ketma-ketlikda ixtiyoriy uchta ketma-ket hadining yig'indisi 50 ga teng. Agar ketma-ketlikning uchinchi hadi 7 ga teng bo'lsa, birinchi va sakkizinchi hadlarining yig'indisi nechaga teng?

A) *43* B) *47* C) *14* D) *7*

120-variant

57. Rasmda $y = f'(x)$ funksiya grafigi tasvirlangan. [-3;3] kesmada $y = f(x)$ funksiyaning nechta maksimum nuqtasi bor?



A) 2 B) 4 C) 3 D) 1

58. $y = ln(6 + 2(sin^2x - 3sin4x) + cos8x + cos2x)$ funksiyaning qiymatlar sohasiga tegishli butun nomanfiy sonlar nechta?

A) 1 ta B) 3 ta C) 4 ta D) 2 ta

59. $y = 5\sin^2 x + \cos^2 x$ funksiya nechta butun qiymatlarni qabul qiladi?

A) 0 B) cheksiz ko'p C) 5 D) 6

60. $a = -2$ bo'lsa, $\int_a^{a+1} (\sin^2 3x + \cos^2 3x)dx$ integralni hisoblang.

A) $\frac{\sqrt{2}-1}{3}$ B) $\sqrt{2}$ C) 1 D) $2\sqrt{2}$

61. $a^2b^2x^4 = b^4x^2 - a^2b^2 + a^4x^2$ tenglamada x ni toping. $(a \cdot b \neq 0)$

A) $\varnothing$ B) $\pm a/b;\ \pm b/a$ C) $\pm a;\ \pm b$ D) $\pm 1/a;\ \pm 1/b$

62. Agar barcha x, y lar uchun $x^3 + 4x^2y + axy^2 + 3xy - bx^cy + 7xy^2 + dxy + y^2 = x^3 + y^2$ ayniyat bajarilsa, $a + b + c$ ni toping. $(c > 1)$

A) -4 B) 3 C) -1 D) -2

63. Qaysi jism(lar)ning simmetriya tekisliklari chekli sonda?
1) shar; 2) prizma; 3) konus; 4) kub

A) 1 B) 1, 4 C) 2, 3 D) 2, 4

64. Ifodaning eng kichik qiymatini toping: $\frac{1}{8}\cos 4\alpha + \sin^2 2\alpha$

A) 0,125 B) $-0,125$ C) 0,875 D) 0,5

65. Agar $f(x) = 13^x \cdot 3x$ bo'lsa, $f'(x) > 0$ tengsizlikni yeching.

A) $(-\log_{13} e; e)$ B) $(-\infty; -\log_{13} e)$ C) $(-2\log_{13} e; \infty)$
D) $(-\log_{13} e; \infty)$

66. ABC uchburchakning AB, BC, CA tomonlarida mos ravishda shunday M, N, P nuqtalar olinganki, $AM{:}AB = BN{:}BC = CP{:}CA = 1{:}3$ munosabat o'rinli. MNP uchburchak yuzasi 3 ga teng bo'lsa, ABC uchburchak yuzasini toping.

A) 9 B) 12 C) 15 D) 6

67. 1 terabayt necha gigabaytga teng?

A) 2^{25} gigabayt B) 2^{32} gigabayt C) 2^{12} gigabayt
D) 2^{22} gigabayt

68. 344, 514, 51 butun sonlarni barchasini yozish mumkin bo'lgan eng kichik asosli sanoq sistemasida shu sonlar yig'indisini aniqlang.

A) 1353 B) 1131 C) 1242 D) 2014

69. Operatsion tizim (sistema) lar qaysi bandda noto'g'ri ko'rsatilgan?

A) DOPPIX, Corel Draw B) Windows, Linux
C) UNIX, PS/2 D) UNIX, MS DOS

70. $A1{=}-4$, $A2{=}0$, $B1{=}8$, $B2{=}3$ bo'lsin. Natijasi 0 ga teng bo'ladigan formulani aniqlang.

A) =СЧЕТЕСЛИ(A1:B2;">=1")
B) =ЗНАК(−A1+B2−A2+B1)
C) =ЦЕЛОЕ(A1+A2/B2−B1)
D) =ЕСЛИ(A1<=B1−3;A2*B1;A1+B2)

71. Qanday teg yordamida HTML hujjatlarida hujjatning bir joydan boshqa joyiga o'tish yoki boshqa hujjatga o'tish mumkin?

A) <U> B) <A> C) <B> D) <I>

72. Paskal tilida quyidagi dastur lavhasi takrorlanish operatoridagi takrorlanishlar sonini aniqlang:
I:=0; While ((I>0) and (I<=100)) do begin I:=I+11; P:=I*I;end;

A) 10 marta B) 9 marta C) 11 marta D) 0 marta

121-variant

MATEMATIKA (INFORMATIKA BILAN)

37. a sonining oxirgi raqami 1 va bu sonning o'nta natural bo'luvchisi bo'lsa, $10a$ sonining nechta natural bo'luvchisi bor? (1 va a ham kiradi).

A) *40* B) *50* C) *20* D) *30*

38. $a = 2$ bo'lsa, $\int_a^{a+1} (ln(\sin^2 2x + \cos^2 2x) + 1)dx$ aniq integralni hisoblang.

A) $2\sqrt{2}$ B) $\sqrt{2}$ C) 1 D) $\frac{\ln 2 - 1}{2}$

39. Agar barcha x, y lar uchun $x^3 + 4x^2y + axy^2 + 3xy - bx^cy + 7xy^2 + dxy + y^2 = x^3 + y^2$ ayniyat bajarilsa, $b + c$ ni toping. $(c > 1)$

A) -2 B) *3* C) *6* D) -4

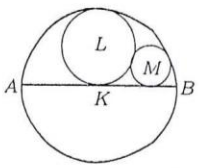
40. $y = 4\cos^2 x + \sin^2 x$ funksiya butun qiymatlari yig'indisini toping.

A) *9* B) *bunday qiymatlar mavjud emas*
C) *bunday qiymatlar cheksiz ko'p* D) *10*

41. $y = \text{arctg}\, x$ funksiya grafigi berilgan bo'lib, uni parallel ko'chirish yordamida $y = \text{arctg}(x + a) + b$ funksiya grafigi hosil qilingan. Bunday parallel ko'chirishda koordinata boshi qanday nuqtaga ko'chadi?

A) $N(-a; b)$ B) $N(a; -b)$ C) $N(a; b)$ D) $N(b; a)$

42. AB kesma K aylananing diametri bo'lsin. L aylana K aylanaga hamda AB to'g'ri chiziqqa K aylananing markazida urinadi; M aylana K va L aylanaga hamda AB to'g'ri chiziqqa urinadi (chizmaga qarang). Agar M aylana radiusi 0,5 ga teng bo'lsa, K aylana radiusini toping.



A) *aniqlab bo'lmaydi* B) *3* C) *4* D) *2*

43. ABC uchburchakning BC tomonidan D nuqta tanlab olingach tomoni 4 ga teng muntazam ABD uchburchak hosil bo'ldi. Agar CD=2 bo'lsa, AC tomon uzunligini toping.

A) $2\sqrt{7}$ B) $3\sqrt{7}$ C) *6* D) *7*

44. $ABCD$ tetraedrning D uchidagi barcha yassi burchaklar to'g'ri. Shu tetraedrga kub shunday ichki chizilganki, kubning bitta uchi D nuqtada, unga qarama-qarshi uchi esa ABC yoqda yotibdi. Agar DA=6, DB=8 va DC =2 bo'lsa, kub qirrasining uzunligini toping.

A) $2\sqrt{2}$ B) *2* C) $\frac{17}{19}$ D) $\frac{24}{19}$

45. Arifmetik progressiya n-hadi $a_n = -\frac{n+4}{5}$ ga teng. Progressiyaning ayirmasini toping.

A) -2 B) $-0,5$ C) -1 D) $-0,2$

46. $y = \log_5(\sin^2 3x + \cos^2 3x)$ funksiyaning $x = \frac{1}{2}$ nuqtadagi hosilasining qiymatini toping.

A) $\log_5 2$ B) *0* C) $-\log_5 2$ D) *1*

47. $|3 - \sqrt{x+5}| > \frac{x-8}{6}$ tengsizlikning butun yechimlari nechta

A) *cheksiz ko'p* B) *24* C) *25* D) *23*

48. Agar $|x + 8| = \frac{x}{2} + a$ tenglama ikkita yechimga ega bo'lsa, a ning eng kichik butun qiymatini toping.

A) *6* B) *4* C) *3* D) *5*

49. Hisoblang: $\log_{64}\left(0,(3)^{\log_3\left(1+\frac{1}{2}+\frac{1}{2^2}+\frac{1}{2^3}+\cdots\right)}\right)$

A) $-\frac{1}{6}$ B) $\frac{1}{6}$ C) $-\frac{1}{3}$ D) *1*

50. $y = \cos 2x$; $y = 0$; $x = -\frac{\pi}{6}$; $x = \frac{\pi}{3}$ chiziqlar bilan chegaralangan shaklning yuzini toping.

A) *0,5* B) $\frac{\sqrt{3}}{4}$ C) *1* D) $\frac{\sqrt{3}}{2}$

51. Bir savat olma 20000 so'm, bir savat nok 30000 so'm, bir savat olxo'ri 40000 so'm turadi. Sakkiz savat mevaning bahosi 230000 so'm bo'lsa, ulardan eng ko'pi bilan nechtasida olxo'ri bo'lishi mumkin?

A) *4* B) *3* C) *2* D) *1*

52. $y > 0$ bo'lsin. To'rtburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(0;y)$, $C(-6;y)$ va $D(-8;0)$. To'rtburchak diagonallarining o'rtalari orasidagi masofani toping.

A) *1* B) $\sqrt{2}$ C) *2* D) *y ga bog'liq*

53. O'zaro teng bo'lmagan x va y sonlari $x^2 - 16x = y^2 - 16y$ tenglikni qanoatlantirsa, $x + y$ ni toping.

A) *24* B) *26* C) *0* D) *16*

54. $y = ln(6 + 2(sin^2x - 3sin4x) + cos8x + cos2x)$ funksiyaning qiymatlar sohasiga kirmaydigan eng kichik butun sonni toping.

A) *3* B) *-3* C) *2* D) *-2*

55. Hisoblang: $\text{ctg}^2\left(arcsin\frac{1}{\sqrt{5}}\right) - 5$

A) $\frac{1}{2}$ B) $-\frac{1}{2}$ C) $-\frac{2}{3}$ D) -1

56. Qaysi jism(lar)ning simmetriya o'qlari chekli sonda?
1) shar; 2) prizma; 3) konus; 4) kub

A) *1* B) *2, 3* C) *3, 4* D) *2, 3, 4*

121-variant

$4 - x < \sqrt{6 - x}$ tengsizlikning yechimlaridan iborat bo'lgan natural sonlar yig'indisini toping.

A) *20* B) *12* C) *10* D) *18*

58. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(-\frac{1}{2};-10)$, $C(-1;0)$. Uchburchak yuzini toping.

A) $4\sqrt{2}$ B) *5* C) *4* D) $3\sqrt{3}$

59. $\alpha = 7,5°$, $a = (\operatorname{tg}\alpha)^{\operatorname{tg}\alpha}$, $b = (\operatorname{tg}\alpha)^{\operatorname{ctg}\alpha}$, $c = (\operatorname{ctg}\alpha)^{\operatorname{ctg}\alpha}$ bo'lsa, quyidagilardan qaysi biri o'rinli?

A) $c > a > b$ B) $b > c > a$ C) $b > a > c$ D) $c > b > a$

60. $\sqrt{4^{x-2} + \frac{15}{4^{2-x}}} = 16$ tenglamaning haqiqiy ildizlari yig'indisini toping.

A) *4,5* B) *5,5* C) *4* D) *5*

61. $\{x | x \in N, -2 \le x \le 5\}$ to'plamning nechta qism-to'plamlari mavjud?

A) *5* B) *32* C) *8* D) *16*

62. Asoslarining radiuslari 3 va 4 ga teng bo'lgan kesik konus va unga tengdosh silindrning balandliklari bir xil. Silindr asosining radiusini toping.

A) $\sqrt{13}$ B) $\sqrt{12\frac{1}{3}}$ C) $\sqrt{17}$ D) $\sqrt{12\frac{2}{3}}$

63. a va b natural sonlarning eng katta umumiy bo'luvchisi 2 ga teng bo'lsa, $a + 3b$ va b sonlarning eng katta umumiy bo'luvchisi nechaga teng?

A) *4* B) *1* C) *bir qiymatli aniqlab bo'lmaydi* D) *2*

64. $y = 4x^3 - 18x^2 + 24x - 10$ egri chizig'i qaysi nuqtalarida o'tkazilgan urinmalar Ox o'qiga parallel bo'ladi?

A) *(-2; -2) va (1; 0)* B) *(2; -2) va (1; 0)*
C) *(2; -2) va (0; 1)* D) *(-2; 2) va (0; 1)*

65. $4x^2 - \sqrt{x^2} - 3 = 0$ tenglama ildizlari ko'paytmasini toping.

A) -1 B) -4 C) *1* D) *2*

66. $ABCD$ parallelogrammning AD tomonidan P nuqta shunday olinganki, $AP{:}AD{=}1{:}5$. AC va BP to'g'ri chiziqlar Q nuqtada kesishsa, $\frac{AC}{AQ}$ ni toping.

A) $4\sqrt{3}$ B) $5\sqrt{2}$ C) *6* D) *5*

67. Qanday qurilmani Semyuel Morze ixtro qilgan?

A) *elektromagnit telegraf* B) *televizor* C) *telefaks*
D) *telefon*

68. Tenglik o'rinli bo'lishi uchun sonlarning asosi qanday bo'lishi kerak? $5_{(x)} * 4_{(x)} = 24_{(x)}$

A) *Yettilik* B) *To'qqizlik* C) *Sakkizlik* D) *Oltilik*

69. Qaysi javobda Windows operatsion tizim (sistema)ida katalog nomi noto'g'ri berilgan?

A) *Document_25* B) *Document/25* C) *Document-25*
D) *Document+25*

70. $A1{=}{-6}$, $A2{=}0$, $B1{=}7$, $B2{=}5$ bo'lsin. Natijasi 5 ga teng bo'ladigan formulani aniqlang.

A) *=МАКС(ABS(A1*A2);ABS(B1*B2))*
B) *=ЕСЛИ(A1*B2>=0;A2+9;B2+5)*
C) *=ЕСЛИ(A1*B2<0;A2+5;B2+9)*
D) *=МИН(ABS(A1);B2;ABS(B1*A2))*

71. Qanday xizmatlar Internet orqali ikki kishining o'zaro yuzma-yuz ovozli suhbatini amalga oshirish imkonini beradi?

A) *Skype, ICQ, Mail.ru Agent*
B) *Outlook Express, Mail.ru Agent, ICQ*
C) *Mapple, Skype, ICQ* D) *PHP, ICQ, chat*

72. Paskal dasturlash tilida berilgan ushbu ifodaning qiymatini toping.

trunc(sqrt(sqr(abs(trunc(4.3)-sqrt(100) *round(1.6)))))

A) *6* B) *4* C) *7* D) *5*

122-variant

MATEMATIKA (INFORMATIKA BILAN)

37. $\begin{cases} 3^{x-y}-2=1, \\ 9^{x+y}=729 \end{cases}$ tenglamalar sistemasini yeching.

A) (1; 2) B) (2; 1) C) (1,5; 1,5) D) (2; 2)

38. $a=-b$, $c=-2$ bo'lsa, $\dfrac{c(a-b)^3+a(b-c)^3+b(c-a)^3}{c^2(b-a)+a^2(c-b)+b^2(a-c)}$ ifodaning qiymatini toping.

A) 2 B) 0 C) -2 D) 1

39. Teng yonli ucburchakning yon tomoniga o'tkazilgan mediana va asosi orasidagi burchak tangensi 4 ga teng. Ucburchakning asosidagi burchak tangensini toping.

A) 15 B) 12 C) 16 D) $2\sqrt{2}$

40. Agar barcha x, y lar uchun $x^3+4x^2y+axy^2+3xy-bx^cy+7xy^2+dxy+y^2=x^3+y^2$ ayniyat bajarilsa, $b+c-d$ ni toping. $(c>1)$

A) 2 B) -2 C) 9 D) -4

41. Hisoblang: $\dfrac{1}{\log_5 25}+\dfrac{1}{\log_{25} 25}+\dfrac{1}{\log_{125} 25}+\dfrac{1}{\log_{625} 25}$

A) 6 B) 4 C) 8 D) 5

42. $k\in N$ da $S_k=x^k+y^k$ darajali yig'indi, $\sigma_1=x+y$, $\sigma_2=xy$ bo'lsa, u holda quyidagi qaysi munosabat doim o'rinli?

A) $S_{n+1}=S_{n-1}\sigma_1-S_n\sigma_2$
B) $S_{n+1}=S_n\sigma_2-S_{n-1}\sigma_1$
C) $S_{n+1}=S_{n-1}\sigma_1+S_{n-1}\sigma_2$
D) $S_{n+1}=S_n\sigma_1-S_{n-1}\sigma_2$

43. $|x-2|^{10x^2-3x-1}=1$ tenglamaning musbat yechimlari sonini toping.

A) 2 B) 3 C) 0 D) 1

44. $\alpha=30^\circ$, $a=(\operatorname{tg}\alpha)^{\operatorname{tg}\alpha}$, $b=(\operatorname{tg}\alpha)^{\operatorname{ctg}\alpha}$, $c=(\operatorname{ctg}\alpha)^{\operatorname{tg}\alpha}$, $d=(\operatorname{ctg}\alpha)^{\operatorname{ctg}\alpha}$ bo'lsa, quyidagilardan qaysi biri o'rinli?

A) $d>c>b>a$ B) $d>c>a>b$ C) $c>d>a>b$
D) $d>a>c>b$

45. $y>0$ bo'lsin. To'rtburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(0;y)$, $C(-1;y)$ va $D(-3;0)$. To'rtburchak diagonallarining o'rtalari orasidagi masofani toping.

A) $\sqrt{2}$ B) y ga bog'liq C) 2 D) 1

46. $y=|x-2|+|x-3|+|x-4|$ funksiyaning eng kichik qiymatini toping.

A) 1 B) 2 C) 0 D) 3

47. Parallelepipedning asoslari tomoni $4\sqrt{2}$ ga teng kvadratla barcha yon yoqlari romblardan iborat. Yuqori asosining uchlaridan biri ostki asosining barcha uchlaridan baravar uzoqlikda joylashgan. Parallelepipedning hajmini toping

A) 16 B) 64 C) 128 D) $16\sqrt{2}$

48. $\sqrt[3]{x^{\log_3 \sqrt[3]{x}}}>3$ tengsizlikning yechimi bo'lmaydigan eng k natural sonni toping.

A) 28 B) 11 C) 12 D) 27

49. $4-x<\sqrt{6-x}$ tengsizlikning natural yechimlaridan eng katta va eng kichigining ayirmasini toping.

A) 6 B) 4 C) 1 D) 3

50. Ushbu $f(x)=\dfrac{2x-1}{x^2-x-2}$ funksiyaning boshlang'ich funksiyasini toping.

A) $\ln|x-2|+C$ B) $\ln|x+1|+C$
C) $\ln(|x-2|\cdot|x+1|)+C$ D) $\ln(|x+2|\cdot|x-1|)+C$

51. Hisoblang: $\operatorname{ctg}^2\left(arcsin\dfrac{1}{\sqrt{5}}\right)-5$

A) $-\dfrac{2}{3}$ B) $-\dfrac{1}{2}$ C) $\dfrac{1}{2}$ D) -1

52. Agar $\vec{a}(-4;3;5)$ va $\vec{b}(3;-4;\sqrt{2})$ berilgan bo'lsa, $\dfrac{|\vec{a}|}{\sqrt{2}}+\dfrac{|\vec{b}|}{\sqrt{3}}$ hisoblang.

A) 8 B) 9 C) 7 D) 5

53. $y=7sin5x+5sin7x$ funksiyaning hosilasini toping.

A) $-70cosx\cdot sin6x$ B) $70cosx\cdot cos6x$ C) $70sinx\cdot cos6$
D) $70sinx\cdot sin6x$

54. $a_1, a_2, \ldots, a_8$ ketma-ketlikda ixtiyoriy uchta ketma-ket hadining yig'indisi 40 ga teng. Agar ketma-ketlikning uchinchi hadi 9 ga teng bo'lsa, birinchi va sakkizinchi hadlarining yig'indisi nechaga teng?

A) 9 B) 31 C) 33 D) 18

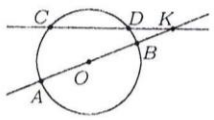
55. Qavariq ko'pburchakning x ga teng bo'lgan bitta barchagidan tashqari qolgan barcha burchaklari yig'indisi 2192° ga teng. x burchakning gradus o'lchovini toping.

A) 148° B) 154° C) *aniqlab bo'lmaydi* D) 150°

56. $x^2-3\sqrt{x^2}-4=0$ tenglama ildizlari yig'indisini toping.

A) 16 B) 2 C) 0 D) 4

57. Rasmga qarab noto'g'ri tasdiqni aniqlang.



A) *AB – aylana diametri*
B) *ODK siniq chiziq uzunligi OK kesma uzunligiga teng*
C) *AB va CD to'g'ri chiziqlar kesishish nuqtasi, markazi O nuqtada bo'lgan doira tashqarisida joylashgan*
D) *AB kesma uzunligi CD kesma uzunligidan katta*

58. Kichkina koala daraxt barglarini 10 soatda yeb tugatadi, otasi ham, onasi ham undan 2 marta tez yeydi. Ular bitta daraxtni necha soatda yeb tugatadi?

A) 4 B) 2 C) 3 D) 5

59. [2; 400] kesmada 2, 3, 5 va 7 sonlariga bo'linganda qoldiq 1 ga teng bo'ladigan natural sonlar nechta?

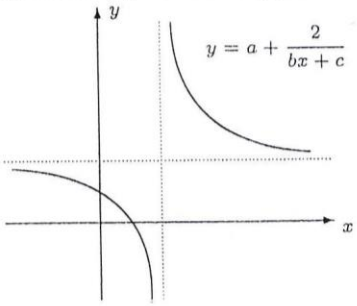
A) 2 B) 1 C) 3 D) 4

122-variant

60. Har qanday $x \in (x_1, x_2)$ uchun $y = f(x)$ funksiya hosilasi musbat bo'lsin. (x_1, x_2) oraliqqa tegishli ixtiyoriy a va b $(a > b)$ uchun qanday tengsizlik o'rinli?

A) $f(b) \geq f(a)$ B) $f(b) < f(a)$ C) $0 < f(a) < f(b)$ D) $f(a) < f(b)$

61. Rasmda $y = a + \dfrac{2}{bx + c}$ funksiya grafigi tasvirlangan. Quyidagilardan qaysi biri noto'g'ri?



A) $b^3 - c^3 > 0$ B) $a^2 - c^3 > 0$ C) $a^2 + b^2 > 0$ D) $c - a > 0$

62. Trapetsiyaning 8 ga teng bo'lgan o'rta chizig' uning yuzini 3 : 5 kabi nisbatda bo'ladi. Trapetsiyaning asoslarini toping.

A) *5 va 11* B) *6 va 10* C) *3 va 13* D) *4 va 12*

63. $y = \ln(\text{arctg}\, 2x + \text{arcctg}\, 2x)$ funksiyaning $x = \dfrac{1}{2}$ nuqtadagi hosilasining qiymatini toping.

A) $-\ln 2$ B) $\ln 2$ C) *1* D) *0*

64. $\{x | x \in N, 5 \leq x^2 \leq 39\}$ to'plamning nechta qism-to'plamlari mavjud?

A) *16* B) *32* C) *5* D) *8*

65. R radiusli sferaga muntazam to'rtburchakli piramida ichki chizilgan. Uchidagi yassi burchak 30° ga teng bo'lsa, piramida yon sirtining yuzini toping.

A) $3R^2\sqrt{3}$ B) $R^2\sqrt{3}$ C) $2R^2\sqrt{3}$ D) $2R^2$

66. $a = 3$ bo'lsa, $\int\limits_a^{a+1} (ln(\sin^2 2x + \cos^2 2x) + 1)dx$ aniq integralni hisoblang.

A) $\frac{\ln 2 - 1}{2}$ B) $2\sqrt{2}$ C) *1* D) $\sqrt{2}$

67. ... – bu axborotning vaqt birligi ichida uzatilgan hajmi tushuniladi.

A) *Axborot uzatish tezligi* B) *Axborot xususiyati*
C) *Axborot hajmi* D) *Axborot o'lchov birligi*

68. 100, 202, 121 butun sonlarni barchasini yozish mumkin bo'lgan eng kichik asosli sanoq sistemasida shu sonlar yig'indisini aniqlang.

A) *1200* B) *1023* C) *10111* D) *423*

69. proba.txt fayli joylashgan katalogni ko'rsating:
C : \doc\1\proba.txt

A) *1* B) *proba* C) *doc* D) *C : *

70. MS Excel. A1=2; A2=-18; A3=15 ga teng bo'lsa, ...(A1;A3+A2)=0,125 tenglik o'rinli bo'lishi uchun nuqtalar o'rnida qaysi funksiya qo'llangan bo'lishi kerak?

A) *СТЕПЕНЬ* B) *СУММ* C) *ОСТАТ* D) *СРЗНАЧ*

71. HTML hujjatida qanday teg satr qismini yangi satrga o'tkazadi?

A)
...</BR> B) <U>...</U>
C) <H1>...</H1> D) <P>...</P>

72. Agar $a = 16$, $b = 7$ va $c = 25$ bo'lsa, $trunc(sqr(a \bmod b) + sqrt(c))$ ifodaning natijasini toping. (Paskal dasturlash tilida)

A) *7* B) *9* C) *10* D) *8*

123-variant

Geometrik progressiya n-hadi $b_n = \frac{\sqrt{3}}{2} \cdot 5^{n-4}$ ga teng. Progressiyaning maxrajini toping.

A) *0,2* B) -5 C) *0,5* D) *5*

38. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(1;4)$, $C(2;0)$. Uchburchak yuzini toping.

A) *4* B) *3* C) $2\sqrt{3}$ D) $3\sqrt{2}$

39. $2\lg x^2 - (lg(-x))^2 = 4$ tenglamani yeching.

A) $x = -100$ B) $x = -1$ C) $x = -4$ D) $x = -10$

40. Rombning tomoni 6 ga, o'tkir burchagi $60°$ ga teng. Rombning tomonlari va kichik diagonaliga urinuvchi aylana radiusini toping.

A) $\sqrt{3}$ B) *3* C) $0,5\sqrt{3}$ D) $2\sqrt{3}$

41. To'g'ri tenglikni aniqlang.

A) $(-124)^{\frac{7}{3}} = \sqrt[3]{124^7}$

B) $\sqrt{(x-2)^2} = |x-2|$

C) $\left(5^{\log_{25} 9} - \log_{\frac{1}{3}} 27\right)^{((sin^2 18° + sin^2 468°)\sqrt[3]{2} - \sqrt{3})} = 0$

D) $\frac{4(2a^2 - a - 1)}{5(2a+1)} = \frac{4}{5}(a-1),\ a \in R$

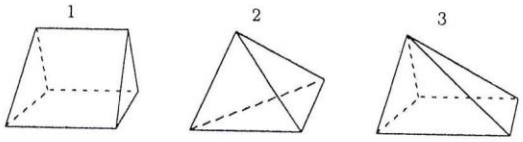
42. O'zaro teng bo'lmagan x va y sonlari $x^2 - 46x = y^2 - 46y$ tenglikni qanoatlantirsa, $x + y$ ni toping.

A) *24* B) *46* C) *0* D) *23*

43. $y = \log_3(\text{arctg}\, 2x + \text{arcctg}\, 2x)$ funksiyaning $x = \frac{1}{2}$ nuqtadagi hosilasining qiymatini toping.

A) *0* B) $\log_3 2$ C) $-\log_3 2$ D) *1*

44. Quyidagi ko'pyoqlardan qaysi birida 5 ta yoq, 8 ta qirra bor?



A) *2, 3* B) *1* C) *3* D) *2*

45. $|x-2|^{10x^2-3x-1} = 1$ tenglamaning nechta butun yechimi bor?

A) *4* B) *3* C) *2* D) *1*

46. $f(x) = ax^2 + x + b$ kvadrat uchhad uchun $f(1) + f(4) + f(6) + f(7) - f(2) - f(3) - f(5) - f(8)$ ni hisoblang.

A) *1* B) *0* C) -1 D) *a, b ga bog'liq*

47. Poyezd 3 minutda 8 kilometr masofani, motosikl 4 minutda 8 kilometr masofani bosib o'tdi. Motosiklchining tezligi poyezd tezligining necha foizini tashkil etadi?

A) *67%* B) *77%* C) *73%* D) *75%*

48. $SABC$ uchburchakli piramidaning S uchidagi yassi burchaklari to'g'ri burchak. SO – piramida balandigi. AOB va BOC uchburchaklar yuzalari mos ravishda 8 va 2 ga teng. ASB uchburchak yuzasining BSC uchburchak yuzasiga nisbatini toping.

A) $\sqrt{2}$ B) 2 C) *3* D) *aniqlab bo'lmaydi*

49. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(1;0)$, $B(-2;0)$, $C(1;-3)$. O'tkir burchaklar medianalari orasidagi o'tmas burchak kosinusini toping.

A) $-\frac{4}{7}$ B) $-\frac{4}{5}$ C) $-\frac{5}{7}$ D) $-\frac{3}{5}$

50. $[2;\ 400]$ kesmada 2, 3, 5 va 7 sonlariga bo'linganda qoldi 1 ga teng bo'ladigan natural sonlar nechta?

A) *4* B) *3* C) *2* D) *1*

51. Hisoblang: $\log_2\left(\frac{3}{0,(4)} + \frac{3}{0,(6)} + \frac{3}{0,(8)} + 1,375\right)$

A) *2* B) *1* C) $\log_2 3$ D) *4*

52. Agar barcha x, y lar uchun $x^3 + 4x^2y + axy^2 + 3xy - bx^cy + 7xy^2 + dxy + y^2 = x^3$ - ayniyat bajarilsa, $a + c$ ni toping. $(c > 1)$

A) -3 B) -5 C) *2* D) *4*

53. $a = 2$ bo'lsa, $\int_a^{a+1} (ln(\sin^2 2x + \cos^2 2x) + 1)dx$ aniq integr hisoblang.

A) *1* B) $\frac{\ln 2 - 1}{2}$ C) $2\sqrt{2}$ D) $\sqrt{2}$

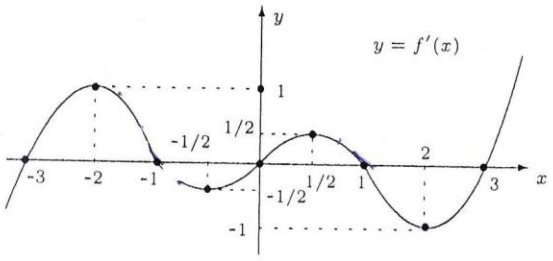
54. $\log_{\frac{1}{5}}^2 (9 - x^2) - 2\log_{\frac{1}{5}} (9 - x^2) - 8 \le 0$ tengsizlikning ba natural yechimlari yig'indisini toping.

A) *3* B) *10* C) *15* D) *6*

55. $\{x | x \in N, x^2 \le 30\}$ to'plamning nechta qism-to'plamlari mavjud?

A) *32* B) *30* C) *5* D) *16*

56. Rasmda $y = f'(x)$ funksiya grafigi tasvirlangan. $y = f(x)$ funksiya maksimum nuqtalarini toping.



A) $-3; 0; 3$ B) $-1; 1$ C) $-3; -1; 0; 1; 3$ D) $-2; \frac{1}{2}$

57. Hisoblang: $(\sqrt{7}+1) \cdot \left(\frac{12}{\sqrt{7}-1} \cdot \frac{18}{\sqrt{7}+5} - 4\sqrt{7}\right)$

A) *20* B) *24* C) $\sqrt{7}$ D) *15*

58. $y = f(x)$ funksiya grafigi berilgan bo'lib, uni parallel ko'chirish yordamida $y = f(x-a) + b$ funksiya grafigi hosil qilingan. Bunday parallel ko'chirishda koordinata boshi qanday nuqtaga ko'chadi?

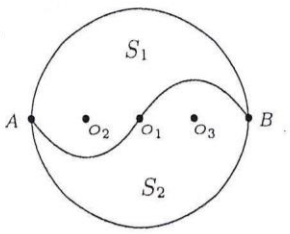
A) $N(-a;-b)$ B) $N(a;b)$ C) $N(a;-b)$ D) $N(-a;b)$

59. Ifodaning eng kichik qiymatini toping: $\frac{1}{8}\cos 4\alpha - \sin^2 2\alpha$

A) $-0,125$ B) $-1,5$ C) $-1,125$ D) -1

123-variant

60.



Rasmda AB katta aylana diametri, O_1 katta aylana markazi, O_2 va O_3 kichik aylana markazlari bo'lib, ular uchun $AO_1 : O_1O_2 = O_2O_3 : O_3B$ tenglik o'rinli. S_2 soha yuzini idodalaydigan son shu soha perimetrini ifodalaydigan sondan 50% ga katta bo'lsa, katta aylana uzunligini toping.

A) 12π B) 18π C) 10π D) 15π

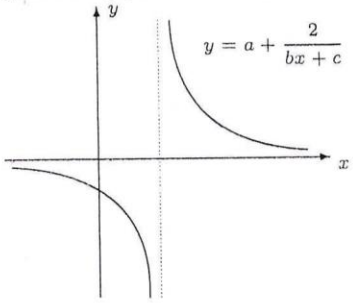
61. Akvariumning bo'yi 140 sm, eni 110 sm, balandligi 75 sm. Suv sathi yuqoridan 5 sm pastda bo'lishi uchun akvariumga necha litr suv quyish kerak?

A) *1200* B) *1080* C) *1155* D) *1078*

62. $a = 4$ bo'lsa, $\int_a^{a+1} (\sin^2 3x + \cos^2 3x)dx$ integralni hisoblang.

A) 1 B) $2\sqrt{2}$ C) $\frac{\sqrt{2}-1}{3}$ D) $\sqrt{2}$

63. Rasmda $y = a + \frac{2}{bx+c}$ funksiya grafigi tasvirlangan. Quyidagilardan qaysi biri noto'g'ri?



A) $bc + ab^2 < 0$ B) $c - b > 0$ C) $b - c + a > 0$
D) $a^3 - b^2 < 0$

64. Teng yonli trapetsiyaning diagonali uning o'tkir burchagi bissektrisasidir. Trapetsiyaning asoslari uzunliklari 3 : 5 kabi nisbatda, perimetri esa 14 ga teng. Trapetsiyaning o'rta chizig'ini toping.

A) *4,5* B) *4* C) *6* D) *8*

65. $\log_{\frac{1}{5}} \log_{\frac{1}{4}} \frac{x+4}{2x-1} < 0$ tengsizlikni qanoatlantiradigan eng kichik butun sonni toping.

A) -5 B) -8 C) -10 D) *0*

66. a ning qanday qiymatida $(a-1)x^2 + (2a+2)x + a - 2 = 0$ kvadrat tenglama ikkita o'zaro teng ildizga ega bo'ladi?

A) 0 B) 0,5 C) 0,2 D) 1

67. Uzluksiz turdagi axborot ... deyiladi.

A) *analogli* B) *aralash* C) *diskretli* D) *foydali*

68. Guruhda 1000 ta o'quvchi bo'lib, ulardan 120 tasi qiz bola va 110 tasi o'g'il bola. Hisoblash bajarilgan sanoq sistemasida 222+222 amali natijasini aniqlang.

A) *1221* B) *52* C) *444* D) *1110*

69. ... - kompyuterga o'rnatilgan dasturiy ta'minotni o'chirish jarayonidir.

A) *Defragmentatsiya* B) *Arxivlash* C) *Deinstallyatsiya*
D) *Installyatsiya*

70. $A1=-3$, $A2=1$, $B1=9$, $B2=4$ bo'lsin. Natijasi -8,25 ga teng bo'ladigan formulani aniqlang.

A) *=СРЗНАЧ(A1:B2) *A1*
B) *=СУММ(-A1+B2;A2+B1)*
C) *=ЦЕЛОЕ(A1/B2) +A2-B1*
D) *=ЕСЛИ(A1+2>B1-1;B2;A2)*

71. Web brauzerda matnning ko'rinishi quyidagicha bo'lishi uchun uning HTML kodi qanday bo'lishi kerak?
Kvadrat tenglama $ax^2+bx+c=0$ ko'rinishida bo'ladi.

A) * <cite>Kvadrat tenglama ax ² +bx+c=0 ko'rinishida bo'ladi.</cite> *
B) * Kvadrat tenglama ax ² +bx+c=0 ko'rinishida bo'ladi. *
C) * Kvadrat tenglama ax² +bx+c=0 ko'rinishida bo'ladi. *
D) * Kvadrat tenglama ax ² +bx+c=0 ko'rinishida bo'ladi. *

72. Quyidagi dastur lavhasining har qanday a, b va c qiymatda ham ma'lumotlarni chiqarish protsedurasi izohiga mos keladigan javob chiqishi uchun * o'rniga yozilishi kerak bo'lgan operatorni aniqlang:

```
Readln(a,b,c); If a>b Then max:=a Else max:=b;
*
WriteLn('Berilgan uchta sondan kattasi= ',max);
```

A) *If c>b Then max:=c Else max:=b;* B) *max:=c;*
C) *If c>b Then max:=c;* D) *If c>max Then max:=c;*

124-variant

MATEMATIKA (INFORMATIKA BILAN)

37. $a=-1$ bo'lsa, $\int\limits_a^{a+1}(\sin^2 3x+\cos^2 3x)dx$ integralni hisoblang.

A) $2\sqrt{2}$ B) $\sqrt{2}$ C) $\frac{\sqrt{2}-1}{3}$ D) *1*

38. $\sqrt[3]{x^{\log_3 \sqrt[3]{x}}}>3$ tengsizlikning yechimi bo'lmaydigan eng katta va eng kichik natural sonlar yig'indisini toping.

A) *29* B) *30* C) *28* D) *27*

39. Asosi a ga, yon tomoni b ga teng bo'lgan teng yonli uchburchakning yon tomoniga tushirilgan balandlik uzunligini toping.

A) $h_b=\frac{b}{2a}\sqrt{4b^2-a^2}$ B) $h_b=\frac{a}{b}\sqrt{4b^2-2a^2}$

C) $h_b=\frac{b}{a}\sqrt{4b^2-2a^2}$ D) $h_b=\frac{a}{2b}\sqrt{4b^2-a^2}$

40. Agar barcha x, y lar uchun $x^3+4x^2y+axy^2+3xy-bx^cy+7xy^2+dxy+y^2=x^3+y^2$ ayniyat bajarilsa, $|a+b+c|(a+b+c)$ ni toping. $(c>1)$

A) *3* B) -2 C) -4 D) -1

41. a sonining oxirgi raqami 1 va bu sonning o'nta natural bo'luvchisi bo'lsa, $10a$ sonining nechta natural bo'luvchisi bor? (1 va a ham kiradi).

A) *30* B) *40* C) *20* D) *50*

42. $\{1,2,3,4,5\}$ to'plamni nechta usul bilan ikkita kesishmaydigan qism-to'plamlarga ajratish mumkin?

A) *10* B) *16* C) *32* D) *5*

43. Agar x quyidagi tenglamani qanoatlantirsa, $\operatorname{tg} 4x$ ning barcha qiymatlari ko'paytmasini toping.
$2\cos^2 4x+\left(\sqrt{3}-2\right)\cos 4x-\sqrt{3}=0$

A) -1 B) *0* C) $\sqrt{3}$ D) *1*

44. Agar $\alpha=17^\circ$ va $\beta=150^\circ$ bo'lsa,
$\sin\alpha\cdot\sin(\beta-\alpha)+\sin^2\left(\frac{\beta}{2}-\alpha\right)$ ni hisoblang.

A) $\frac{2+\sqrt{3}}{4}$ B) 0,5 C) 0,25 D) $\frac{2-\sqrt{3}}{4}$

45. Teng yonli ABC uchburchakning AC asosida D nuqta shunday olinganki AD=13, DC=15 tengliklar bajariladi. ABD va DBC uchburchaklarga ichki chizilgan aylanalar BD to'g'ri chiziqqa mos ravishda M va N nuqtalarda urinadilar. MN kesma uzunligini toping.

A) $\sqrt{3}$ B) *2* C) $\sqrt{2}$ D) *1*

46. Arifmetik progressiyani tashkil etuvchi hadlari
$\begin{cases} a_2^2=a_8 \\ a_6-a_3=36 \end{cases}$ tenglamalar sistemasini qanoatlantirsa, a_2 ning musbat qiymatini toping.

A) *9* B) *10* C) *11* D) *8*

47. Prizmaning qirralari soni 60 ga teng. Uning yoqlari sonini toping.

A) *20* B) *bir qiymatli aniqlab bo'lmaydi* C) *60* D) *22*

48. Poyezd 3 minutda 6 kilometr masofani, motosikl 4 minutda 6 kilometr masofani bosib o'tdi. Motosiklchining tezligi poyezd tezligining necha foizini tashkil etadi?

A) *75%* B) *87%* C) *70%* D) *73%*

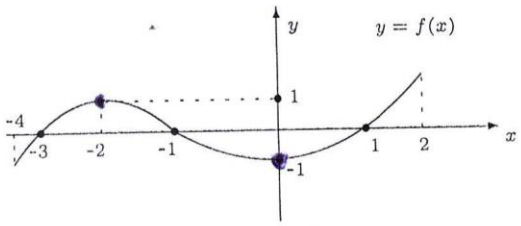
49. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(1;4)$, $C(2;0)$. Uchburchak yuzini toping.

A) *4* B) $3\sqrt{2}$ C) $2\sqrt{3}$ D) *3*

50. To'g'ri burchakli trapetsiyaning asoslari 15 va 5 ga teng. Unga ichki chizilgan aylana radiusini toping.

A) *4* B) *3,5* C) *3,75* D) *3*

51. Rasmda $y=f(x)$ funksiya grafigi berilgan. $y=f(x)$ funksiya ekstremum nuqtalari koordinatalari yig'indisini toping. $(x\in[-3;1])$



A) *-1* B) *-5* C) *-3* D) *-2*

52. Teng yonli trapetsiya diagonallari o'zaro perpendikular. Uning yuzi 25 ga teng bo'lsa, balandlikni toping.

A) *bir qiymatli aniqlab bo'lmaydi* B) *4* C) *6* D) *5*

53. $y=\log_7(\operatorname{arctg} 3x+\operatorname{arcctg} 3x)$ funksiyaning $x=\frac{1}{2}$ nuqtadagi ikkinchi tartibli hosilasining qiymatini toping.

A) $\log_7 2$ B) *0* C) *1* D) $-\log_7 2$

54. $4-x<\sqrt{6-x}$ tengsizlikning natural yechimlaridan eng katta va eng kichigining ayirmasini toping.

A) *4* B) *1* C) *6* D) *3*

55. Agar $2a^2-5ab+2b^2=0$ bo'lsa, a ni b orqali ifodalang.

A) $a=0,75b$; $a=4b$ B) $a=4b$; $a=0,5b$
C) $a=0,5b$; $a=2b$ D) $a=3b$; $a=2b$

56. $a=(0,2)^{\frac{1}{2}\log_5\sqrt{2}-\log_{25}2}$ bo'lsa, $\log_2 a$ ni hisoblang.

A) *0,25* B) *0,5* C) *1* D) $\log_2 5$

124-variant

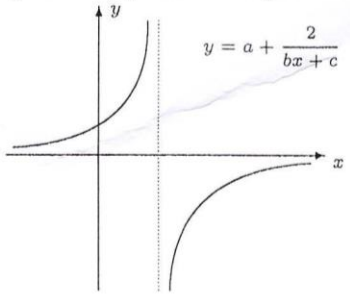
7. $f(x) = 4x^2 + ax + 103$ kvadrat uchhad uchun $f(1) + f(4) + f(6) + f(7) - f(2) - f(3) - f(5) - f(8)$ ni hisoblang.

A) *1* B) *a ga bog'liq* C) *0* D) -1

58. R radiusli sferaga muntazam to'rtburchakli piramida ichki chizilgan. Piramida yon sirtining yuzining eng katta qiymatini toping.

A) R^2 B) $4R^2$ C) $6R^2$ D) $5R^2$

59. Rasmda $y = a + \dfrac{2}{bx + c}$ funksiya grafigi tasvirlangan. Quyidagilardan qaysi biri noto'g'ri?



A) $a + b - c < 0$ B) $c(a - b) > 0$ C) $b(a - c) > 0$
D) $c^3 - a^{16} < 0$

60. $y = \ln x$ funksiya grafigi berilgan bo'lib, uni parallel ko'chirish yordamida $y = \ln(x - a) + b$ funksiya grafigi hosil qilingan. Bunday parallel ko'chirishda koordinata boshi qanday nuqtaga ko'chadi? Bunda, $x > a$, $x > 0$

A) $N(a; b)$ B) $N(-a; b)$ C) $N(a; -b)$ D) $N(b; a)$

61. $3^{2x} - 3^x = 702$ tenglamani yeching.

A) 2 B) 3 C) 5 D) 4

62. a va b natural sonlarning umumiy bo'luvchilari soni 4 ga teng bo'lsa, $a + 2b$ va b sonlarning umumiy bo'luvchilari nechta?

A) *bir qiymatli aniqlab bo'lmaydi* B) *2* C) *4* D) *1*

63. $y > 0$ bo'lsin. To'rtburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(1; 0)$, $B(1; y)$, $C(-8; y)$ va $D(-10; 0)$. To'rtburchak diagonallarining o'rtalari orasidagi masofani toping.

A) *y ga bog'liq* B) *1* C) $\sqrt{2}$ D) *2*

64. Agar $\log_{12} 27 = a$ bo'lsa, $\log_6 16$ ni a orqali ifodalang.

A) $\dfrac{3 - a}{a + 3}$ B) $\dfrac{4(3 - a)}{3 + a}$ C) $\dfrac{3 + a}{3 - a}$ D) $\dfrac{4a - 3}{3 + a}$

65. $\dfrac{\operatorname{tg}^4 2\alpha + 1}{\operatorname{tg}^2 2\alpha + \operatorname{ctg}^2 2\alpha} - \dfrac{1}{\cos^2 2\alpha}$ ni soddalashtiring.

A) -1 B) $-\operatorname{tg}^2 2\alpha$ C) 0 D) $\operatorname{tg}^2 2\alpha$

66. $a = -2$ bo'lsa, $\int_a^{a+1} (ln(\sin^2 2x + \cos^2 2x) + 1)dx$ aniq integralni hisoblang.

A) $\frac{\ln 2 - 1}{2}$ B) *1* C) $2\sqrt{2}$ D) $\sqrt{2}$

67. Quyidagilardan qaysi biri axborot ko'rinishi hisoblanadi?

A) *tushunarli, ishonchli* B) *grafikli, tovushli*
C) *uzlukli, uzluksiz* D) *karrali, dolzarb*

68. 31322, 323 butun sonlarni barchasini yozish mumkin bo'lgan eng kichik asosli sanoq sistemasida shu sonlar raqamlarining yig'indisini hisoblang.

A) *201* B) *34* C) *103* D) *31*

9. Operatsion tizim (sistema) lar qaysi bandda noto'g'ri ko'rsatilgan?

A) *UNIX, PS/2* B) *UNIX, MS DOS* C) *Windows, Linux*
D) *DOPPIX, Corel Draw*

70. *A1=-9, A2=-1, B1=7, B2=5* bo'lsin. Natijasi 5 ga teng bo'ladigan formulani aniqlang.

A) *=ЕСЛИ(A1*B2<0;A2+5;B2+9)*
B) *=МАКС(ABS(A1*A2);ABS(B1*B2))*
C) *=ЕСЛИ(A1*B2>=0;A2+9;B2+5)*
D) *=МИН(ABS(A1);B2;ABS(B1*A2))*

71. <IMG SRC= "mypic.jpg" WIDTH=100 HEIGHT=50> HTML hujjat fragmentining web-brauzerda aks ettirilgan natijasini ko'rsating.

A) *mypic.jpg rasmining haqiqiy o'lchamini hisobga olmagan holda, 50x50 piksellar o'lchamida web-sahifaga joylashtiriladi*
B) *mypic.jpg rasmining haqiqiy o'lchamini hisobga olmagan holda, 100x50 piksellar o'lchamida web-sahifaga joylashtiriladi*
C) *mypic.jpg rasm atrofida chapdan, o'ngdan, yuqori va pastki qismidan 100 piksel o'lchamda bo'sh joy qoldirib web-sahifaga joylashtiradi*
D) *mypic.jpg rasm atrofida ko'rsatilgan o'lchamlarda ramka hosil qilib web-sahifaga joylashtiradi*

72. Paskal tilida 63 ta elementdan iborat ikki o'lchovli massiv to'g'ri tavsiflangan javobni ko'rsating.

A) *Var M: array [3..11,2..8] of char;*
B) *Var B: array [5..10,3..10] of string;*
C) *Var M: array [-1..7,4..12] of boolean;*
D) *Var C: array[3..65] of char;*

125-variant

MATEMATIKA (INFORMATIKA BILAN)

37. To'g'ri burchakli uchburchak tomonlariga yasalgan kvadratlar yuzlarining yigindisi 98 ga teng. Gipotenuza uzunligini toping.

A) 14 B) 7 C) 9 D) 6

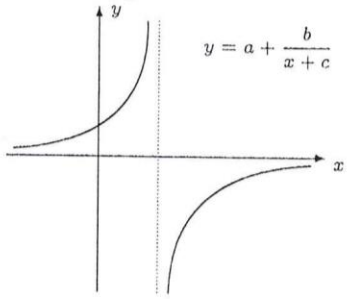
38. $a = (0,2)^{\frac{1}{2}\log_5 16 - \log_{25} 2^8}$ bo'lsa, $\log_2 a$ ni hisoblang.

A) 0,5 B) 1 C) 2 D) $\log_2 5$

39. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(-\frac{1}{2};-4)$, $C(-1;0)$. Uchburchak yuzini toping.

A) 2 B) $2\sqrt{3}$ C) 3 D) $2\sqrt{2}$

40. Rasmda $y = a + \frac{b}{x+c}$ funksiya grafigi tasvirlangan. Quyidagilardan qaysi biri doim o'rinli?



A) $a - b + c > 0$ B) $bc - a^5 > 0$ C) $c^2(a+b) > 0$
D) $a(b^4 + c^4) > 0$

41. Kompyuter xotirasiga virus tushdi. Birinchi sekundda u xotiraning yarmini, ikkinchi sekundda qolganining uchdan birini, uchinchi sekundda qolganining to'rtdan birini, to'rtinchi sekundda qolganining beshdan bir qismini ishdan chiqardi. Shu paytda xotiraning qancha qismiga virus tushmagan?

A) $\frac{1}{5}$ B) $\frac{1}{12}$ C) $\frac{1}{10}$ D) $\frac{1}{6}$

42. O'zaro teng bo'lmagan x va y sonlari $x^2 + 26y = y^2 + 26x$ tenglikni qanoatlantirsa, $x + y$ ni toping.

A) 0 B) 16 C) 26 D) 24

43. Beshta a_1, a_2, a_3, a_4, a_5 tub sonlar ayirmasi 6 ga teng bo'lgan arifmetik progressiyani tashkil qiladi. $2a_1 + a_5$ ni toping.

A) 43 B) 41 C) 39 D) 34

44. $\sqrt{2x+1} \le \sqrt{x^3 - 4x^2 + x + 5}$ tengsizlikning nomusbat butun yechimlari nechta?

A) 0 B) cheksiz ko'p C) 2 D) 1

45. $y = 3\sin(2x + \frac{\pi}{4})$ funksiya nechta butun qiymatlarni qabul qiladi?

A) 0 B) cheksiz ko'p C) 6 D) 7

46. [2; 200] kesmada 2, 3, 5 va 7 sonlariga bo'linganda qoldiq 1 ga teng bo'ladigan natural sonlar nechta?

A) 1 B) 0 C) 3 D) 2

47. $y = 7cos5x - 5cos7x$ funksiyaning hosilasini toping.

A) $-70cosx \cdot sin6x$ B) $70sinx \cdot cos6x$ C) $70cosx \cdot cos6x$
D) $70sinx \cdot sin6x$

48. Hisoblang: $\cos 40^\circ \cdot \cos 20^\circ \cdot \cos 100^\circ$.

A) $\frac{\sqrt{3}}{4}$ B) $\frac{\sqrt{3}}{8}$ C) $-\frac{1}{8}$ D) $\frac{\sqrt{2}}{4}$

49. Agar barcha x, y lar uchun $x^3 + 4x^2y + axy^2 + 3xy - bx^cy + 7xy^2 + dxy + y^2 = x^3 + y^3$ ayniyat bajarilsa, $a - b - c + d$ ni toping. $(c > 1)$

A) 4 B) 2 C) -16 D) -10

50. Hisoblang: $(\sqrt{7}+1) \cdot \left(\frac{12}{\sqrt{7}-1} \cdot \frac{18}{\sqrt{7}+5} - 4\sqrt{7}\right)$

A) 20 B) 15 C) 24 D) $\sqrt{7}$

51. $y > 0$ bo'lsin. To'rtburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(0;y)$, $C(2;y)$ va $D(4;0)$. To'rtburchak diagonallarining o'rtalari orasidagi masofani toping.

A) 1 B) y ga bog'liq C) 2 D) $\sqrt{2}$

52. $y = \cos 2x$; $y = 0$; $x = -\frac{\pi}{6}$; $x = \frac{\pi}{3}$ chiziqlar bilan chegaralangan shaklning yuzini toping.

A) 1 B) 0,5 C) $\frac{\sqrt{3}}{2}$ D) $\frac{\sqrt{3}}{4}$

53. $\frac{1}{\sqrt{2}}$ radiusli sferaga muntazam to'rtburchakli piramida ichki chizilgan. Uchidagi yassi burchak 15° ga teng bo'lsa, piramida yon sirtining yuzini toping.

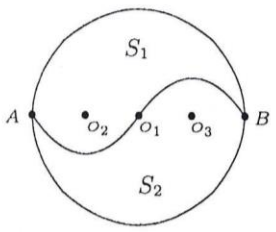
A) 1 B) $\sqrt{3}$ C) 2 D) $\sqrt{2}$

54. Har qanday $x \in (x_1, x_2)$ uchun $y = f(x)$ funksiya hosilasi manfiy bo'lsin. (x_1, x_2) oraliqqa tegishli ixtiyoriy a va b $(a > b)$ uchun qanday tengsizlik o'rinli?

A) $f(a) < f(b)$ B) $f(a) < f(b) < 0$ C) $f(b) < f(a)$
D) $f(a) \ge f(b)$

55. $\begin{cases} y^2 + xy = 12 \\ x^2 + xy = 4 \end{cases}$ tenglamalar sistemasini yeching.

A) $(-1;-3)$ va $(1;3)$ B) $(1;3)$ C) $(1;3)$ va $(3;1)$
D) $(-1;-3)$



56. Rasmda AB katta aylana diametri, O_1 katta aylana markazi O_2 va O_3 kichik aylana markazlari bo'lib, ular uchun $AO_1 : O_1O_2 = O_2O_3 : O_3B$ tenglik o'rinli. S_1 va S_2 sohalar perimetrlari yig'indisi 32π ga teng bo'lsa, katta va kichik aylanalar radiuslari ayirmasini toping.

A) 3 B) 6 C) 2 D) 4

57. $k \in N$ da $S_k = x^k + y^k$ darajali yig'indi, $\sigma_1 = x + y$, $\sigma_2 = xy$ bo'lsa, u holda quyidagi qaysi munosabat doim o'rinli?

A) $S_3 = S_2\sigma_1 - S_1\sigma_2$ B) $S_3 = S_1\sigma_1 - S_2\sigma_2$
C) $S_3 = S_2\sigma_2 + S_1\sigma_1$ D) $S_3 = S_2\sigma_1 + S_1\sigma_2$

58. Agar $x^2 + 36y^2 = 13xy$ bo'lsa, $\frac{x}{y}$ nisbatning eng katta qiymatini toping.

A) 4 B) 9 C) 13 D) 5

59. Qaysi jism(lar)ning simmetriya tekisliklari cheksiz sonda?
1) kub; 2) prizma; 3) konus
A) *3* B) *2* C) *1* D) *2, 3*

60. $\{x|x \in N, 6 \leq x^2 \leq 43\}$ to'plamning nechta qism-to'plamlari mavjud?
A) *16* B) *32* C) *8* D) *5*

61. $5 \cdot 0,2^{\lg x} > 0,04^{\lg 2}$ tengsizlikni qanoatlantiruvchi barcha natural sonlar yig'indisini toping.
A) *760* B) *820* C) *780* D) *380*

62. $a = 4$ bo'lsa, $\int_a^{a+1} (ln(\sin^2 3x + \cos^2 3x) + 1)dx$ aniq integralni hisoblang.
A) 1 B) $\frac{\ln 2 - 1}{3}$ C) $2\sqrt{2}$ D) $\sqrt{2}$

63. Asoslarining radiuslari 2 va 3 ga teng bo'lgan kesik konus va unga tengdosh silindrning balandliklari bir xil. Silindr asosining radiusini toping.
A) $\sqrt{19}$ B) $\sqrt{13}$ C) $\sqrt{6\frac{1}{3}}$ D) $\sqrt{6\frac{2}{3}}$

64. (x, y) sonlar juftligi $\begin{cases} \frac{5x+2y}{3} - \frac{25x+11y}{4} = -3 \\ 5x + 7y = 8 \end{cases}$ sistemaning yechimi bo'lsa, $x^2 + y^2$ ni toping.
A) *1,04* B) *4* C) *0,4* D) *1,4*

65. $y = \ln(\sin^2 3x + \cos^2 3x)$ funksiyaning $x = \frac{1}{2}$ nuqtadagi hosilasining qiymatini toping
A) $-\ln 2$ B) *1* C) $\ln 2$ D) *0*

66. Qavariq $ABCDEF$ oltiburchakda ichki burchaklar o'zaro teng. Agar $AB = 3$, $BC = 4$, $CD = 5$, $EF = 5$ bo'lsa, DE tomon uzunligini toping.
A) *3* B) *5* C) *bir qiymatli aniqlab bo'lmaydi* D) *2*

67. ... inson tomonidan axborotni izlash, yig'ish, saqlash, qayta ishlash va undan foydalanish usullari va vositalari deb yuritiladi.
A) *Axborot texnologiyasi* B) *Axborot xavfsizligi*
C) *Axborotni kodlash* D) *Elektromagnit maydon*

68. $5C9$, $6AC$ butun sonlarni barchasini yozish mumkin bo'lgan eng kichik asosli sanoq sistemasida shu sonlar raqamlarining yig'indisini hisoblang.
A) *42* B) *39* C) *3C* D) *46*

69. Operatsion tizim (sistema) lar qaysi bandda noto'g'ri ko'rsatilgan?
A) *Windows, Linux* B) *UNIX, MS DOS*
C) *DOPPIX, Corel Draw* D) *UNIX, PS/2*

70. MS Excel. A1=12; A2=18; A3=-12; A4=-17 ga teng bo'lsa, ...(A1;A3-A2;A4)=-35 tenglik o'rinli bo'lishi uchun nuqtalar o'rnida qaysi funksiya qo'llangan bo'lishi kerak?
A) *СУММ* B) *МИН* C) *МАКС* D) *СРЗНАЧ*

71. Qaysi dastur orqali Web-sahifalarni ko'rish mumkin?
A) *muharrir* B) *utilit* C) *drayver* D) *brauzer*

72. Paskal tilida quyidagi dastur lavhasi takrorlanish operatoridagi takrorlanishlar sonini aniqlang:
I:=0; While ((I>0) and (I<=100)) do begin I:=I+11;
P:=I*I;end;
A) *10 marta* B) *11 marta* C) *0 marta* D) *9 marta*

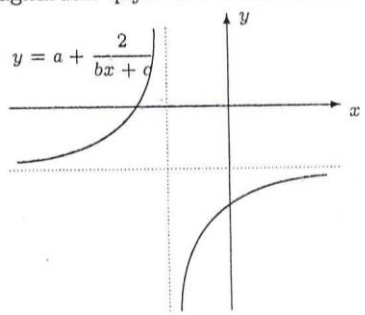
126-variant

MATEMATIKA (INFORMATIKA BILAN)

37. $y = \log_7(\operatorname{arctg} 3x + \operatorname{arcctg} 3x)$ funksiyaning $x = \frac{1}{2}$ nuqtadagi hosilasining qiymatini toping.

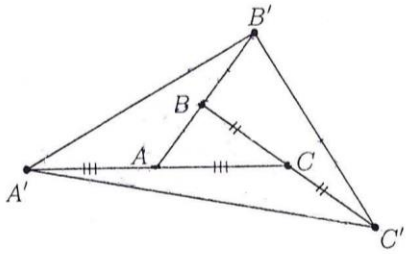
A) $\log_7 2$ B) $-\log_7 2$ C) *0* D) *1*

38. Rasmda $y = a + \frac{2}{bx + c}$ funksiya grafigi tasvirlangan. Quyidagilardan qaysi biri doim o'rinli?



A) $abc > 0$ B) $c^2 - b^2 > 0$ C) $a^2 - b^2c > 0$
D) $a^3 - b^3 > 0$

39. ABC uchburchakning har bir tomoni chizmada ko'rsatilgandek o'z uzunligiga teng uzunlikda davom ettirilgan. Agar $A'B'C'$ uchburchak yuzasi 7 ga teng bo'lsa, ABC uchburchak yuzasini toping.



A) *1* B) *3* C) *4* D) *2*

40. $60°$ ga teng bo'lgan A burchakka aylana ichki chizilgan. Bu aylana burchak tomonlariga B va C nuqtalarda urinadi. Agar BC=3 bo'lsa, $AB + AC$ ni toping.

A) *3* B) *4* C) *bir qiymatli aniqlab bo'lmaydi* D) *6*

41. $x = -y$, $z = 2$ bo'lsa, $\dfrac{x^3 + y^3 + z^3 - 3xyz}{x^2 + y^2 + z^2 - xy - xz - yz}$ ifodaning qiymatini toping.

A) *2* *0* C) *1* D) -2

42. $\sqrt{3}\left(4^x + 2^{2x-1}\right) < 3^x + 3^{x+1}$ tengsizlikni yeching.

A) $(-\infty; -1) \cup (-1; 0) \cup (0; 1) \cup (1; +\infty)$
B) $(-\infty; 1,5)$
C) $(0; 2)$
D) $(-\infty; 0) \cup (0; 3)$

43. Agar $\operatorname{tg}\frac{x}{2} = 2$ bo'lsa, $\dfrac{9\cos\left(x - \frac{\pi}{2}\right)}{3 + \sin\left(\frac{3\pi}{2} - x\right)}$ ni hisoblang.

A) *1* B) *21* C) *2* D) *4*

44. $y = \sin x$ funksiya grafigi berilgan bo'lib, uni parallel ko'chirish yordamida $y = \sin(x + a) - b$ funksiya grafigi hosil qilingan. Bunday parallel ko'chirishda koordinata boshi qanday nuqtaga ko'chadi?

A) $N(-a; b)$ B) $N(-a; -b)$ C) $N(a; b)$ D) $N(b; a)$

45. Asosi a ga, yon tomoni b ga teng bo'lgan teng yonli uchburchakning yon tomoniga tushirilgan balandlik uzunligini toping.

A) $h_b = \frac{b}{a}\sqrt{4b^2 - 2a^2}$ B) $h_b = \frac{b}{2a}\sqrt{4b^2 - a^2}$
C) $h_b = \frac{a}{2b}\sqrt{4b^2 - a^2}$ D) $h_b = \frac{a}{b}\sqrt{4b^2 - 2a^2}$

46. $ABCD$ parallelogrammda CD tomonni D uchidan boshlab hisoblaganda 1:2 nisbatda bo'luvchi AN to'g'ri chiziq o'tkazilgan. Agar ABC uchburchakning yuzi 12 ga teng bo'lsa, ANC uchburchakning yuzini toping.

A) *8* B) $4\sqrt{2}$ C) *4* D) *6*

47. Parallepipedning asoslari tomoni 4 ga teng kvadratlardan, barcha yon yoqlari romblardan iborat. Yuqori asosining uchlaridan biri ostki asosining barcha uchlaridan baravar uzoqlikda joylashgan. Parallelepipedning hajmini toping.

A) $16\sqrt{2}$ B) $8\sqrt{2}$ C) $32\sqrt{2}$ D) *8*

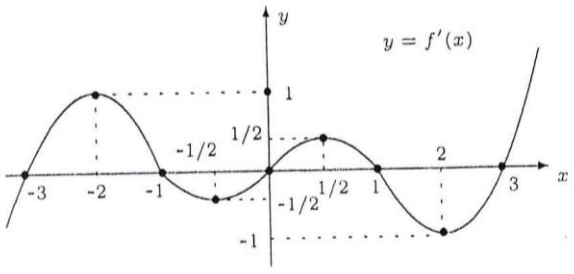
48. Agar barcha x, y lar uchun $x^3 + 4x^2y + axy^2 + 3xy - bx^cy + 7xy^2 + dxy + y^2 = x^3 + y^2$ ayniyat bajarilsa, $a + b - c$ ni toping. $(c > 1)$

A) -4 B) -5 C) *3* D) -2

49. $a = 5$ bo'lsa, $\int_a^{a+1} (\sin^2 2x + \cos^2 2x)dx$ integralni hisoblang.

A) *1* B) $\dfrac{\sqrt{2} - 1}{2}$ C) $\sqrt{2}$ D) $2\sqrt{2}$

50. Rasmda $y = f'(x)$ funksiya grafigi tasvirlangan. $f'(x) = 0$ tenglama yechimlari o'rta arifmetigini toping. $(x \in [-3; 3])$



A) 1,5 B) 2 C) 1 D) 0

51. Agar $\begin{cases} x^2 + (y + a)^2 - 1 = 0 \\ x^2 + y = -1 \end{cases}$ tenglamalar sistemasi yechimga ega bo'lmasa, a ning eng katta manfiy butun qiymatini toping.

A) *-3* B) *-1* C) *bir qiymatli aniqlanmaydi* D) *-2*

52. Hisoblang: $\cos 10° \cdot \cos 50° \cdot \cos 70°$.

A) $\frac{\sqrt{3}}{8}$ B) $\frac{\sqrt{2}}{2}$ C) $\frac{\sqrt{2}}{4}$ D) $\frac{1}{8}$

53. A va B to'plamlarning birlashmasi qanday belgilanadi?

A) $A \triangle B$ B) $A \cap B$ C) $A \cup B$ D) $A + B$

126-variant

. $\sqrt[3]{x^{\log_3 \sqrt[3]{x}}} > 3$ tengsizlikning eng kichik natural yechimini toping.

A) 9 B) 27 C) 1 D) 28

. Kichkina koala daraxt barglarini 10 soatda yeb tugatadi, otasi ham, onasi ham undan 2 marta tez yeydi. Ular bitta daraxtni necha soatda yeb tugatadi?

A) 4 B) 2 C) 5 D) 3

. $\{x|x \in N, 6 \le x^2 \le 40\}$ to'plamning nechta qism-to'plamlari mavjud?

A) 32 B)16 C) 8 D) 5

. $a = 4$ bo'lsa, $\int_a^{a+1} (ln(\sin^2 2x + \cos^2 2x) + 1)dx$ aniq integralni hisoblang.

A) $\frac{\ln 2-1}{2}$ B) 1 C) $2\sqrt{2}$ D) $\sqrt{2}$

. [50; 300] kesmada 3 ga bo'linganda qoldiq 1 ga, 4 ga bo'linganda qoldiq 2 ga, 5 ga bo'linganda qoldiq 3 ga va 6 ga bo'linganda qoldiq 4 ga teng bo'ladigan natural sonlar nechta?

A) 4 B) 5 C) 3 D) 2

. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(-1;5)$, $C(-2;0)$ Uchburchak yuzini toping.

A) $4\sqrt{2}$ B) 4 C) 5 D) $3\sqrt{3}$

0. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(-2;0)$, $C(0;-2)$. O'tkir burchaklar medianalari orasidagi o'tmas burchak kosinusini toping.

A) $-\frac{4}{7}$ B) $-\frac{3}{5}$ C) $-\frac{4}{5}$ D) $-\frac{5}{7}$

1. $y = |x| + |x-4|$ va $y = 8$ chiziqlar bilan chegaralangan soha yuzini toping.

A) 24 B) 16 C) 10,5 D) 12

2. $\sqrt{3}$ radiusli sferaga muntazam to'rtburchakli piramida ichki chizilgan. Uchidagi yassi burchak 45° ga teng bo'lsa, piramida yon sirtining yuzini toping.

A) 15 B) 14 C) 12 D) $9\sqrt{2}$

3. Hisoblang: $5^{\log_{25} 49} + 10^{1-\log_{0,0(9)} 5} - 2 \cdot 3^{\log_{0,(3)} \frac{1}{30}}$

A) 0 B) 1 C) -3 D) 3

4. Tenglamani yeching:
$2^{x-2} + 2^{x-3} + 2^{x-4} = 224$

A) 7 B) 9 C) 11 D) 10

5. Geometrik progressiya n-hadi $b_n = \frac{\sqrt{3}}{4} \cdot 5^{n+3}$ ga teng.
Progressiyaning maxrajini toping.

A) -5 B) 0,2 C) 0,5 D) 5

6. $|x^2 - 9x + 15| = 7$ tenglama yechimlari ayirmasining modulini toping

A) 8 B) 0 C) 7 D) 9

7. 160 bayt necha bitga teng?

A) 1640 B) 1600 C) 1320 D) 1280

8. Rim sanoq sistemasida to'g'ri tenglikni aniqlang.

A) $CXII : XXVIII = V$ B) $IL \cdot VLII = MMCCCIII$
C) $CVLII + XXVIII = CLXXIV$
D) $CCCXVII-VLI = CCLXX$

9. ... – bu kompyuter va uning qurilmalari ishini boshqaruvchi, foydalanuvchi bilan muloqotni tashkil etuvchi dasturdir.

A) Utilitlar B) Drayverlar C) Antiviruslar
D) Operatsion tizim (sistema)

70. $A1$=−3, $B1$=6, $B2$=3 bo'lsin. Quyidagi formula natijasi 2 ga teng bo'lishi uchun $A2$ katakka kiritilishi kerak bo'lgan qiymatni aniqlang.
=ЕСЛИ(И($A1+B2<=A2*B1$;$A1*B1<>0$); $A1+B2+B1-A2$;$A1*B1+B2+A2$)

A) 4 B) 1 C) 6 D) 2

71. Rasm joylashtirish tegi to'g'ri ko'rsatilgan qatorni tanlang.

A) <img scr="fayl nomi"> B) <img src="fayl nomi">
C) <a href="fayl nomi"> D) <frame src="fayl nomi">

72. Quyidagi to'plamni Paskal tilida yozilishini aniqlang:
$X^2 + Y^2 < R^2$, $y \ge 0$, $x < a$

A) (sqr(x)+sqr(y)<sqr(r)) or (x<a) or (y>=0)
B) (x*x+sqr(y)<r*r) and (x<a) and Not(y<0)
C) (x*x+sqr(y)<sqr(r)) and (x<=a) or (y>0)
D) (X*X+Y*Y)<R*R) and (y>=0) and Not(x>A)

MATEMATIKA (INFORMATIKA BILAN)

37. $ABCD$ tetraedrning D uchidagi barcha yassi burchaklar to‘g‘ri. Shu tetraedrga kub shunday ichki chizilganki, kubning bitta uchi D nuqtada, unga qarama-qarshi uchi esa ABC yoqda yotibdi. Agar DA=4, DB=6 va DC = 10 bo‘lsa, kub qirrasining uzunligini toping.

A) $\frac{60}{31}$ $\frac{17}{19}$ C) $2\sqrt{2}$ D) $\frac{23}{12}$

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38. $f(x) = 4x^2 + ax + 103$ kvadrat uchhad uchun $f(1) + f(4) + f(6) + f(7) - f(2) - f(3) - f(5) - f(8)$ ni hisoblang.

A) 0 B) -1 C) *1* D) *a ga bog'liq*

39. Beshta a_1, a_2, a_3, a_4, a_5 tub sonlar ayirmasi 6 ga teng bo'lgan arifmetik progressiyani tashkil qiladi. $2a_1 + a_5$ ni toping.

A) *39* B) *41* C) *43* D) *34*

40. $y = x^3$; $y = 0$; $x = -3$; $x = 1$ chiziqlar bilan chegaralangan shaklning yuzini toping.

A) *20,5* B) *21* C) *10,75* D) *24*

41. $(x^2 - 1)\sqrt{6 - x - x^2} \leq 0$ tengsizlikning butun yechimlari nechta?

A) *3* B) *0* C) *5* D) *4*

42. ABC uchburchakning A ichki burchagidan o'tkazilgan bissektrisasi BC tomonni D nuqtada kesib o'tadi. Bunda $AD = BD$, $AB = 9$ va $AC = 16$. Uchburchakning BC tomonini toping.

A) *24* B) *20* C) *21* D) *18*

43. $\dfrac{x+6}{x(x-7)} - \dfrac{4}{(7-x)^2} = \dfrac{1}{x-7}$ tenglamani yeching.

A) 4, 2 B) 42 C) 21 D) 2, 1

44. $\{x | x \in N, -3 \leq x \leq 5\}$ to'plamning nechta qism-to'plamlari mavjud?

A) *16* B) *32* C) *9* D) *5*

45. Prizmaning qirralari soni 72 ga teng. Uning yoqlari sonini toping.

A) *bir qiymatli aniqlab bo'lmaydi* B) *72* C) *26* D) *24*

46. Hisoblang: $\log_2 \left(\dfrac{1+\sqrt{7}}{\sqrt{4+\sqrt{7}}} - \dfrac{1-\sqrt{5}}{\sqrt{3-\sqrt{5}}} \right)$

A) *-1,2* B) *1,5* C) *1* D) *0*

47. $y = \log_7(\sin^2 3x + \cos^2 3x)$ funksiyaning $x = \dfrac{1}{2}$ nuqtadagi hosilasining qiymatini toping.

A) $\log_7 2$ B) *1* C) *0* D) $-\log_7 2$

48. Teng yonli ABC uchburchakning AC asosida D nuqta shunday olinganki AD=23, DC=25 tengliklar bajariladi. ABD va DBC uchburchaklarga ichki chizilgan aylanalar $\cup D$ to'g'ri chiziqqa mos ravishda M va N nuqtalarda urinadilar. MN kesma uzunligini toping.

A) *1* B) $\sqrt{2}$ C) *2* D) $\sqrt{3}$

49. Agar $x^2 + 20y^2 = 9xy$ bo'lsa, $\dfrac{x}{y}$ nisbatning eng katta qiymatini toping.

A) *9* B) *3* C) *5* D) *2*

50. $y > 0$ bo'lsin. To'rtburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(1;0)$, $B(1;y)$, $C(4;y)$ va $D(6;0)$. To'rtburchak diagonallarining o'rtalari orasidagi masofani toping.

A) *2* B) *y ga bog'liq* C) $\sqrt{2}$ D) *1*

51. Agar barcha x, y lar uchun $x^3 + 4x^2y + axy^2 + 3xy - bx^cy + 7xy^2 + dxy + y^2 = x^3 + y^2$ ayniyat bajarilsa, a ni toping. $(c > 1)$

A) *4* B) -7 C) *2* D) -3

52. Hisoblang: $\cos 7,5^\circ \cdot \cos 52,5^\circ \cdot \cos 67,5^\circ$

A) $\dfrac{\sqrt{\sqrt{3}-\sqrt{2}}}{8}$

B) $\dfrac{\sqrt{2+\sqrt{2}}}{8}$

C) $\dfrac{\sqrt{2-\sqrt{3}}}{8}$

D) $\dfrac{\sqrt{2+\sqrt{3}}}{8}$

53. $y = -6sin^2x + \dfrac{3}{4}cos^2 2x + 2\dfrac{1}{4}$ funksiyaning qiymatlar sohasiga tegishli nomusbat butun sonlar nechta?

A) *5 ta* B) *2 ta* C) *3 ta* D) *4 ta*

54. $a = -2$ bo'lsa, $\int_a^{a+1} (ln(\sin^2 2x + \cos^2 2x) + 1)dx$ aniq integralni hisoblang.

A) $\frac{\ln 2 - 1}{2}$ B) *1* C) $\sqrt{2}$ D) $2\sqrt{2}$

55. Velosipedchi tepalikka 12 km/soat tezlik bilan chiqdi. Chiqqan yo'li orqali 20 km/soat tezlik bilan pastga tushdi va chiqishdagiga qaraganda 16 minut kamroq vaqt sarfladi. Yo'lning uzunligini (km) toping.

A) *12* B) *8* C) *10* D) *14*

56. Elementlar soniga bog'liq holda to'plamlar qanday to'plamlarga ajratiladi?

A) *bo'sh va bo'sh emas to'plamlarga*
B) *kesishadigan va kesishmaydigan to'plamlarga*
C) *ikki va bir necha elementli to'plamlarga*
D) *chekli va cheksiz to'plamlarga*

57. Ifodani soddalashtiring: $\sin 6\alpha + 2\sin^2 3\alpha - 1$

A) $\sqrt{2}\cos(6\alpha - 45^\circ)$
B) $-\sqrt{2}\sin(3\alpha - 45^\circ)$
C) $-\sqrt{2}\cos(3\alpha - 45^\circ)$
D) $\sqrt{2}\sin(6\alpha - 45^\circ)$

58. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(-1;-1)$, $C(-2;0)$. Uchburchak yuzini toping.

A) *2* B) $\sqrt{3}$ C) $\sqrt{2}$ D) *1*

59. $a = -b$, $c = 2$ bo'lsa, $\dfrac{c(a-b)^3 + a(b-c)^3 + b(c-a)^3}{c^2(b-a) + a^2(c-b) + b^2(a-c)}$ ifodaning qiymatini toping.

A) *2* B) -2 C) *0* D) *1*

60. $\dfrac{1}{|x+1|-1} \geq \dfrac{2}{|x+1|-2}$ tengsizlikning eng katta manfiy butun yechimini toping.

A) *-2* B) *-1* C) *-3* D) *-4*

61. [0; 500] kesmada 3 ga bo'linganda qoldiq 1 ga, 4 ga bo'linganda qoldiq 2 ga, 5 ga bo'linganda qoldiq 3 ga va 6 ga bo'linganda qoldiq 4 ga teng bo'ladigan natural sonlar nechta?

A) 6 B) *8* C) *5* D) *7*

62. 60° ga teng bo'lgan A burchakka aylana ichki chizilgan. Bu aylana burchak tomonlariga B va C nuqtalarda urinadi. Agar BC=3 bo'lsa, AC ni toping.

A) *1* B) *2* C) *bir qiymatli aniqlab bo'lmaydi* D) *3*

128-variant

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37. Teng yonli ABC uchburchakning AC asosida D nuqta shunday olinganki AD=5, DC=7 tengliklar bajariladi. ABD va DBC uchburchaklarga ichki chizilgan aylanalar BD to'g'ri chiziqqa mos ravishda M va N nuqtalarda urinadilar. MN kesma uzunligini toping.

A) $\sqrt{3}$ B) 2 C) $\sqrt{2}$ D) 1

38. ABC uchburchakning BC tomoniga AD to'g'ri chiziq shunday o'tkazilganki, natijada AC asosli teng yonli ADC uchburchak hosil bo'lgan. Agar ABC va ABD uchburchaklar perimetrlari mos ravishda 51 va 40 ga teng bo'lsa, AC tomon uzunligini toping.

A) 11 B) 14 C) 17 D) 12

39. ABC o'tkir burchakli uchburchak berilgan. Uchburchakning BC tomonini C uchidan boshlab hisoblanganda 2:3 nisbatda bo'luvchi AN to'g'ri chiziq o'tkazilgan. Agar ANC uchburchakning yuzi 6 ga teng bo'lsa, ABC uchburchakning yuzini toping.

A) 12 B) 13 C) 16 D) 15

40. Asosi a ga, yon tomoni b ga teng bo'lgan teng yonli uchburchakning yon tomoniga tushirilgan balandlik uzunligini toping.

A) $h_b = \frac{a}{2b}\sqrt{4b^2-a^2}$ B) $h_b = \frac{b}{a}\sqrt{4b^2-2a^2}$

C) $h_b = \frac{b}{2a}\sqrt{4b^2-a^2}$ D) $h_b = \frac{a}{b}\sqrt{4b^2-2a^2}$

41. Asoslarining radiuslari 2 va 5 ga teng bo'lgan kesik konus va unga tengdosh silindrning balandliklari bir xil. Silindr asosining radiusini toping.

A) $\sqrt{29}$ B) $\sqrt{13}$ C) $\sqrt{13\frac{2}{3}}$ D) 7

42. Sharga asosining tomoni $4\sqrt{2}$ ga, balandligi 4 ga teng bo'lgan muntazam to'rtburchakli piramida ichki chizilgan. Shar radiusini toping.

A) 3,2 B) 3,5 C) 4,2 D) 4

43. $y = \log_7(\sin^2 x + \cos^2 x)$ funksiyaning $x = \frac{2016\pi}{6}$ nuqtadagi qiymatini hisoblang.

A) $\log_7 2$ B) $-\log_7 2$ C) 1 D) 0

44. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(-1;5)$, $C(-2;0)$. Uchburchak yuzini toping.

A) $3\sqrt{3}$ B) 4 C) $4\sqrt{2}$ D) 5

45. Hisoblang:
$\left(\frac{2\sqrt{15}-4}{\sqrt{15}+\sqrt{13}} + \frac{2\sqrt{13}+2}{\sqrt{15}-\sqrt{13}} + \sqrt{15} + 11\sqrt{13}\right)\cdot(2-\sqrt{13})$

A) -2310 B) -126 C) -42 D) 13

46. $x^{x^2-x-6} = 1$ tenglamaning ildizlari ko'paytmasini toping $(x > 0)$.

A) $\emptyset$ B) 3 C) -6 D) 6

47. $\sqrt{x+3} > x+1$ tengsizlikning butun yechimlari nechta?

A) 2 B) 3 C) 5 D) 4

48. [50; 150] kesmada 3 ga bo'linganda qoldiq 1 ga, 4 ga bo'linganda qoldiq 2 ga, 5 ga bo'linganda qoldiq 3 ga va 6 bo'linganda qoldiq 4 ga teng bo'ladigan natural sonlar nechta?

A) 2 B) 3 C) 1 D) 0

49. Agar $f(x) = 11^x \cdot 7x$ bo'lsa, $f'(x) = 0$ tenglamani yeching.

A) $\log_{11} e$ B) 0 C) $\ln 11$ D) $-\log_{11} e$

50. $y > 0$ bo'lsin. To'rtburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(0;y)$, $C(9;y)$ va $D(11;0)$. To'rtburchak diagonallarining o'rtalari orasidagi masofani toping.

A) $\sqrt{2}$ B) 2 C) 1 D) y ga bog'liq

51. $\int \left(x^2 + \sqrt[3]{x} - 7\right) dx$ ni hisoblang.

A) $x^3 + \frac{x\sqrt[3]{x}}{4} - 7x + C$

B) $x^3 + \frac{\sqrt[3]{x}}{4} - 7x + C$

C) $\frac{x^3}{3} + \frac{4x\sqrt[3]{x}}{3} - \frac{7x}{3} + C$

D) $\frac{x^3}{3} + \frac{3x\sqrt[3]{x}}{4} - 7x + C$

52. $a^2b^2x^4 = b^4x^2 - a^2b^2 + a^4x^2$ tenglamada x ni toping. $(a \cdot b \neq 0)$

A) $\emptyset$ B) $\pm 1/a;\ \pm 1/b$ C) $\pm a/b;\ \pm b/a$ D) $\pm a;\ \pm b$

53. Kemaga yana 30 ta yo'lovchi chiqqanidan so'ng, kemadagi ichimlik suvi oldingiday 60 kunga emas, 50 kunga yetishi ma'lum bo'ldi. Dastlab kemada nechta odam bo'lgan?

A) 40 B) 110 C) 140 D) 150

54. $\int \left(5x^4 - \frac{8\sqrt[5]{x^3}}{5} + 6\right) dx$ ni hisoblang.

A) $x^5 - x\sqrt[5]{x^3} + 6x + C$

B) $x^5 - \sqrt[5]{x^6} + 6x + C$

C) $\frac{x^5}{5} - \frac{8x\sqrt[5]{x^6}}{5} + 6x + C$

D) $\frac{x^5}{5} - \frac{8\sqrt[5]{x^6}}{5} + 6x + C$

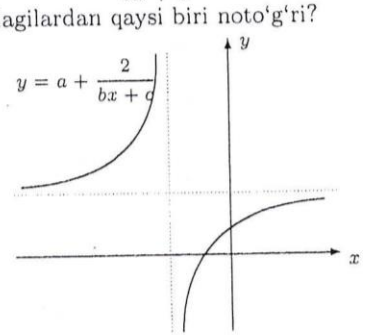
55. $a = (0,2)^{\frac{1}{2}\log_5 4 - \log_{25} 16}$ bo'lsa, $\log_2 a$ ni hisoblang.

A) 0,5 B) $\log_2 5$ C) 0,25 D) 1

56. $y = 3sin4x + 2sin6x$ funksiyaning hosilasini toping.

A) $24sinx \cdot sin5x$ B) $24cosx \cdot cos5x$ C) $24sinx \cdot cos5x$
D) $-24cosx \cdot sin5x$

57. Rasmda $y = a + \frac{2}{bx+c}$ funksiya grafigi tasvirlangan. Quyidagilardan qaysi biri noto'g'ri?



A) $b^5 - a^4 < 0$ B) $b^2(c^2 - a^2) > 0$ C) $bc + a > 0$
D) $c(b - a) > 0$

128-variant

$\alpha = 22,5°$, $a = (\operatorname{tg}\alpha)^{\operatorname{tg}\alpha}$, $b = (\operatorname{tg}\alpha)^{\operatorname{ctg}\alpha}$, $c = (\operatorname{ctg}\alpha)^{\operatorname{tg}\alpha}$, $d = (\operatorname{ctg}\alpha)^{\operatorname{ctg}\alpha}$ bo'lsa, quyidagilardan qaysi biri o'rinli?

A) $c > d > a > b$ B) $d > a > c > b$ C) $d > c > b > a$
D) $d > c > a > b$

$y = f(x)$ funksiya maksimum nuqtasi x_0 bo'lsin. U holda qaysi tengsizlik x_0 ning qandaydir atrofidagi barcha x lar uchun o'rinli?

A) $f(x) \le f(x_0)$ B) $f(x) \ge f(x_0)$ C) $f(x) < f(x_0)$
D) $f(x) > f(x_0)$

$\cos 0,2x - \sqrt{3}\sin 0,2x < 0$ tengsizlikni yeching.

A) $\left(\frac{5\pi}{6} + 10\pi k; \frac{35\pi}{6} + 10\pi k\right)$

B) $\left(\frac{5\pi}{3} + 10\pi k; \frac{35\pi}{3} + 10\pi k\right)$

C) $\left(\frac{5\pi}{6} + 2\pi k; \frac{35\pi}{6} + 2\pi k\right)$

D) $\left(\frac{5\pi}{3} + 2\pi k; \frac{35\pi}{3} + 2\pi k\right)$

a va b natural sonlarning eng katta umumiy bo'luvchisi 6 ga teng bo'lsa, $a + 3b$ va b sonlarning eng katta umumiy bo'luvchisi nechaga teng?

A) *6* B) *bir qiymatli aniqlab bo'lmaydi* C) *1* D) *4*

O'zaro teng bo'lmagan x va y sonlari $x^2 - 36x = y^2 - 36y$ tenglikni qanoatlantirsa, $x + y$ ni toping.

A) *18* B) *24* C) *36* D) *0*

$a_1, a_2, \ldots, a_8$ ketma-ketlikda ixtiyoriy uchta ketma-ket hadining yig'indisi 40 ga teng. Agar ketma-ketlikning uchinchi hadi 6 ga teng bo'lsa, birinchi va sakkizinchi hadlarining yig'indisi nechaga teng?

A) *12* B) *6* C) *36* D) *34*

$\{x | x \in N, x^2 \le 33\}$ to'plamning nechta qism-to'plamlari mavjud?

A) *5* B) *32* C) *16* D) *33*

Agar barcha x, y lar uchun $x^3 + 4x^2y + axy^2 + 3xy - bx^cy + 7xy^2 + dxy + y^2 = x^3 + y^2$ ayniyat bajarilsa, $b + c$ ni toping. $(c > 1)$

A) *3* B) -2 C) -4 D) *6*

Agar $x^2 + 10y^2 = 7xy$ bo'lsa, $\frac{x}{y}$ nisbatning eng katta qiymatini toping.

A) *5* B) *7* C) *2* D) *4*

Quyidagi keltirilgan misollardan qaysi biri uzluksiz axborot bo'la oladi?

A) *o'qituvchi ma'ruzasi, harorat* B) *vaqt, harorat*
C) *dars, yozuv* D) *teleko'rsatuv, vaqt*

761, 138, 268, 147 butun sonlarni barchasini yozish mumkin bo'lgan eng kichik asosli sanoq sistemasida shu sonlar yig'indisini aniqlang.

A) *11A2* B) *1436* C) *1314* D) *1560*

proba.txt fayli joylashgan katalogni ko'rsating:
C : \doc\1\proba.txt

A) *proba* B) *doc* C) *1* D) *C : *

A1=-6, *A2*=0, *B1*=9, *B2*=3 bo'lsin. Natijasi -15 ga teng bo'ladigan formulani aniqlang.

A) = ЗНАК(−*A1* + *B2* − *A2* + *B1*)
B) = СЧЕТЕСЛИ(*A1* : *B2*;" >= 1")
C) = ЕСЛИ(*A1* <= *B1* − 3; *A2* * *B1*; *A1* + *B2*)
D) = ЦЕЛОЕ(*A1* + *A2*/*B2* − *B1*)

71. Web brauzerda matnning ko'rinishi quyidagicha bo'lishi uchun uning HTML kodi qanday bo'lishi kerak?
Kvadrat tenglama $ax^2+bx+c=0$ ko'rinishida bo'ladi

A) * Kvadrat tenglama ax ² +bx+c=0 ko'rinishida bo'ladi. *

B) * Kvadrat tenglama ax² +bx+c=0 ko'rinishida bo'ladi. *

C) * <cite>Kvadrat tenglama ax ² +bx+c=0 ko'rinishida bo'ladi.</cite> *

D) * Kvadrat tenglama ax ² +bx+c=0 ko'rinishida bo'ladi. *

72. Paskal. Quyidagi dastur natijasini aniqlang.
Var X, Y, A : Real;
Begin X:=25; Y:=15; IF X<Y THEN
begin A:=X; X:=(X+Y) div 2; Y:=A*Y; end ELSE begin A:=Y; Y:=(X+Y) div 2; X:=X*A;end;Write('X=', X:5:1, 'Y=', trunc(Y)); End.

A) *Kompilyatsiyada xatolik xabari chiqadi*
B) *X=375.0Y=20*
C) *X= 20.0Y=375*
D) *X= 0.0Y=0*

129-variant

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37. $2^{x+2}+5^{x+2}>5^{x+1}+2^{x+3}+2^{x+4}$ tengsizlikni yeching.

A) $[-1;0)$ B) $(-1;+\infty)$ C) $(0;+\infty)$ D) $(0;1)$

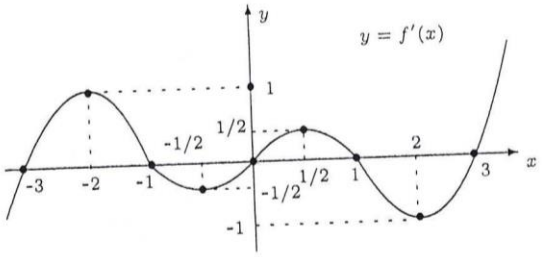
38. $\{x|x\in N, 2\le x^2\le 34\}$ to'plamning nechta qism-to'plamlari mavjud?

A) *5* B) *16* C) *32* D) *34*

39. R radiusli sferaga muntazam to'rtburchakli piramida ichki chizilgan. Piramida yon sirtining yuzining eng katta qiymatini toping.

A) $6R^2$ B) R^2 C) $4R^2$ D) $5R^2$

40. Rasmda $y=f'(x)$ funksiya grafigi tasvirlangan. $y=f(x)$ funksiyaning grafigiga $x_0=-2$ nuqtasida o'tkazilgan urinmaning burchak koeffitsiyentini toping.



A) *-1* B) *-2* C) *1* D) *0*

41. Ko'pyoqning bitta yoqi beshburchak bo'lsa, uning yoqlari soni eng kamida nechta bo'lishi mumkin?

A) *10* B) *5* C) *7* D) *6*

42. $\alpha>0$, $\beta<0$ haqiqiy sonlar uchun qanday munosabat doimo o'rinli?

A) $|\alpha+\beta|\le\alpha-\beta$ B) $|\alpha\beta|<-|\alpha||\beta|$
C) $|\alpha+\beta|<\alpha+\beta$ D) $|\alpha+\beta|\ge\alpha-\beta$

43. $y=-6sin^2x+\frac{3}{4}cos^2 2x+2\frac{1}{4}$ funksiyaning qiymatlar sohasiga tegishli manfiy butun sonlar nechta?

A) *3 ta* B) *4 ta* C) *5 ta* D) *2 ta*

44. Soddalashtiring: $\sqrt{22+12\sqrt{2}}+\frac{2\sqrt{2}-1}{\sqrt{2}+1}$

A) *7* B) $9+\sqrt{2}$ C) $7+\sqrt{2}$ D) *9*

45. Rombning tomoni 6 ga, o'tkir burchagi $60°$ ga teng. Rombning tomonlari va kichik diagonaliga urinuvchi aylana radiusini toping.

A) $2\sqrt{3}$ B) $0,5\sqrt{3}$ C) *3* D) $\sqrt{3}$

46. Agar $\alpha=15°$ va $\beta=30°$ bo'lsa,
$\sin\alpha\cdot\sin(\beta-\alpha)+\sin^2\left(\frac{\beta}{2}-\alpha\right)$ ni hisoblang.

A) $\frac{\sqrt{3}-2}{4}$ B) $\frac{2-\sqrt{3}}{4}$ C) 1 D) $\frac{1}{4}$

47. $\sqrt[3]{x^{\log_3\sqrt[3]{x}}}>3$ tengsizlikning yechimi bo'lmaydigan eng katta natural sonni toping.

A) *11* B) *27* C) *12* D) *28*

48. Asosi a ga, yon tomoni b ga teng bo'lgan teng yonli uchburchakning yon tomoniga tushirilgan balandlik uzunligini toping.

A) $h_b=\frac{b}{2a}\sqrt{4b^2-a^2}$ B) $h_b=\frac{b}{a}\sqrt{4b^2-2a^2}$
C) $h_b=\frac{a}{2b}\sqrt{4b^2-a^2}$ D) $h_b=\frac{a}{b}\sqrt{4b^2-2a^2}$

49. $y=f(x)$ funksiya D to'plamda noqat'iy kamayuvchi bo'lsin. D to'plamdan olingan ixtiyoriy a, b elementlari uchun $(a<b)$ quyidagi munosabatlardan qaysi biri o'rinli?

A) $f(a)\le f(b)$ B) $f(b)=f(a)$ C) $f(a)<f(b)$
D) $f(b)\le f(a)$

50. Hisoblang:
$\left(\frac{2\sqrt{15}-4}{\sqrt{15}+\sqrt{13}}+\frac{2\sqrt{13}+2}{\sqrt{15}-\sqrt{13}}+\sqrt{15}+11\sqrt{13}\right)\cdot(2-\sqrt{13})$

A) *-2310* B) *-42* C) *13* D) *-126*

51. $y=-x^2+6x-1$ funksiya grafigining simmetriya o'qi koordinatasi va (5;8) nuqta orasidagi masofani toping.

A) *7* B) *3* C) *2* D) *8*

52. $a=-2$ bo'lsa, $\int_a^{a+1}(ln(\sin^2 3x+\cos^2 3x)+1)dx$ aniq integralni hisoblang.

A) $\frac{\ln 2-1}{3}$ B) $2\sqrt{2}$ C) $\sqrt{2}$ D) *1*

53. $\int_0^1\frac{2x}{2x+1}dx$ integralni hisoblang.

A) $\ln\frac{e}{\sqrt{3}}$ B) $\ln 3e$ C) $\ln\frac{e}{2}$ D) *2*

54. $(0,2)^{\frac{1}{2}\log_5 4-\log_{25}16}$ sonidan katta bo'lmagan natural sonlar nechta?

A) *3* B) *1* C) *2* D) *0*

55. Agar barcha x, y lar uchun
$x^3+4x^2y+axy^2+3xy-bx^cy+7xy^2+dxy+y^2=x^3+y^2$
ayniyat bajarilsa, $|a+b+c|(a-c)$ ni toping. $(c>1)$

A) 2 B) 4 C) -7 D) -9

56. Agar $|x+3|=\frac{x}{2}+a$ tenglama bitta yechimga ega bo'lsa, a parametr nechta natural qiymatga ega?

A) *3* B) *2* C) *0* D) *1*

57. $\left(\frac{11}{13}\right)^{\frac{5}{\sqrt{x}}-3}=\left(\frac{13}{11}\right)^{\frac{7}{\sqrt{x}}+1}$ tenglamaning ildizlari yig'indisini toping.

A) *1* B) *36* C) *3* D) *16*

58. Beshta a_1, a_2, a_3, a_4, a_5 tub sonlar ayirmasi 6 ga teng bo'lgan arifmetik progressiyani tashkil qiladi. a_4+a_5 ni toping.

A) *52* B) *42* C) *48* D) *40*

59. a ning qanday qiymatida $(a-1)x^2+(2a+2)x+a-2=0$ kvadrat tenglama ikkita o'zaro teng ildizga ega bo'ladi?

A) 0,2 B) 1 C) 0 D) 0,5

129-variant

60. Agar $\log_{12} 27 = a$ bo'lsa, $\log_6 16$ ni a orqali ifodalang.

A) $\frac{3+a}{3-a}$ B) $\frac{4a-3}{3+a}$ C) $\frac{4(3-a)}{3+a}$ D) $\frac{3-a}{a+3}$

71. 72.

61. $y = \log_3(\operatorname{arctg} x + \operatorname{arcctg} x)$ funksiyaning $x = \frac{1}{2}$ nuqtadagi hosilasining qiymatini toping.

A) *0* B) *1* C) $-\log_3 2$ D) $\log_3 2$

62. ABC uchburchakning A ichki burchagidan o'tkazilgan bissektrisasi BC tomonni D nuqtada kesib o'tadi. Bunda $AD = BD$, $AB = 9$ va $AC = 16$. Uchburchakning BC tomonini toping.

A) *21* B) *20* C) *18* D) *24*

63. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(\frac{1}{2};2)$, $C(1;0)$. Uchburchak yuzini toping.

A) *1* B) *2* C) $\sqrt{2}$ D) $\sqrt{3}$

64. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(-2;0)$, $C(0;-2)$. O'tkir burchaklar medianalari orasidagi o'tmas burchak kosinusini toping.

A) $-\frac{4}{7}$ B) $-\frac{3}{5}$ C) $-\frac{4}{5}$ D) $-\frac{5}{7}$

65. Poyezd 5 minutda 10 kilometr masofani, motosikl 6 minutda 10 kilometr masofani bosib o'tdi. Motosiklchining tezligi poyezd tezligining necha foizini tashkil etadi?

A) $81\frac{2}{3}\%$ B) $83\frac{1}{3}\%$ C) $63\frac{1}{3}\%$ D) *80%*

66. Teng yonli ABC uchburchakning AC asosida D nuqta shunday olinganki AD=13, DC=15 tengliklar bajariladi. ABD va DBC uchburchaklarga ichki chizilgan aylanalar BD to'g'ri chiziqqa mos ravishda M va N nuqtalarda urinadilar. MN kesma uzunligini toping.

A) *1* B) $\sqrt{2}$ C) $\sqrt{3}$ D) *2*

67. Agar tasvirdagi raqamlar oq, qora bo'lsa, bitta nuqtaning rangini kodlash uchun necha bit kerak bo'ladi?

A) *2* B) *1* C) *4* D) *8*

68. AA, 2107 butun sonlarni barchasini yozish mumkin bo'lgan eng kichik asosli sanoq sistemasida shu sonlar raqamlarining yig'indisini hisoblang.

A) *26* B) *28* C) *30* D) *24*

69. Qanday dasturlar majmuasi kompyuterning va kompyuter tarmoqlarining ishini ta'minlaydi?

A) *tizim (sistema)li dasturiy ta'minot*
B) *yordamchi dasturiy ta'minot*
C) *dasturlar yaratish vositalari*
D) *amaliy dasturiy ta'minot*

70. MS Excel dasturida quyidagi formulaning natijasini aniqlang: =СТЕПЕНЬ(3;4)+СУММ(14;1;5)

A) *105* B) *101* C) *88* D) *84*

71. Web brauzerda matnning ko'rinishi quyidagicha bo'lishi uchun uning HTML kodi qanday bo'lishi kerak?
Bikvadrat tenglama $ax^4+bx^2+c=0$ ko'rinishida bo'ladi.

A) * Bikvadrat tenglama ax⁴ +bx² +c=0 ko'rinishida bo'ladi. *

B) * Bikvadrat tenglama ax⁴ +bx² +c=0 ko'rinishida bo'ladi. *

C) * <cite>Bikvadrat tenglama ax⁴ +bx² +c=0 ko'rinishida bo'ladi.</cite> *

D) * Bikvadrat tenglama ax⁴ +bx² +c=0 ko'rinishida bo'ladi. *

72. Paskal. Quyidagi dasturning ekrandagi natijasini aniqlang.

```
var a, b, s: integer;
Begin a:=2; s:=0; for b:=-10 to 6 do s:=s+a*b;
writeln (s); end.
```

A) *-68* B) *-54* C) *-60* D) *-52*

130-variant

37. $y = \sin x$ funksiya grafigi berilgan bo'lib, uni parallel ko'chirish yordamida $y = \sin(x + a) + b$ funksiya grafigi hosil qilingan. Bunday parallel ko'chirishda koordinata boshi qanday nuqtaga ko'chadi?
A) $N(-a; b)$ B) $N(a; b)$ C) $N(a; -b)$ D) $N(b; a)$

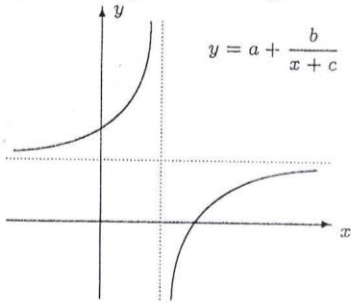
38. Agar barcha x, y lar uchun $x^3 + 4x^2y + axy^2 + 3xy - bx^cy + 7xy^2 + dxy + y^2 = x^3 + y^2$ ayniyat bajarilsa, $|a + b + c|(a + b)$ ni toping. $(c > 1)$
A) -3 B) -1 C) 2 D) -2

39. Tenglama ildizlari yig'indisini toping. $\arcsin\left(\frac{x^2}{3} - \frac{x}{2}\right) = \frac{\pi}{6}$
A) $1{,}5$ B) 4 C) $-2{,}5$ D) $-1{,}5$

40. $\log_2^4 x - \log_{0,5}^2 \frac{x^3}{8} + 9\log_2 \frac{32}{x^2} < 4\log_{0,5}^2 x$ tengsizlikning eng katta va eng kichik butun yechimlari ayirmasini toping.
A) 4 B) 2 C) 1 D) 3

41. $y > 0$ bo'lsin. To'rtburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0; 0)$, $B(0; y)$, $C(-7; y)$ va $D(-9; 0)$. To'rtburchak diagonallarining o'rtalari orasidagi masofani toping.
A) 1 B) y ga bog'liq C) $\sqrt{2}$ D) 2

42. Rasmda $y = a + \frac{b}{x + c}$ funksiya grafigi tasvirlangan. Quyidagilardan qaysi biri noto'g'ri?



A) $a^3 - c^3 > 0$ B) $b^2 - c^3 > 0$ C) $ab^2 - c > 0$
D) $b^3 - c^3a > 0$

43. Rombning tomoni 6 ga, o'tkir burchagi $60°$ ga teng. Rombning tomonlari va kichik diagonaliga urinuvchi aylana radiusini toping.
A) $0{,}5\sqrt{3}$ B) 3 C) $\sqrt{3}$ D) $2\sqrt{3}$

44. Hisoblang: $\cos 10° \cdot \cos 50° \cdot \cos 70°$.
A) $\frac{1}{8}$ B) $\frac{\sqrt{2}}{2}$ C) $\frac{\sqrt{2}}{4}$ D) $\frac{\sqrt{3}}{8}$

45. Asoslarining radiuslari 4 va 6 ga teng bo'lgan kesik konus va unga tengdosh silindrning balandliklari bir xil. Silindr asosining radiusini toping.
A) $\sqrt{23}$ B) $\sqrt{29}$ C) $\sqrt{25\frac{2}{3}}$ D) $\sqrt{25\frac{1}{3}}$

46. Hisoblang: $2 + \text{tg}^2\left(-\arccos\frac{1}{5}\right)$
A) -26 B) 16 C) 24 D) 26

47. Hisoblang: $\frac{1}{\log_3 9} - \frac{1}{\log_9 9} + \frac{1}{\log_{27} 9} - \frac{1}{\log_{81} 9} + \frac{1}{\log_{243} 9} - \frac{1}{\log_{729} 9} + \frac{1}{\log_{2187} 9}$.
A) 1 B) 2 C) 0 D) -1

48. Teng yonli ucburchakning yon tomoniga o'tkazilgan medianasi asosi bilan $30°$ li burchak tashkil etadi. Uchburchakning asosidagi burchak tangensini toping.
A) $\sqrt{3}$ B) $2\sqrt{3}$ C) 3 D) $1{,}5\sqrt{2}$

49. $\int \left(x^2 + \sqrt[3]{x} - 7\right) dx$ ni hisoblang.
A) $\frac{x^3}{3} + \frac{3x\sqrt[3]{x}}{4} - 7x + C$
B) $x^3 + \frac{x\sqrt[3]{x}}{4} - 7x + C$
C) $\frac{x^3}{3} + \frac{4x\sqrt[3]{x}}{3} - \frac{7x}{3} + C$
D) $x^3 + \frac{\sqrt[3]{x}}{4} - 7x + C$

50. $y = \log_7(\text{arctg}\, x + \text{arcctg}\, x)$ funksiyaning $x = \frac{1}{2}$ nuqtadagi hosilasining qiymatini toping.
A) $\log_7 2$ B) 0 C) 1 D) $-\log_7 2$

51. O'zaro teng bo'lmagan x va y sonlari $x^2 - 36x = y^2 - 36y$ tenglikni qanoatlantirsa, $x + y$ ni toping.
A) 0 B) 36 C) 18 D) 24

52. $\{x | x \in N, -1 < x < 5\}$ to'plamning nechta qism-to'plamlari mavjud?
A) 4 B) 16 C) 6 D) 32

53. Kemaga yana 30 ta yo'lovchi chiqqanidan so'ng, kemadagi ichimlik suvi oldingiday 60 kunga emas, 50 kunga yetishi ma'lum bo'ldi. Dastlab kemada nechta odam bo'lgan?
A) 110 B) 40 C) 140 D) 150

54. A va B to'plamlarning birlashmasi qanday belgilanadi?
A) $A + B$ B) $A \cup B$ C) $A \triangle B$ D) $A \cap B$

55. $ABCD$ parallelogrammda CD tomonni D uchidan boshlab hisoblaganda 1:2 nisbatda bo'luvchi AN to'g'ri chiziq o'tkazilgan. Agar AND uchburchakning yuzi 4 ga teng bo'lsa, parallelogramning yuzini toping.
A) $12\sqrt{2}$ B) 24 C) 12 D) 18

56. Arifmetik progressiya n-hadi $a_n = -\frac{n+2}{5}$ ga teng. Progressiyaning ayirmasini toping.
A) -2 B) $-0{,}5$ C) -1 D) $-0{,}2$

57. $(x^2 - 1)\sqrt{6 - x - x^2} \le 0$ tengsizlikning butun yechimlari nechta?
A) 3 B) 4 C) 5 D) 0

58. [100; 600] kesmada 2, 3, 5 va 7 sonlariga bo'linganda qoldiq 1 ga teng bo'ladigan natural sonlar nechta?
A) 4 B) 2 C) 1 D) 3

59. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0; 0)$, $B(-1; -5)$, $C(-2; 0)$. Uchburchak yuzini toping.
A) $4\sqrt{2}$ B) 4 C) 5 D) $3\sqrt{3}$

60. Agar $\frac{22}{x} = \frac{m^2}{n^2 - m^2}$ va $\frac{n^2}{n^2 - m^2} = 12$ bo'lsa, x ni toping.
A) -1 B) 2 C) 1 D) -2

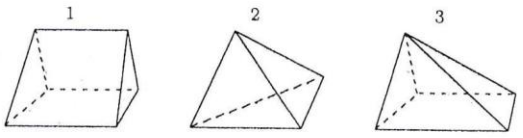
61. Tenglama ildizlari yig'indisini toping. $(x - 3)^3 + (2x + 1)^3 = 27x^3 - 8$
A) $1{,}5$ B) $\frac{1}{6}$ C) $\frac{2}{3}$ D) $\frac{7 - \sqrt{17}}{4}$

62. Muntazam uchburchakli piramida asosining tomonidan unga ayqash yon qirraga perpendikular bo'lgan tekislik o'tkazilgan. Kesuvchi tekislik yon qirrani uchidan hisoblaganda 3:2 nisbatda kesadi. Asos tomoni $\sqrt{2}$ ga teng bo'lsa, piramida yon sirtining yuzini toping.
A) 2 B) $2{,}5$ C) 3 D) $1{,}5$

63. $a = 5$ bo'lsa, $\int_a^{a+1} (\sin^2 3x + \cos^2 3x)dx$ integralni hisoblang.

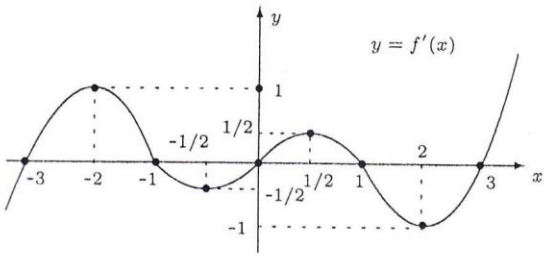
A) $2\sqrt{2}$ B) *1* C) $\sqrt{2}$ D) $\frac{\sqrt{2}-1}{3}$

64. Quyidagi ko'pyoqlardan qaysi birida 5 ta yoq, 8 ta qirra va 5 ta uchi bor?



A) *2* B) *1* C) *3* D) *1, 2*

65. Rasmda $y = f'(x)$ funksiya grafigi tasvirlangan. $y = f(x)$ funksiya grafigiga $x_0 = 2$ nuqtada o'tkazilgan urinmaning burchak koeffitsiyentini toping.



A) -1 B)0 C) 1 D) 3

66. Agar $f(x) = ax^7 + bx^3 - 2$ funksiya uchun $f(-3) = -2$ shart bajarilsa, $f(3)$ qiymatni toping.

A) *bir qiymatli aniqlanmaydi* B) *-1* C)-2 D) *1*

67. 1600 bit necha baytga teng?

A) *20,2* B) *0,02* C)*200* D) *20*

68. $EA0A$, $908E$ butun sonlarni barchasini yozish mumkin bo'lgan eng kichik asosli sanoq sistemasida shu sonlar yig'indisini hisoblang va natijani o'nlik sanoq sistemasida tasvirlang.

A) *65208* B) *96920* C) *116049* D)*80019*

69. proba.txt fayli joylashgan katalogni ko'rsating:
$C:\doc\1\proba.txt$

A) *proba* B) $C:\backslash$ C)*1* D) *doc*

70. MS Excel. A1=10; B1=14; B2=6 bo'lsa, =МИН(A1-B2;A2-B1) funksiyaning natijasi 4 ga teng bo'lishi uchun A2 katakda qanday son bo'lishi kerak?

A) *16* B) *17* C) *15* D)*18*

71. Rasm joylashtirish tegi to'g'ri ko'rsatilgan qatorni tanlang.

A) *<a href="fayl nomi">* B)*<img src="fayl nomi">*
C) *<frame src="fayl nomi">* D) *<img scr="fayl nomi">*

72. Paskal. Quyidagi dasturning ekrandagi natijasini aniqlang.

```
var a, b: integer; s:real;
Begin a:=2; s:=1; for b:=-1 to 6 do s:=s*a*b;
writeln (s:6:2); end.
```

A) *52.00* B) *184* C) *184.00* D) *0.00*

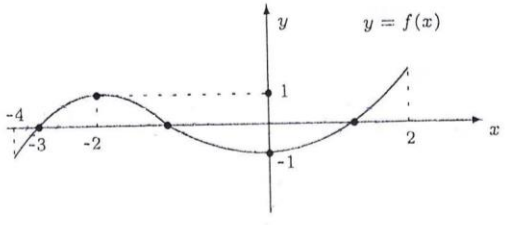
131-variant

MATEMATIKA (INFORMATIKA BILAN)

37. Sonning 8 foizi 40 foiziming necha foizini tashkil qiladi?

A) 25 B) 15 C) 20 D) 5

38. Rasmda $y = f(x)$ funksiya grafigi berilgan. $y = f(x)$ funksiya ekstremum nuqtalari koordinatalari yig'indisini toping. $(x \in [-3; 1])$



A) -2 B) -1 C) -5 D) -3

39. Sonlarni o'sish tartibida joylashtiring:
$a = \cos(-1)$, $b = \cos(-3,2)$, $c = \cos(-2,7)$

A) $c < a < b$ B) $b < c < a$ C) $c < b < a$ D) $a < b < c$

40. Agar barcha x, y lar uchun
$x^3 + 4x^2y + axy^2 + 3xy - bx^cy + 7xy^2 + dxy + y^2 = x^3 + y^2$
ayniyat bajarilsa, $|a + b + c|(a - b - c + d)$ ni toping. $(c > 1)$

A) 4 B) -16 C) -10 D) 2

41. $y = 4\cos^2 x + \sin^2 x$ funksiya butun qiymatlari yig'indisini toping.

A) 10 B) *bunday qiymatlar cheksiz ko'p* C) 9
D) *bunday qiymatlar mavjud emas*

42. Teng yonli ucburchakning yon tomoniga o'tkazilgan mediana va asosi orasidagi burchak tangensi 4 ga teng.
Ucburchakning asosidagi burchak tangensini toping.

A) 15 B) $2\sqrt{2}$ C) 12 D) 16

43. $y > 0$ bo'lsin. To'rtburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(1;0)$, $B(1;y)$, $C(-3;y)$ va $D(-5;0)$. To'rtburchak diagonallarining o'rtalari orasidagi masofani toping.

A) *y ga bog'liq* B) $\sqrt{2}$ C) 2 D) 1

44. Agar $\vec{a}(-4;8;-12)$ va $\vec{b}(-6;-3;9)$ berilgan bo'lsa, $\frac{\vec{a}}{2}$ va $\frac{\vec{b}}{3}$ vektorlar orasidagi burchak kosinusini toping.

A) $-\frac{9}{16}$ B) $-\frac{9}{13}$ C) $-\frac{9}{11}$ D) $-\frac{9}{14}$

45. $(0,2)^{\frac{1}{2}\log_5 2 - \log_{25} 4}$ sonidan katta bo'lmagan natural sonlar nechta?

A) 3 B) 0 C) 1 D) 2

46. $\dfrac{\operatorname{tg}^4 2\alpha + 1}{\operatorname{tg}^2 2\alpha + \operatorname{ctg}^2 2\alpha} - \dfrac{1}{\cos^2 2\alpha}$ ni soddalashtiring.

A) $-\operatorname{tg}^2 2\alpha$ B) $\operatorname{tg}^2 2\alpha$ C) -1 D) 0

47. 2015 va 2016 sonlarining umumiy natural bo'luvchilari nechta?

A) 4 B) 0 C) 1 D) 2

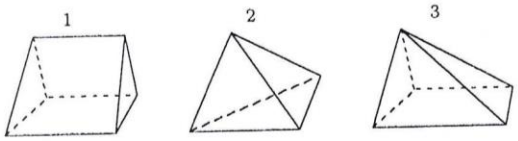
48. $y = \sin x$ funksiya grafigi berilgan bo'lib, uni parallel ko'chirish yordamida $y = \sin(x + a) - b$ funksiya grafigi hosil qilingan. Bunday parallel ko'chirishda koordinata boshi qanday nuqtaga ko'chadi?

A) $N(-a;-b)$ B) $N(a;b)$ C) $N(b;a)$ D) $N(-a;b)$

49. $y = \log_5(\sin^2 x + \cos^2 x)$ funksiyaning $x = \frac{1}{2}$ nuqtadagi hosilasining qiymatini toping.

A) $\log_5 2$ B) 1 C) $-\log_5 2$ D) 0

50. Quyidagi ko'pyoqlardan qaysi birida 5 ta yoq, 9 ta qirra va 6 ta uchi bor?



A) 1 B) 2 C) 3 D) 1, 3

51. $\{x | x \in N, x^2 \leq 35\}$ to'plamning nechta qism-to'plamlari mavjud?

A) 16 B) 5 C) 35 D) 32

52. Qavariq $ABCDEF$ oltiburchakda ichki burchaklar o'zaro teng. Agar $AB = 3$, $BC = 4$, $CD = 5$, $EF = 4$ bo'lsa, AF tomon DE tomondan qancha uzun?

A) 1 B) 3 C) *bir qiymatli aniqlab bo'lmaydi* D) 2

53. Parallepipedning asoslari tomoni $\sqrt{2}$ ga teng kvadratlardan, barcha yon yoqlari romblardan iborat. Yuqori asosining uchlaridan biri ostki asosining barcha uchlaridan baravar uzoqlikda joylashgan. Parallelepipedning hajmini toping

A) 1 B) 2 C) 4 D) $\sqrt{2}$

131-variant

54. a va b natural sonlarning eng katta umumiy bo'luvchisi 5 ga teng bo'lsa, $a+2b$ va b sonlarning eng katta umumiy bo'luvchisi nechaga teng?

A) *5* B) *4* C) *1* D) *bir qiymatli aniqlab bo'lmaydi*

55. $\sqrt{3}\left(4^x+2^{2x-1}\right)<3^x+3^{x+1}$ tengsizlikni yeching.

A) $(0;2)$
B) $(-\infty;1,5)$
C) $(-\infty;0)\cup(0;3)$
D) $(-\infty;-1)\cup(-1;0)\cup(0;1)\cup(1;+\infty)$

56. $\log_{\frac{1}{5}}\log_{\frac{1}{4}}\frac{x+4}{2x-1}<0$ tengsizlikni qanoatlantiruvchi barcha butun sonlar yig'indisini toping.

A) -26 B) -30 C) -21 D) *0*

57. Aniq integralni hisoblang: $\int\limits_0^2\left(x^3-5\sqrt[3]{x^2}+7\right)dx$.

A) $18-6\sqrt[3]{4}$ B) $16-6\sqrt[3]{4}$ C) $16+6\sqrt[3]{4}$ D) $18+6\sqrt[3]{4}$

58. $a=5$ bo'lsa, $\int\limits_a^{a+1}(ln(\sin^2 2x+\cos^2 2x)+1)dx$ aniq integralni hisoblang.

A) $2\sqrt{2}$ B) $\sqrt{2}$ C) $\frac{\ln 2-1}{2}$ D) *1*

59. ABC uchburchakning BC tomoniga AD to'g'ri chiziq shunday o'tkazilganki, natijada AC asosli teng yonli ADC uchburchak hosil bo'lgan. Agar ABC va ABD uchburchaklar perimetrlari mos ravishda 51 va 40 ga teng bo'lsa, AC tomon uzunligini toping.

A) *14* B) *17* C) *12* D) *11*

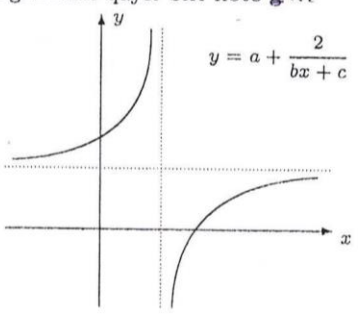
60. Agar $|x+5|=\frac{x}{2}+a$ tenglama a parametrning nechta natural qiymatida yechimga ega emas?

A) *3* B) *1* C) *0* D) *2*

61. R radiusli sferaga muntazam to'rtburchakli piramida ichki chizilgan. Piramida yon sirtining yuzining eng katta qiymatini toping.

A) R^2 B) $4R^2$ C) $6R^2$ D) $5R^2$

62. Rasmda $y=a+\frac{2}{bx+c}$ funksiya grafigi tasvirlangan. Quyidagilardan qaysi biri noto'g'ri?



A) $ab^2c<0$ B) $a-b^3+c>0$ D) $b-a-c<0$
D) $a-b+c>0$

63. $\frac{x+6}{x(x-7)}-\frac{4}{(7-x)^2}=\frac{1}{x-7}$ tenglamani yeching.

A) 21 B) 4, 2 C) 2, 1 D) 42

64. Geometrik progressiya n-hadi $b_n=\frac{\sqrt{3}}{4}\cdot 5^{n+3}$ ga teng. Progressiyaning maxrajini toping.

A) *5* B) *0,2* C) *0,5* D) -5

65. $x=-y$, $z=-2$ bo'lsa, $\frac{x^3+y^3+z^3-3xyz}{x^2+y^2+z^2-xy-xz-yz}$ ifodaning qiymatini toping.

A) *1* B) *0* C) -2 D) *2*

66. $2\cdot\cos(2-3x)=1$ tenglamaning $[-3;5]$ kesmadagi eng k ildizini toping.

A) $\frac{11\pi+6}{9}$ B) $\frac{2\pi+5}{9}$ C) $\frac{5\pi}{9}+\frac{1}{3}$ D) $3+\frac{2\pi}{9}$

67. Qanday qurilmani Semyuel Morze ixtro qilgan?

A) *elektromagnit telegraf* B) *telefon* C) *televizor*
D) *telefaks*

68. Quyidagi mantiqiy ifoda qiymatini aniqlang:
$\left((1+3)^{\frac{1}{2}}=2\right)\wedge\neg\left((5-1)^{\frac{1}{2}}>2\right)\vee\left(3^3+1\right)<250$

A) *Rost*
B) *Sodda mulohazalardan ba'zilarini qiymatini aniqlab bo'lmaydi*
C) *Yolg'on*
D) *Mantiqiy ifoda xato yozilgan*

69. Qanday dasturlar majmuasi kompyuterning va kompyut tarmoqlarining ishini ta'minlaydi?

A) *yordamchi dasturiy ta'minot*
B) *dasturlar yaratish vositalari*
C) *tizim (sistema)li dasturiy ta'minot*
D) *amaliy dasturiy ta'minot*

70. MS Excel dasturida formulaning natijasini aniqlang:
$A1=45$; $B1=6$; $C1=5,6$;
$=\text{ОСТАТ}(A1;B1)+\text{ЦЕЛОЕ}(C1)$

A) *8* B) *9* C) *6,5* D) *12*

71. HTML hujjat tilida 6 ta ustun va 5 ta satrdan iborat jad tuzishda nechta <tr> va <td> teglaridan foydalaniladi?

A) *5 ta <tr>, 6 ta <td>* B) *6 ta <tr>, 5 ta <td>*
C) *5 ta <tr>, 30 ta <td>* D) *6 ta <tr>, 30 ta <td>*

72. Paskal tilining faqat modullari keltirilgan javobni aniqlan

A) *SYSTEM; CLRSCR; GRAPH*
B) *SYSTEM; CRT; GRAPH*
C) *SYSTEM; CRT; CLEARDEVICE*
D) *SYSTEM; SRT; GRAPH*

132-variant

MATEMATIKA (INFORMATIKA BILAN)

37. $y = |x-2| + |x-3| + |x-4|$ funksiyaning eng kichik qiymatini toping.

A) 2 B) 3 C) 1 D) 0

38. Agar barcha x, y lar uchun $x^3 + 4x^2y + axy^2 + 3xy - bx^cy + 7xy^2 + dxy + y^2 = x^3 + y^2$ ayniyat bajarilsa, $|a+b+c|(a+b-d)$ ni toping. $(c > 1)$

A) 3 B) 0 C) -2 D) -4

39. $\dfrac{1}{|x+1|-1} \geq \dfrac{2}{|x+1|-2}$ tengsizlikning eng katta manfiy butun yechimini toping.

A) -1 B) -4 C) -2 D) -3

40. $y = \sin x$ funksiya grafigi berilgan bo'lib, uni parallel ko'chirish yordamida $y = \sin(x+a) + b$ funksiya grafigi hosil qilingan. Bunday parallel ko'chirishda koordinata boshi qanday nuqtaga ko'chadi?

A) $N(a;-b)$ B) $N(a;b)$ C) $N(b;a)$ D) $N(-a;b)$

41. [50; 200] kesmada 3 ga bo'linganda qoldiq 1 ga, 4 ga bo'linganda qoldiq 2 ga, 5 ga bo'linganda qoldiq 3 ga va 6 ga bo'linganda qoldiq 4 ga teng bo'ladigan natural sonlar nechta?

A) 0 B) 3 C) 1 D) 2

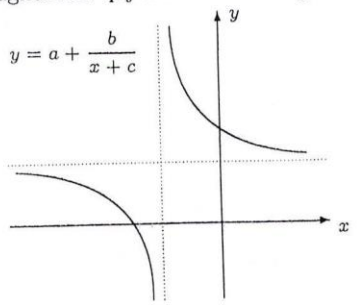
42. $\alpha + \beta + \gamma = \pi$, $\cos\dfrac{\alpha}{2}\cos\dfrac{\beta}{2}\cos\dfrac{\gamma}{2} = \dfrac{1}{4}$ bo'lsa, $\sin\alpha + \sin\beta + \sin\gamma$ ning qiymatini toping.

A) 1 B) $\sqrt{2+\sqrt{2}}$ C) $\sqrt{2}$ D) 2

43. $\dfrac{1-x}{\sqrt{x}-1} = \dfrac{5}{3-\sqrt{x}}$ tenglamaning haqiqiy ildizlari yig'indisini toping.

A) 4 B) 16 C) 20 D) 12

44. Rasmda $y = a + \dfrac{b}{x+c}$ funksiya grafigi tasvirlangan. Quyidagilardan qaysi biri doim to'g'ri?



A) $a-b+c>0$ B) $b-a-c>0$ C) $a+b+c>0$ D) $a+b-c>0$

45. $y = \log_2(\operatorname{arctg} 2x + \operatorname{arcctg} 2x)$ funksiyaning $x = \dfrac{1}{2}$ nuqtadagi ikkinchi tartibli hosilasining qiymatini toping.

A) 0 B) $\log_2 3$ C) 1 D) $-\log_2 2$

46. $\alpha > 0$, $\beta < 0$ haqiqiy sonlar uchun qanday munosabat doimo o'rinli?

A) $|\alpha+\beta| \geq \alpha - \beta$ B) $|\alpha+\beta| < \alpha+\beta$
C) $|\alpha+\beta| \leq \alpha - \beta$ D) $|\alpha\beta| < -|\alpha||\beta|$

47. $\dfrac{c(a-b)^3 + a(b-c)^3 + b(c-a)^3}{c^2(b-a) + a^2(c-b) + b^2(a-c)}$ ifodani soddalashtiring.

A) $a-b-c$ B) $a+b-c$ C) $a-b+c$ D) $a+b+c$

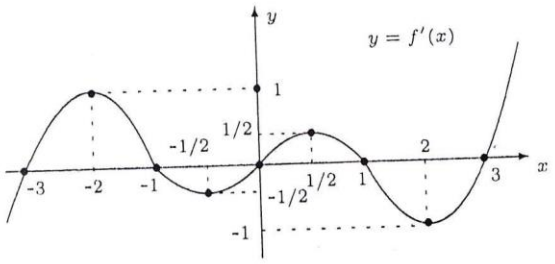
48. $\begin{cases} y^2 + xy = 12 \\ x^2 + xy = 4 \end{cases}$ tenglamalar sistemasini yeching.

A) $(-1;-3)$ B) $(-1;-3)$ va $(1;3)$ C) $(1;3)$ va $(3;1)$ D) $(1;3)$

49. $\left|\dfrac{|x+2|-|x|}{\sqrt{4-x^2}}\right| \geq 0$ tengsizlikni qanoatlantirmaydigan eng katta manfiy va eng kichik natural sonlar nisbatini toping.

A) -4 B) 0 C) -3 D) -1

50. Rasmda $y = f'(x)$ funksiya grafigi tasvirlangan. $[-3;3]$ kesmada shu funksiyaning nechta ekstremum nuqtasi bor?



A) 1 B) 4 C) 3 D) 2

51. Agar $|x+3| = \dfrac{x}{2} + a$ tenglama a parametrning nechta natural qiymatida yechimga ega emas?

A) 1 B) 0 C) 3 D) 2

52. $a_1, a_2, \ldots, a_8$ ketma-ketlikda ixtiyoriy uchta ketma-ket hadining yig'indisi 50 ga teng. Agar ketma-ketlikning uchinchi hadi 7 ga teng bo'lsa, birinchi va sakkizinchi hadlarining yig'indisi nechaga teng?

A) 47 B) 43 C) 14 D) 7

132-variant

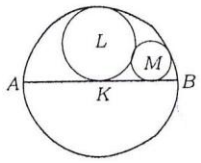
53. $y > 0$ bo'lsin. To'rtburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(0;y)$, $C(-6;y)$ va $D(-8;0)$. To'rtburchak diagonallarining o'rtalari orasidagi masofani toping.

A) *2* B) *y ga bog'liq* C) $\sqrt{2}$ D) *1*

54. Asoslarining radiuslari 5 va 6 ga teng bo'lgan kesik konus va unga tengdosh silindrning balandliklari bir xil. Silindr asosining radiusini toping.

A) $\sqrt{31}$ B) $\sqrt{30\frac{2}{3}}$ C) $\sqrt{29}$ D) $\sqrt{30\frac{1}{3}}$

55. AB kesma K aylananing diametri bo'lsin. L aylana K aylanaga hamda AB to'g'ri chiziqqa K aylananing markazida urinadi; M aylana K va L aylanaga hamda AB to'g'ri chiziqqa urinadi (chizmaga qarang). Agar M doira yuzasi 2 ga teng bo'lsa, L doira yuzasini toping.



A) *12* B) *4* C) *8* D) *aniqlab bo'lmaydi*

56. $\{x | x \in N, -5 < x < 5\}$ to'plamning nechta qism-to'plamlari mavjud?

A) *16* B) *32* C) *4* D) *10*

57. $(0,2)^{\frac{1}{2}\log_5 2 - \log_{25} 4}$ sonidan katta bo'lmagan natural sonlar nechta?

A) *3* B) *0* C) *2* D) *1*

58. Poyezd 5 minutda 9 kilometr masofani, motosikl 6 minutda 9 kilometr masofani bosib o'tdi. Motosiklchining tezligi poyezd tezligining necha foizini tashkil etadi?

A) $63\frac{1}{3}\%$ B) *80%* C) $81\frac{2}{3}\%$ D) $83\frac{1}{3}\%$

59. Qaysi jism(lar)ning simmetriya tekisliklari chekli sonda?
1) shar; 2) prizma; 3) konus; 4) kub

A) *1* B) *2, 4* C) *2, 3* D) *1, 4*

60. Qavariq $ABCDEF$ oltiburchakda ichki burchaklar o'zaro teng. Agar $AB = 3$, $BC = 4$, $CD = 5$, $EF = 4$ bo'lsa, AF tomon DE tomondan qancha uzun?

A) *3* B) *2* C) *bir qiymatli aniqlab bo'lmaydi* D) *1*

61. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(-1;2)$, $C(-2;0)$. Uchburchak yuzini toping.

A) $2\sqrt{3}$ B) *3* C) $2\sqrt{2}$ D) *2*

62. To'g'ri burchakli uchburchakning gipotenuzasi 9 ga, unga ichki chizilgan aylana radiusi 1 ga teng. Uchburchakning perimetrini toping.

A) *25* B) *18* C) *20* D) *28*

63. $a = -4$ bo'lsa, $\int_a^{a+1} (ln(\sin^2 3x + \cos^2 3x) + 1)dx$ aniq integralni hisoblang.

A) $\frac{\ln 2 - 1}{3}$ B) $\sqrt{2}$ C) $2\sqrt{2}$ D) *1*

64. Muntazam uchburchakli piramida asosining tomonidan unga ayqash yon qirraga perpendikular bo'lgan tekislik o'tkazilgan. Kesuvchi tekislik yon qirrani uchidan hisoblaganda 3:2 nisbatda kesadi. Asos tomoni $\sqrt{2}$ ga teng bo'lsa, piramida yon sirtining yuzini toping.

A) *2,5* B) *1,5* C) *3* D) *2*

65. $y = 2 + \cos\frac{x}{2}$; $y = 0$; $x = 0$; $x = \frac{2\pi}{3}$ chiziqlar bilan chegaralangan shaklning yuzini toping.

A) $\frac{2\pi}{3} + 1$ B) $\frac{4\pi}{3} + \sqrt{3}$ C) $\frac{\pi}{3} + 1$ D) $\frac{\pi}{2}$

66. Hisoblang: $\cos 45° \cdot \cos 15° \cdot \cos 105°$.

A) *1* B) $\frac{\sqrt{2}}{8}$ C) $-\frac{\sqrt{2}}{8}$ D) -1

67. Quyidagi gapdagi axborot hajmini hisoblang (qo'shtirnoqlar hisobga olinmasin):
«Dars - muqaddas»

A) *17 bayt* B) *15 bit* C) *120 bayt* D) *120 bit*

68. 22012, 12202 butun sonlarni barchasini yozish mumkin bo'lgan eng kichik asosli sanoq sistemasida shu sonlar raqamlarining yig'indisini hisoblang.

A) *112* B) *32* C) *24* D) *1110*

69. Superkompyuterlarda foydalaniladigan ko'p foydalanuvchili operatsion tizim (sistema)ni toping

A) *UNIX* B) *WINDOWS XP* C) *MS-DOS*
D) *WINDOWS 95*

70. $A1$=-3, $B1$=7, $B2$=5 bo'lsin. Quyidagi formula natijasi 6 ga teng bo'lishi uchun $A2$ katakka kiritilishi kerak bo'lgan qiymatni aniqlang.
=ЕСЛИ(И($A1+B2<=A2*B1$;$A1*B1<>0$); $A1+B2+B1-A2$;$A1*B1+B2+A2$)

A) *5* B) *1* C) *3* D) *0*

71. Web brauzerda matnning ko'rinishi quyidagicha bo'lishi uchun uning HTML kodi qanday bo'lishi kerak?
Bikvadrat tenglama $ax^5 + bx^2 + c = 0$ ko'rinishida bo'lmaydi.

A) * Bikvadrat tenglama ax ⁵ +bx² +c=0 ko'rinishida bo'lmaydi. *
B) * <s><cite>Bikvadrat tenglama ax ⁵ +bx² +c=0 ko'rinishida bo'lmaydi.</cite></s> *
C) * Bikvadrat tenglama <s>ax ⁵ +bx² +c=0</s> ko'rinishida bo'lmaydi. *
D) * Bikvadrat tenglama ax⁵ +bx² +c=0 ko'rinishida bo'lmaydi. *

72. Quyidagi to'plamni Paskal tilida yozilishini aniqlang: $X^2 + Y^2 < R^2$, $y \geq 0$, $x < a$

A) *(x*x+sqr(y)<sqr(r)) and (x<=a) or (y>0)*
B) *(x*x+sqr(y)<r*r) and (x<a) and Not(y<0)*
C) *(X*X+Y*Y)<R*R) and (y>=0) and Not(x>A)*
D) *(sqr(x)+sqr(y)<sqr(r)) or (x<a) or (y>=0)*

133-variant

MATEMATIKA (INFORMATIKA BILAN)

37. $2+\left(\frac{x}{x-1}\right)^4-3\left(\frac{x}{x-1}\right)^2=0$ tenglamaning ildizlari ko'paytmasini toping.

A) 2 B) 1 C) $4\frac{1}{2}$ D) $3\frac{1}{6}$

38. $y=|x-2|+|x-3|+|x-4|$ funksiyaning eng kichik qiymatini toping.

A) 3 B) 1 C) 0 D) 2

39. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(-1;-4)$, $C(-2;0)$. Uchburchak yuzini toping.

A) $3\sqrt{2}$ B) 4 C) $2\sqrt{3}$ D) 3

40. Geometrik progressiya n-hadi $b_n=\frac{\sqrt{3}}{2}\cdot 5^{n-4}$ ga teng. Progressiyaning maxrajini toping.

A) -5 B) 0,2 C) 0,5 D) 5

41. Hisoblang: $\log_{64}\left(0,(3)^{\log_3\left(1+\frac{1}{2}+\frac{1}{2^2}+\frac{1}{2^3}+\cdots\right)}\right)$

A) $-\frac{1}{3}$ B) $\frac{1}{6}$ C) 1 D) $-\frac{1}{6}$

42. $y=4\sin^2 2x+4\sqrt{3}\sin x\cos x+1,5\cos 4x+1,5-2\sqrt{3}$ funksiyaning eng kichik qiymatini toping.

A) $4-4\sqrt{3}$ B) 0 C) 4 D) $-2\sqrt{3}$

43. Kvadratga ikkita doira ichki chizilgan. Radiusi 1,5 ga teng bo'lgan birinchi doira kvadratning ikkita qo'shni tomonlariga urinadi, radiusi 2,5 ga teng bo'lgan ikkinchi doira kvadratning qolgan ikkita tomoni va birinchi doiraga urinadi. Kvadratning yuzini toping.

A) $8(2\sqrt{2}+3)$ B) $2(3\sqrt{2}+1)$ C) $2(2\sqrt{2}+3)$ D) $4(2\sqrt{2}+1)$

44. Teng yonli ABC uchburchakning AC asosida D nuqta shunday olinganki AD=23, DC=25 tengliklar bajariladi. ABD va DBC uchburchaklarga ichki chizilgan aylanalar BD to'g'ri chiziqqa mos ravishda M va N nuqtalarda urinadilar. MN kesma uzunligini toping.

A) 1 B) 2 C) $\sqrt{3}$ D) $\sqrt{2}$

45. Parallelepipedning asoslari tomoni 6 ga teng kvadratlardan, barcha yon yoqlari romblardan iborat. Yuqori asosining uchlaridan biri ostki asosining barcha uchlaridan baravar uzoqlikda joylashgan. Parallelepipedning hajmini toping.

A) $54\sqrt{2}$ B) $72\sqrt{2}$ C) $108\sqrt{2}$ D) 81

46. Agar $|x-2|=\frac{x}{2}+a$ tenglama bitta yechimga ega bo'lsa, a ning qiymatini toping.

A) 2 B) -1 C) -2 D) -3

47. Ushbu $f(x)=\frac{2x-1}{x^2-x-2}$ funksiyaning boshlang'ich funksiyasini toping.

A) $\ln(|x+2|\cdot|x-1|)+C$ B) $\ln(|x-2|\cdot|x+1|)+C$
C) $\ln|x-2|+C$ D) $\ln|x+1|+C$

48. [200; 800] kesmada 2, 3, 5 va 7 sonlariga bo'linganda qoldiq 1 ga teng bo'ladigan natural sonlar nechta?

A) 4 B) 2 C) 3 D) 1

49. To'g'ri tenglikni aniqlang. ($a\in R$)

A) $(\sqrt{a})^2=a$ B) $(-a)^{\frac{5}{7}}=a^{\frac{5}{7}}$ C) $a^0=1$, $a\neq 0$
D) $\sqrt{a^2}=a$

50. Hisoblang:
$\left(\frac{2\sqrt{15}-4}{\sqrt{15}+\sqrt{13}}+\frac{2\sqrt{13}+2}{\sqrt{15}-\sqrt{13}}+\sqrt{15}+11\sqrt{13}\right)\cdot(2-\sqrt{13})$

A) -42 B) -126 C) -2310 D) 13

51. $y=\log_3(\operatorname{arctg}x+\operatorname{arcctg}x)$ funksiyaning $x=\frac{1}{2}$ nuqtadagi hosilasining qiymatini toping.

A) 1 B) $-\log_3 2$ C) 0 D) $\log_3 2$

52. Muntazam uchburchakli piramida asosining tomonidan unga ayqash yon qirraga perpendikular bo'lgan tekislik o'tkazilgan. Kesuvchi tekislik yon qirrani uchidan hisoblaganda 3:2 nisbatda kesadi. Asos tomoni $\sqrt{2}$ ga teng bo'lsa, piramida yon sirtining yuzini toping.

A) 3 B) 2,5 C) 2 D) 1,5

53. $\log_{\frac{1}{9}}\log_{\frac{1}{4}}\frac{x+4}{2x-1}<0$ tengsizlikni qanoatlantiradigan eng kichik butun sonni toping.

A) 0 B) -10 C) -8 D) -5

54. Samandarning o'g'il bola sinfdoshlari soni qiz bola sinfdoshlari sonidan 7 taga ko'p. Sinfda o'g'il bolalar soni qiz bolalar sonidan 2 marta ko'p. Diyora – Samandarning sinfdoshi. Diyoraning sinfdosh dugonalari nechta?

A) 7 B) 9 C) 6 D) 8

55. Agar barcha x, y lar uchun
$x^3+4x^2y+axy^2+3xy-bx^cy+7xy^2+dxy+y^2=x^3+y^2$
ayniyat bajarilsa, $a+b$ ni toping. ($c>1$)

A) -2 B) -3 C) -1 D) 2

56. $y=\operatorname{arctg}x$ funksiya grafigi berilgan bo'lib, uni parallel ko'chirish yordamida $y=\operatorname{arctg}(x-a)+b$ funksiya grafigi hosil qilingan. Bunday parallel ko'chirishda koordinata boshi qanday nuqtaga ko'chadi?

A) $N(-a;b)$ B) $N(a;-b)$ C) $N(b;a)$ D) $N(a;b)$

57. 60° ga teng bo'lgan A burchakka aylana ichki chizilgan. Bu aylana burchak tomonlariga B va C nuqtalarda urinadi. Agar BC=1 bo'lsa, AB ni toping.

A) bir qiymatli aniqlab bo'lmaydi B) 1 C) 2 D) 3

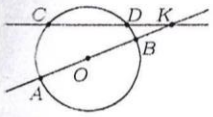
58. Hisoblang: $\operatorname{tg}50^\circ\cdot\operatorname{tg}10^\circ\cdot\operatorname{tg}110^\circ$.

A) $-\sqrt{3}$ B) 1 C) -1 D) $-\frac{\sqrt{3}}{3}$

59. $\{x : x \in N, -3 \le x \le 5\}$ to'plamning nechta qism-to'plamlari mavjud?

A) *16* B) *32* C) *5* D) *9*

60. Rasmga qarab noto'g'ri tasdiqni aniqlang.



A) *AB – aylana diametri*
B) *CD kesma uzunligi AB kesma uzunligidan katta*
C) *AB va CD to'g'ri chiziqlar kesishish nuqtasi, markazi O nuqtada bo'lgan doira tashqarisida joylashgan*
D) *AB kesma uzunligi CD kesma uzunligidan katta*

61. $x^8 - 18x^4 + 32 \le 0$ tengsizlikning barcha butun yechimlari ko'paytmasini toping.

A) *2* B) *4* C) *-2* D) *-4*

62. $y > 0$ bo'lsin. To'rtburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(0;y)$, $C(-10;y)$ va $D(-12;0)$. To'rtburchak diagonallarining o'rtalari orasidagi masofani toping.

A) *2* B) *1* C) *y ga bog'liq* D) $\sqrt{2}$

63. $15 \cdot 5^x + 3^{2x} = 5^x + 15 \cdot 3^{2x}$ tenglamaning ildizlari sonini toping.

A) *2* B) *3* C) *0* D) *1*

64. $y = 3sin4x + 2sin6x$ funksiyaning hosilasini toping.

A) $-24cosx \cdot sin5x$ B) $24sinx \cdot sin5x$ C) $24cosx \cdot cos5x$
D) $24sinx \cdot cos5x$

65. $a = 3$ bo'lsa, $\int_a^{a+1} (ln(\sin^2 3x + \cos^2 3x) + 1)dx$ aniq integralni hisoblang.

A) $2\sqrt{2}$ B) $\frac{\ln 2 - 1}{3}$ C) *1* D) $\sqrt{2}$

66. O'zaro teng bo'lmagan x va y sonlari $x^2 - 26x = y^2 - 26y$ tenglikni qanoatlantirsa, $x + y$ ni toping.

A) *16* B) *24* C) *0* D) *26*

67. To'g'ri tenglikni ko'rsating:

A) *1 Kbit=1 bayt* B) *1 Kbit=1000 bit*
C) *1 Mbit=1024 Kbit* D) *1 Kbit=1024 bayt*

68. 512, 350, 162, 22 butun sonlarni barchasini yozish mumkin bo'lgan eng kichik asosli sanoq sistemasida shu sonlar yig'indisini aniqlang.

A) *1406* B) *1156* C) *1530* D) *1266*

69. Buyruq fayllari kengaytmasini aniqlang.

A) *.bak* B) *.bat* C) *.pas* D) *.bas*

70. *A*1=–5, *B*1=6, *B*2=4 bo'lsin. Quyidagi formula natijasi –24 ga teng bo'lishi uchun *A*2 katakka kiritilishi kerak bo'lgan qiymatni aniqlang.
=ЕСЛИ(ИЛИ(*A*1+*B*2>=*A*2**B*1;*A*1**B*1>0); *A*1**B*2–*B*1–*A*2;*A*1**B*1+*B*2+*A*2)

A) *4* B) *0* C) *-1* D) *2*

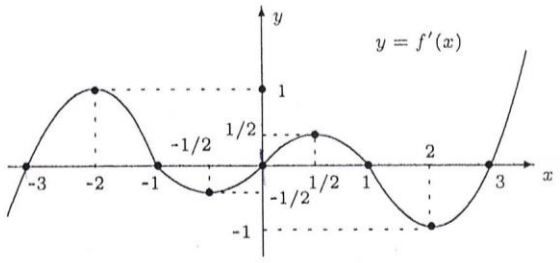
71. Brauzerda "x^3" yozuvini aks ettirish uchun teglar to'g'ri berilgan javobni ko'rsating.

A) *x<u>3</u>* B) *x₃* C) *x3*
D) *x³*

72. Paskal tilida quyidagi dastur lavhasi bajarilgach S o'zgaruvchi qiymatini aniqlang:
A:=12345; S:=0; While a>1 do begin S:=S*a mod 10; a:=a div 10; end; Write(S);

A) *15* B) *120* C) *0* D) *2345*

37. Rasmda $y = f'(x)$ funksiya grafigi tasvirlangan. $y = f(x)$ funksiyaning $-3 < x \le 0$ oraliqdagi o'sish oralig'ini toping.



A) $(-3;0)$ B) $(-3;-1)$ C) $(-1;0)$ D) $(-\infty;-3)$

38. Beshta a_1, a_2, a_3, a_4, a_5 tub sonlar ayirmasi 6 ga teng bo'lgan arifmetik progressiyani tashkil qiladi. $a_3 + a_4$ ni toping.

A) *28* B) *22* C) *40* D) *34*

39. $a = 3$ bo'lsa, $\int_a^{a+1} (\sin^2 3x + \cos^2 3x)dx$ integralni hisoblang.

A) *1* B) $\sqrt{2}$ C) $\frac{\sqrt{2}-1}{3}$ D) $2\sqrt{2}$

40. $y = f(x)$ funksiya grafigi berilgan bo'lib, uni parallel ko'chirish yordamida $y = f(x-a) - b$ funksiya grafigi hosil qilingan. Bunday parallel ko'chirishda koordinata boshi qanday nuqtaga ko'chadi?

A) $N(a;-b)$ B) $N(-a;-b)$ C) $N(-a;b)$ D) $N(a;b)$

41. Teng yonli trapetsiyaning diagonali uning o'tkir burchagi bissektrisasidir. Trapetsiyaning asoslari uzunliklari 1 : 2 kabi nisbatda, perimetri esa 15 ga teng. Trapetsiyaning o'rta chizig'ini toping.

A) *4,8* B) *4,5* C) *4* D) *4,2*

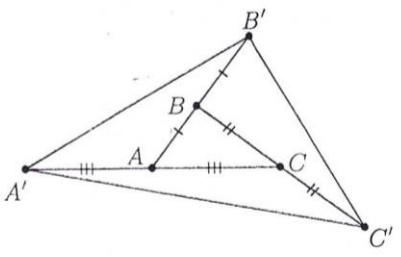
42. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(-1;5)$, $C(-2;0)$. Uchburchak yuzini toping.

A) $3\sqrt{3}$ B) $4\sqrt{2}$ C) *4* D) *5*

43. a ning qanday butun qiymatida $y = -x^2 + 2x + a$ funksiya faqat 4 ta nomanfiy butun qiymatga ega?

A) *1* B) *2* C) *0* D) *-1*

44. ABC uchburchakning har bir tomoni chizmada ko'rsatilgandek o'z uzunligiga teng uzunlikda davom ettirilgan. Agar ABC uchburchak yuzasi 2 ga teng bo'lsa, $A'B'C'$ uchburchak yuzasini toping.



A) *14* B) *10* C) *12* D) *16*

45. $a = -5$ bo'lsa, $\int_a^{a+1} (ln(\sin^2 3x + \cos^2 3x) + 1)dx$ aniq integralni hisoblang.

A) $2\sqrt{2}$ B) $\frac{\ln 2 - 1}{3}$ C) $\sqrt{2}$ D) *1*

46. $\lg^2 x^2 = 4$ tenglamaning barcha manfiy ildizlari yig'indisini toping.

A) $-10,01$ B) -100 C) $-10,1$ D) -10

47. $60°$ ga teng bo'lgan A burchakka aylana ichki chizilgan. Bu aylana burchak tomonlariga B va C nuqtalarda urinadi. Agar BC=5 bo'lsa, ABC uchburchak perimetrini toping.

A) *bir qiymatli aniqlab bo'lmaydi* B) *15* C) *10* D) *12*

48. $\{x | x \in N, -5 \le x < 5\}$ to'plamning nechta qism-to'plamlari mavjud?

A) *16* B) *10* C) *32* D) *4*

49. Ifodaning eng kichik qiymatini toping: $\frac{1}{8}\cos 4\alpha - \sin^2 2\alpha$

A) $-1,125$ B) $-0,125$ C) -1 D) $-1,5$

50. $y = \log_5(\text{arctg}\, 2x + \text{arcctg}\, 2x)$ funksiyaning $x = \frac{1}{2}$ nuqtadagi hosilasining qiymatini toping.

A) $\log_5 2$ B) $-\log_5 2$ C) *1* D) *0*

51. Agar $\log_{30} 90 = a$ bo'lsa, $\log_3 10$ ni a orqali ifodalang.

A) $\frac{2-a}{a+1}$ B) $\frac{a+2}{a+1}$ C) $\frac{a-2}{1-a}$ D) $\frac{a-2}{a+1}$

52. Ifodani soddalashtiring: $\sin 6\alpha + 2\sin^2 3\alpha - 1$

A) $-\sqrt{2}\sin(3\alpha - 45°)$
B) $-\sqrt{2}\cos(3\alpha - 45°)$
C) $\sqrt{2}\cos(6\alpha - 45°)$
D) $\sqrt{2}\sin(6\alpha - 45°)$

53. Nomanfiy x, y sonlar uchun $a = 3x + \frac{1}{3}y$ va $b = 2\sqrt{xy}$ bo'lsin. Qaysi tengsizlik har doim o'rinli?

A) $a < b$ B) $a \le b$ C) $a > b$ D) $a \ge b$

54. $a^2b^2x^4 = b^4x^2 - a^2b^2 + a^4x^2$ tenglamada x ni toping. $(a \cdot b \ne 0)$

A) $\pm a; \pm b$ B) $\pm 1/a; \pm 1/b$ C) $\varnothing$ D) $\pm a/b; \pm b/a$

55. $y > 0$ bo'lsin. To'rtburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(0;y)$, $C(4;y)$ va $D(6;0)$. To'rtburchak diagonallarining o'rtalari orasidagi masofani toping.

A) *1* B) *y ga bog'liq* C) *2* D) $\sqrt{2}$

56. $\log_{0,5}(4^x - 5 \cdot 2^x + 6) \ge -1$ tengsizlikni qanoatlantiradigan eng kichik butun sonni toping.

A) *0* B) *2* C) *1* D) *-2*

57. 12345123451234512345 sonida 10 ta raqam shunday o'chirilganki, hosil bo'lgan son eng katta bo'ldi. Shu sonning 9-raqamini toping.

A) *5* B) *4* C) *3* D) *2*

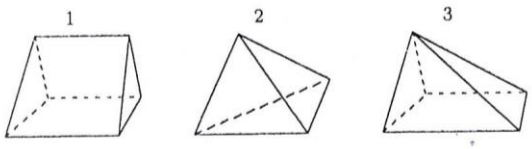
58. R radiusli sferaga muntazam to'rtburchakli piramida ichki chizilgan. Uchidagi yassi burchak $15°$ ga teng bo'lsa, piramida yon sirtining yuzini toping.

A) $3R^2$ B) R^2 C) $2R^2$ D) $R^2\sqrt{2}$

59. $x^{x^2-x-6} = 1$ tenglamaning ildizlari yig'indisini toping. $(x>0)$

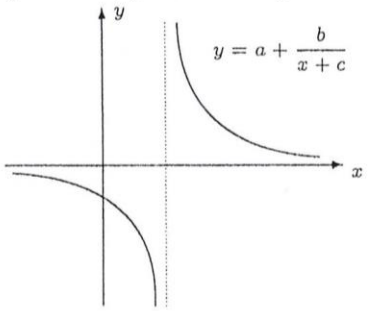
A) *1* B) *4* C) *2* D) *-1*

60. Quyidagi ko'pyoqlardan qaysi birida 5 ta yoq, 8 ta qirra bor?



A) *1* B) *2, 3* C) *3* D) *2*

61 Rasmda $y = a + \frac{b}{x+c}$ funksiya grafigi tasvirlangan. Quyidagilardan qaysi biri noto'g'ri?



A) $a - b > 0$ B) $b - c + a > 0$ C) $a^3 - b^2 < 0$
D) $bc + ab^2 < 0$

62. Agar barcha x, y lar uchun
$x^3 + 4x^2y + axy^2 + 3xy - bx^cy + 7xy^2 + dxy + y^2 = x^3 + y^2$
ayniyat bajarilsa, $a - b$ ni toping. $(c > 1)$
A) -11 B) -3 C) -1 D) 2

63. Poyezd 4 minutda 8 kilometr masofani, motosikl 6 minutda 8 kilometr masofani bosib o'tdi. Motosiklchining tezligi poyezd tezligining necha foizini tashkil etadi?
A) $65\frac{2}{3}\%$ B) 70% C) $66\frac{2}{3}\%$ D) $53\frac{1}{3}\%$

64. Prizmaning qirralari soni 75 ga teng. Uning yoqlari sonini toping.
A) *bir qiymatli aniqlab bo'lmaydi* B) *27* C) *75* D) *25*

65. $5^{2\sqrt{x}} + 5^{\sqrt{x}} < 5 + 5^{\sqrt{x}+1}$ tengsizlikni yeching.
A) $[1; 2]$ B) $[0; 1)$ C) $[0; 1) \cup (1; 2]$ D) $(0; 1) \cup (1; 2]$

66. O'zaro teng bo'lmagan x va y sonlari $x^2 + 26y = y^2 + 26x$ tenglikni qanoatlantirsa, $x + y$ ni toping.
A) *24* B) *16* C) *26* D) *0*

67. 4 terabayt necha gigabaytga teng?
A) 2^{32} *gigabayt* B) 2^{22} *gigabayt* C) 2^{25} *gigabayt*
D) 2^{12} *gigabayt*

68. 64, 512, 42, 7 butun sonlarni barchasini yozish mumkin bo'lgan eng kichik asosli sanoq sistemasida shu sonlar yig'indisini aniqlang
A) *636* B) *661* C) *647* D) *625*

69. Faqat qobiq dasturlar keltirilgan javobni aniqlang.
A) *Total Commander, Norton Commander*
B) *Vista, Total Commander*
C) *MS DOS, Volkov Commander*
D) *Linux, Norton Commander*

70. *A*1=-6, *A*2=0, *B*1=7, *B*2=5 bo'lsin. Natijasi 5 ga teng bo'ladigan formulani aniqlang.
A) *=ЕСЛИ(A1*B2>=0;A2+9;B2+5)*
B) *=ЕСЛИ(A1*B2<0;A2+5;B2+9)*
C) *=МИН(ABS(A1);B2;ABS(B1*A2))*
D) *=МАКС(ABS(A1*A2);ABS(B1*B2))*

71. HTML hujjatida qanday teg satr qismini yangi satrga o'tkazadi?
A) *<P>...</P>* B) *<U>...</U>*
C) *
...</BR>* D) *<H1>...</H1>*

72. Agar a=12 va b=10 bo'lsa, Paskal dasturlash tilida berilgan ushbu ifodaning qiymatini toping.
Round(a/b)+b* (a mod 4)
A) *32* B) *31* C) *2* D) *1*

135-variant

MATEMATIKA (INFORMATIKA BILAN)

37. $y = \log_2(\sin^2 2x + \cos^2 2x)$ funksiyaning $x = \dfrac{2016\pi}{6}$ nuqtadagi qiymatini hisoblang.

A) *1* B) $\log_2 2$ C) $-\log_2 2$ D) *0*

38. Nechta natural son $\sqrt[3]{x^{\log_3 \sqrt[3]{x}}} > 3$ tengsizlikning yechimi bo'la olmaydi.

A) *26 ta* B) *28 ta* C) *27 ta* D) *25 ta*

39. Parallepipedning asoslari tomoni 4 ga teng kvadratlardan, barcha yon yoqlari romblardan iborat. Yuqori asosining uchlaridan biri ostki asosining barcha uchlaridan baravar uzoqlikda joylashgan. Parallelepipedning hajmini toping.

A) *8* B) $16\sqrt{2}$ C) $8\sqrt{2}$ D) $32\sqrt{2}$

40. [2; 500] kesmada 2, 3, 5 va 7 sonlariga bo'linganda qoldiq 1 ga teng bo'ladigan natural sonlar nechta?

A) *1* B) *4* C) *3* D) *2*

41. $2^{\sin^2 x} + 2^{\cos^2 x} = 3$ tenglamaning $[0; 2\pi]$ kesmadagi ildizlari yig'indisini toping.

A) $270°$ B) $900°$ C) $360°$ D) $630°$

42. Agar $a = \log_{20} 60$ va $b = \dfrac{1}{\log_3 2}$ bo'lsa, $\log_2 5$ ni a va b orqali ifodalang.

A) $\dfrac{2+b-2a}{a+1}$ B) $\dfrac{2+b+2a}{a-1}$ C) $\dfrac{2+b-2a}{a-1}$ D) $\dfrac{2-b-2a}{a-1}$

43. $\int_0^1 \frac{7x}{x+1}dx$ integralni hisoblang.

A) 2 B) $7\ln\dfrac{e}{2}$ C) $\ln\dfrac{e}{2}$ D) $7\ln 2e$

44. Agar $\vec{a}(-4; 8; -12)$ va $\vec{b}(-6; -3; 9)$ berilgan bo'lsa, $\left|\dfrac{\vec{a}}{2}\right| - \left|\dfrac{\vec{b}}{3}\right|$ ni hisoblang.

A) $2\sqrt{14}$ B) 2 C) $\sqrt{14}$ D) 3

45. a va b natural sonlarning eng katta umumiy bo'luvchisi 2 ga teng bo'lsa, $a + 3b$ va b sonlarning eng katta umumiy bo'luvchisi nechaga teng?

A) *bir qiymatli aniqlab bo'lmaydi* B) *4* C) *2* D) *1*

46. $60°$ ga teng bo'lgan A burchakka aylana ichki chizilgan. Bu aylana burchak tomonlariga B va C nuqtalarda urinadi. Agar BC=5 bo'lsa, AC ni toping.

A) *bir qiymatli aniqlab bo'lmaydi* B) *5* C) *3* D) *4*

47. Kvadratga ikkita aylana ichki chizilgan. Radiusi 1,5 ga teng bo'lgan birinchi aylana kvadratning ikkita qo'shni tomonlariga urinadi, radiusi 2,5 ga teng bo'lgan ikkinchi aylana kvadratning qolgan ikkita tomoni va birinchi aylanaga urinadi. Kvadratning diagonalini toping.

A) $2(2+2\sqrt{2})$ B) $2(2-\sqrt{2})$ C) $1,5(\sqrt{2}+1)$ D) $3(\sqrt{2}+1)$

48. $y = 7sin5x - 5sin7x$ funksiyaning hosilasini toping.

A) $70sinx \cdot cos6x$ B) $70sinx \cdot sin6x$ C) $-70cosx \cdot sin6x$ D) $70cosx \cdot cos6x$

49. $\log_5(5^x - 24) = 2 - x$ tenglamani yeching.

A) *3* B) *2* C) $\emptyset$ D) *1*

50. Teng yonli ABC uchburchakning AC asosida D nuqta shunday olinganki AD=23, DC=25 tengliklar bajariladi. ABD va DBC uchburchaklarga ichki chizilgan aylanalar BD to'g'ri chiziqqa mos ravishda M va N nuqtalarda urinadilar. MN kesma uzunligini toping.

A) *1* B) $\sqrt{3}$ C) *2* D) $\sqrt{2}$

51. $ABCD$ tetraedrning D uchidagi barcha yassi burchaklar to'g'ri. Shu tetraedrga kub shunday ichki chizilganki, kubning bitta uchi D nuqtada, unga qarama-qarshi uchi esa ABC yoqda yotibdi. Agar DA=a, DB=b va DC = c bo'lsa, kub qirrasining uzunligini toping.

A) $\dfrac{ab+ba+ac}{3(a+b+a)}$

B) $\dfrac{ab+ba+ac}{a+b+a}$

C) $\dfrac{abc}{ab+ba+ac}$

D) $\dfrac{3abc}{ab+ba+ac}$

52. Agar $f(x) = 7^x \cdot 3x$ bo'lsa, $f'(x) = 0$ tenglamani yeching.

A) *0* B) $\log_7 e$ C) $\ln 7$ D) $-\log_7 e$

53. $4 - x < \sqrt{6-x}$ tengsizlikning yechimlaridan iborat bo'lgan natural sonlar yig'indisini toping.

A) *20* B) *18* C) *12* D) *10*

54. $y > 0$ bo'lsin. To'rtburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0; 0)$, $B(0; y)$, $C(10; y)$ va $D(12; 0)$. To'rtburchak diagonallarining o'rtalari orasidagi masofani toping.

A) *1* B) *y ga bog'liq* C) $\sqrt{2}$ D) *2*

55. $\sqrt[3]{27^{5\sqrt{x}}} = 3^{x(\sqrt{x}-4)}$ tenglamani yeching.

A) *1/2; 0* B) *25; 0* C) *0* D) *25*

56. Poyezd 5 minutda 10 kilometr masofani, motosikl 6 minutda 10 kilometr masofani bosib o'tdi. Motosiklchining tezligi poyezd tezligining necha foizini tashkil etadi?

A) *80%* B) $63\frac{1}{3}\%$ C) $83\frac{1}{3}\%$ D) $81\frac{2}{3}\%$

57. Hisoblang: $\operatorname{tg} 5° \cdot \operatorname{tg} 55° \cdot \operatorname{tg} 65°$.

A) $2+\sqrt{3}$ B) $\dfrac{2-\sqrt{3}}{2}$ C) $\dfrac{2+\sqrt{3}}{2}$ D) $2-\sqrt{3}$

58. $y = 4\sin^2 2x + 4\sqrt{3}\sin x \cos x + 1,5\cos 4x + 1,5 - 2\sqrt{3}$ funksiyaning qiymatlar sohasiga tegishli butun sonlar nechta?

A) *cheksiz ko'p* B) *7 ta* C) *8 ta* D) *6 ta*

59. $\{x | x \in N, x^2 \leq 23\}$ to'plamning nechta qism-to'plamlari mavjud?

A) *23* B) *16* C) *4* D) *32*

60. Ifodani soddalashtiring: $\sin 10\alpha - 2\sin^2 5\alpha + 1$

A) $\sqrt{2}\cos(5\alpha - 45°)$

B) $-\sqrt{2}\sin(5\alpha - 45°)$

C) $\sqrt{2}\cos(10\alpha - 45°)$

D) $\sqrt{2}\sin(10\alpha - 45°)$

61. Qaysi jism(lar)ning simmetriya o'qlari chekli sonda?
1) shar; 2) prizma; 3) konus

A) *1* B) *2, 3* C) *3* D) *2*

62. Agar barcha x, y lar uchun
$x^3+4x^2y+axy^2+3xy-bx^cy+7xy^2+dxy+y^2=x^3+y^2$
ayniyat bajarilsa, $|a+b+c|(a+b+d)$ ni toping. $(c>1)$

A) -6 B) -4 C) -2 D) 3

63. $x=-y$, $z=-2$ bo'lsa, $\dfrac{x^3+y^3+z^3-3xyz}{x^2+y^2+z^2-xy-xz-yz}$
ifodaning qiymatini toping.

A) -2 B) 1 C) 0 D) 2

64. $y=\ln x$ funksiya grafigi berilgan bo'lib, uni parallel ko'chirish yordamida $y=\ln(x+a)+b$ funksiya grafigi hosil qilingan. Bunday parallel ko'chirishda koordinata boshi qanday nuqtaga ko'chadi? Bunda, $x>-a$, $x>0$

A) $N(b;a)$ B) $N(a;-b)$ C) $N(a;b)$ D) $N(-a;b)$

65. Arifmetik progressiyani tashkil etuvchi hadlari
$\begin{cases} a_2^2=a_8 \\ a_6-a_3=36 \end{cases}$ tenglamalar sistemasini qanoatlantirsa,
a_2 ning musbat qiymatini toping.

A) 9 B) 10 C) 11 D) 8

66. $a=2$ bo'lsa, $\int\limits_a^{a+1}(ln(\sin^2 3x+\cos^2 3x)+1)dx$ aniq integralni hisoblang.

A) $\frac{\ln 2-1}{3}$ B) $\sqrt{2}$ C) 1 D) $2\sqrt{2}$

67. Axborot nazariyasi asoschisini aniqlang.

A) *J.Fon Neyman* B) *N.Virt* C) *K.Shennon*
D) *N.Viner*

68. Tenglik o'rinli bo'lishi uchun sonlarning asosi qanday bo'lishi kerak? $24123_{(x)}+3210_{(x)}=30333_{(x)}$

A) *Sakkizlik* B) *To'qqizlik* C) *Yettilik* D) *Oltilik*

69. Qaysi javobda faqat arxivlangan fayllar kengaytmasi berilgan?

A) *.zip, .jpg, .rar* B) *.awi, .com, .bac* C) *.zip, .rar, .arj*
D) *.htm, .arj, .txt*

70. $A1$=–9, $B1$=8, $B2$=4 bo'lsin. Quyidagi formula natijasi –75 ga teng bo'lishi uchun $A2$ katakka kiritilishi kerak bo'lgan qiymatni aniqlang.
=ЕСЛИ(И($A1+B2<=A2*B1$;$A1*B1<>0$);
$A1+B2+B1-A2$;$A1*B1+B2+A2$)

A) *–9* B) *–5* C) *–10* D) *–7*

71. <TH> yoki <TD> teglarda jadval satrlarini birlashtirish uchun HTML hujjatlarida qanday parametr ishlatiladi?

A) *CELLSPACING* B) *ROWSPAN* C) *CELLPADDING*
D) *COLSPAN*

72. Paskal. Quyidagi dasturning ekrandagi natijasini aniqlang.
var a, b: integer; s:real;
Begin a:=2; s:=1; for b:=1 to 6 do s:=s+a*b;
writeln (s:5:2); end.

A) *-41* B) *-41.00* C) *43* D) *43.00*

136-variant

MATEMATIKA (INFORMATIKA BILAN)

37. $\frac{1}{|x+1|-1} \geq \frac{2}{|x+1|-2}$ tengsizlikning eng katta manfiy butun yechimini toping.

A) -1 B) -4 C) -2 D) -3

38. Agar $\log_{30} 90 = a$ bo'lsa, $\lg 3$ ni a orqali ifodalang.

A) $\frac{a+1}{a+2}$ B) $\frac{1+a}{a-2}$ C) $\frac{1-a}{a-2}$ D) $\frac{a+1}{2-a}$

39. $y = \ln x$ funksiya grafigi berilgan bo'lib, uni parallel ko'chirish yordamida $y = \ln(x+a) + b$ funksiya grafigi hosil qilingan. Bunday parallel ko'chirishda koordinata boshi qanday nuqtaga ko'chadi? Bunda, $x > -a$, $x > 0$

A) $N(a;b)$ B) $N(a;-b)$ C) $N(b;a)$ D) $N(-a;b)$

40. $ABCD$ tetraedrning D uchidagi barcha yassi burchaklar to'g'ri. Shu tetraedrga kub shunday ichki chizilganki, kubning bitta uchi D nuqtada, unga qarama-qarshi uchi esa ABC yoqda yotibdi. Agar $DA{=}a$, $DB{=}b$ va $DC = c$ bo'lsa, kub qirrasining uzunligini toping.

A) $\frac{ab+ba+ac}{a+b+a}$

B) $\frac{abc}{ab+ba+ac}$

C) $\frac{ab+ba+ac}{3(a+b+a)}$

D) $\frac{3abc}{ab+ba+ac}$

41. a sonining oxirgi raqami 1 va bu sonning o'nta natural bo'luvchisi bo'lsa, $10a$ sonining nechta natural bo'luvchisi bor? (1 va a ham kiradi).

A) *30* B) *50* C) *40* D) *20*

42. Ifodaning eng katta qiymatini toping: $\cos^2\alpha + \sin\alpha \cdot \cos\alpha$

A) 1 B) $\frac{\sqrt{2}+1}{2}$ C) $\frac{2+\sqrt{2}}{2}$ D) $\frac{1-\sqrt{2}}{2}$

43. a ning qanday qiymatida $9x^2 + 6x + a = 0$ kvadrat tenglama ikkita o'zaro teng ildizga ega bo'ladi?

A) 1 B) $\frac{3}{2}$ C) 3 D) $\frac{1}{3}$

44. Agar barcha x, y lar uchun $x^3 + 4x^2y + axy^2 + 3xy - bx^cy + 7xy^2 + dxy + y^2 = x^3 + y^2$ ayniyat bajarilsa, $|a+b+c|(a+b)$ ni toping. $(c > 1)$

A) *2* B) -2 C) -3 D) -1

45. $y > 0$ bo'lsin. To'rtburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(1;0)$, $B(1;y)$, $C(2;y)$ va $D(4;0)$. To'rtburchak diagonallarining o'rtalari orasidagi masofani toping.

A) *2* B) *1* C) $\sqrt{2}$ D) *y ga bog'liq*

46. Teng yonli ucburchakning yon tomoniga o'tkazilgan medianasi asosi bilan $30°$ li burchak tashkil etadi. Ucburchakning asosidagi burchak tangensini toping.

A) $\sqrt{3}$ B) $2\sqrt{3}$ C) *3* D) $1,5\sqrt{2}$

47. $\sqrt{3}$ soni $y = -2x^2 + bx + 3$ funksiyaning noli bo'lsa, b ni toping.

A) $\sqrt{2}$ B) *1* C) $\sqrt{5}$ D) $\sqrt{3}$

48. Hisoblang: $\cos\left(2\,\mathrm{arcctg}\,\frac{1}{5}\right)$

A) $\frac{12}{13}$ B) $-\frac{12}{13}$ C) $-\frac{11}{13}$ D) 1

49. To'g'ri burchakli ABC uchburchakning C to'g'ri burchagini CH balandlik va CM mediana teng uch qismga bo'ladi. Agar CHM uchburchak yuzasi 4 ga teng bo'lsa, ABC uchburchak yuzasini toping.

A) $16\sqrt{3}$ B) $12\sqrt{3}$ C) *16* D) *12*

50. $\{x | x \in N, -5 \leq x < 5\}$ to'plamni nechta usul bilan ikkita kesishmaydigan qism-to'plamlarga ajratish mumkin?

A) *8* B) *4* C) *10* D) *16*

51. Agar $|x - 10| = \frac{x}{2} + a$ tenglama bitta yechimga ega bo'lsa, a ning qiymatini toping.

A) *-4* B) *-6* C) *-5* D) *10*

136-variant

Poyezd 4 minutda 9 kilometr masofani, motosikl 6 minutda 9 kilometr masofani bosib o'tdi. Motosiklchining tezligi poyezd tezligining necha foizini tashkil etadi?

A) $66\frac{2}{3}\%$ B) $67\frac{2}{3}\%$ C) 70% D) $73\frac{1}{3}\%$

3. Beshta a_1, a_2, a_3, a_4, a_5 tub sonlar ayirmasi 6 ga teng bo'lgan arifmetik progressiyani tashkil qiladi. $4a_1 + a_3$ ni toping.

A) *37* B) *29* C) *34* D) *39*

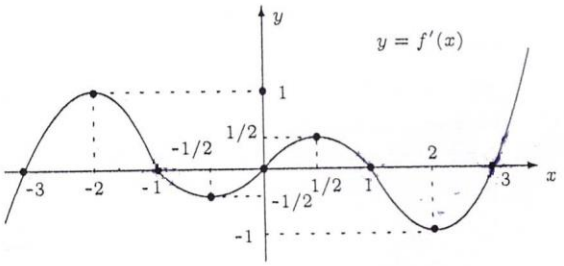
4. $\dfrac{x^3+y^3+z^3-3xyz}{x^2+y^2+z^2-xy-xz-yz}$ ifodani soddalashtiring.

A) $x+y+z$ B) $x-y+z$ C) $x-y-z$ D) $x+y-z$

5. Parallepipedning asoslari tomoni $3\sqrt{2}$ ga teng kvadratlardan, barcha yon yoqlari romblardan iborat. Yuqori asosining uchlaridan biri ostki asosining barcha uchlaridan baravar uzoqlikda joylashgan. Parallelepipedning hajmini toping.

A) *54* B) *27* C) $9\sqrt{2}$ D) $27\sqrt{2}$

6. Rasmda $y = f'(x)$ funksiya grafigi tasvirlangan. $y = f(x)$ funksiya maksimum nuqtalarini toping.



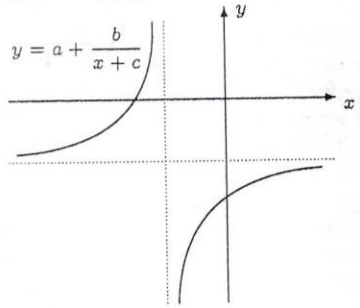
A) $-1; 1$ B) $-3; 0; 3$ C) $-3; -1; 0; 1; 3$ D) $-2; \frac{1}{2}$

7. Ushbu $f(x) = \dfrac{x+2}{x+3}$ funksiyaning boshlang'ich funksiyasini toping.

A) $x + 2\ln|x+3| + C$ B) $\dfrac{2x^2}{(x+3)^2} + C$

C) $x - \ln|x+3| + C$ D) $\ln(x+3)^2 + C$

8. Rasmda $y = a + \dfrac{b}{x+c}$ funksiya grafigi tasvirlangan. Quyidagilardan qaysi biri noto'g'ri?



A) $b^5 - a^4 < 0$ B) $ba + c > 0$ C) $a + bc^2 < 0$
D) $a^3b^3 < 0$

9. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(-\frac{1}{2}; -2)$, $C(-1;0)$. Uchburchak yuzini toping.

A) $\sqrt{2}$ B) $\sqrt{3}$ C) *2* D) *1*

10. $\left|\dfrac{|x+2|-|x|}{\sqrt{4-x^2}}\right| \geq 0$ tengsizlikni qanoatlantirmaydigan eng katta manfiy va eng kichik natural sonlar nisbatini toping.

A) *0* B) -3 C) -4 D) -1

11. a va b natural sonlarning eng katta umumiy bo'luvchisi 5 ga teng bo'lsa, $a + 3b$ va b sonlarning eng katta umumiy bo'luvchisi nechaga teng?

A) *bir qiymatli aniqlab bo'lmaydi* B) *5* C) *4* D) *1*

12. $y = 1 + \frac{1}{2}\cos x$; $y = 0$; $x = -\frac{\pi}{2}$; $x = \frac{\pi}{2}$ chiziqlar bilan chegaralangan shaklning yuzini toping.

A) $\pi + 1$ B) π C) $\pi - 1$ D) $\pi + 2$

13. $\begin{cases} x^2 + xy + y^2 = 13 \\ x + y + xy = 7 \end{cases}$ tenglamalar sistemasini qanoatlantiruvchi barcha x va y larning yig'indisini toping.

A) *1* B) *8* C) *0* D) -8

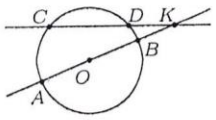
14. Asosi 4 sm ga, yon tomoni 6 sm ga teng bo'lgan teng yonli uchburchakning yon tomoniga tushirilgan balandlik uzunligini (sm) toping.

A) $\dfrac{12\sqrt{3}}{5}$ B) $\dfrac{8\sqrt{2}}{5}$ C) $\dfrac{5\sqrt{2}}{4}$ D) $\dfrac{8\sqrt{2}}{3}$

15. Agar $f(x) = 13^x \cdot 3x$ bo'lsa, $f'(x) > 0$ tengsizlikni yeching.

A) $(-\infty; -\log_{13} e)$ B) $(-2\log_{13} e; \infty)$ C) $(-\log_{13} e; e)$
D) $(-\log_{13} e; \infty)$

16. Rasmga qarab noto'g'ri tasdiqni aniqlang.



A) *AD kesma uzunligi AB kesma uzunligidan katta*
B) *AB kesma uzunligi CD kesma uzunligidan katta*
C) *AB va CD to'g'ri chiziqlar kesishish nuqtasi, markazi O nuqtada bo'lgan doira tashqarisida joylashgan*
D) *AB – aylana diametri*

17. Ingliz tilidagi qaysi so'zlardan bit atamasi hosil qilingan?

A) *bitmap digit* B) *binom digital* C) *binary digit*
D) *binary disk*

18. Yettilik sanoq sistemasida 33 sonidan uch marta katta son sakkizlik sanoq sistemasida nechaga teng bo'ladi?

A) *70* B) *110* C) *72* D) *77*

19. ... – bu kompyuter va uning qurilmalari ishini boshqaruvchi, foydalanuvchi bilan muloqotni tashkil etuvchi dasturdir.

A) *Drayverlar* B) *Operatsion tizim (sistema)*
C) *Antiviruslar* D) *Utilitlar*

20. *A*1=–6, *B*1=6, *B*2=4 bo'lsin. Quyidagi formula natijasi –33 ga teng bo'lishi uchun *A*2 katakka kiritilishi kerak bo'lgan qiymatni aniqlang.
=ЕСЛИ(И(*A*1+*B*2<*A*2**B*1;*A*1**A*2<0); *A*1**B*2–15+*A*2;*A*1**B*1+5–*A*2)

A) *6* B) *3* C) *8* D) *4*

21. Internetdagi ma'lumotlarni tarmoqda uzatish qoidalari ... deyiladi.

A) *dasturlar* B) *protokollar* C) *promouterlar*
D) *provayderlar*

137-variant

MATEMATIKA (INFORMATIKA BILAN)

37. [50; 200] kesmada 3 ga bo'linganda qoldiq 1 ga, 4 ga bo'linganda qoldiq 2 ga, 5 ga bo'linganda qoldiq 3 ga va 6 ga bo'linganda qoldiq 4 ga teng bo'ladigan natural sonlar nechta?

A) *1* B) *2* C) *0* D) 3

38 Muntazam uchburchakli piramida asosining tomonidan unga ayqash yon qirraga perpendikular bo'lgan tekislik o'tkazilgan. Kesuvchi tekislik yon qirrani uchidan hisoblaganda 3:2 nisbatda kesadi. Asos tomoni $a\sqrt{2}$ ga teng bo'lsa, piramida yon sirtining yuzini toping.

A) $2a^2$ B) $2,5a^2$ C) $3a^2$ D) $1,5a^2$

39. Agar $\operatorname{tg}\alpha = \frac{1}{2}$ bo'lsa, $\frac{4\sin 4\alpha \cdot \cos 2\alpha}{(1-\cos 2\alpha)(1+\cos 4\alpha)}$ ni hisoblang.

A) -4 B) 2 C) 4 D) 8

40. Asosi 4 sm ga, yon tomoni 6 sm ga teng bo'lgan teng yonli uchburchakning yon tomoniga tushirilgan balandlik uzunligini (sm) toping.

A) $\frac{5\sqrt{2}}{4}$ B) $\frac{12\sqrt{3}}{5}$ C) $\frac{8\sqrt{2}}{3}$ D) $\frac{8\sqrt{2}}{5}$

41. a ning qanday qiymatlarida $y = ax + 0,76$ funksiyaning grafigi (-1; 1,26) nuqtadan o'tadi?

A) *-1,5* B) *0,5* C) *-0,5* D) *1,5*

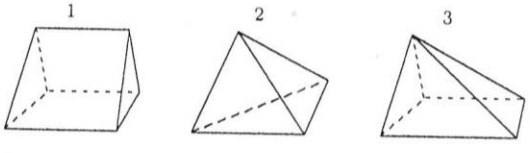
42. $y = f(x)$ funksiya D to'plamda yuqoridan chegaralangan bo'lsin. U holda qaysi munosabat ixtiyoriy $x \in D$ uchun o'rinli?

A) *biror K haqiqiy soni uchun* $f(x) < K$
B) *biror K musbat haqiqiy soni uchun* $|f(x)| > K$
C) *biror K haqiqiy soni uchun* $|f(x)| > K$
D) *biror K musbat haqiqiy soni uchun* $|f(x)| < K$

43. Hisoblang: $\log_2\left(\frac{3}{0,(4)} + \frac{3}{0,(6)} + \frac{3}{0,(8)} + 1,375\right)$

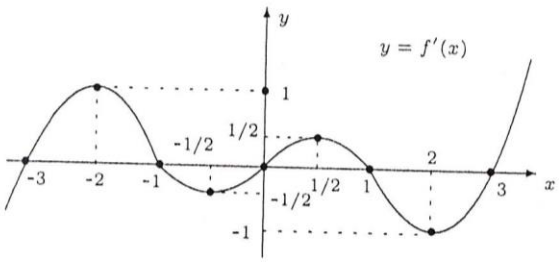
A) *1* B) $\log_2 3$ C) *4* D) *2*

44. Quyidagi ko'pyoqlardan qaysi birida 6 ta qirra bor?



A) *2* B) *1* C) *3* D) *1, 3*

45. Rasmda $y = f'(x)$ funksiya grafigi tasvirlangan. $y = f(x)$ funksiya maksimum nuqtalarini toping.



A) $-3; 0; 3$ B) $-2; \frac{1}{2}$ C) $-1; 1$ D) $-3; -1; 0; 1; 3$

46. $\sqrt{x+3} > x + 1$ tengsizlikning butun musbat yechimlari nechta?

A) *5* B) *2* C) *3* D) *butun musbat yechimga ega emas*

47. Ushbu $f(x) = \frac{2x-1}{x^2-x-2}$ funksiyaning boshlang'ich funksiyasini toping.

A) $\ln(|x-2| \cdot |x+1|) + C$ B) $\ln|x+1| + C$
C) $\ln|x-2| + C$ D) $\ln(|x+2| \cdot |x-1|) + C$

48. Teng yonli trapetsiya diagonallari o'zaro perpendikular. Uning balandligi 2 ga teng bo'lsa, yuzini toping.

A) *3* B) *4* C) *2* D) *bir qiymatli aniqlab bo'lmaydi*

49. Agar $f(x) = 5^x \cdot 5x$ bo'lsa, $f'(x) = 0$ tenglamani yeching.

A) $\log_5 e$ B) $\ln 5$ C) $-\log_5 e$ D) *0*

50. $5^{x/2+1} - 4 \cdot 3^{x-1} < \frac{2}{3} \cdot 5^{x/2+1} + 3^{x-1}$ tengsizlikni yeching.

A) $(0; +\infty)$ B) $\emptyset$ C) $[0; +\infty)$ D) $(-\infty; 0) \cup (0; +\infty)$

51. Agar $|x-8| = \frac{x}{2} + a$ tenglama bitta yechimga ega bo'lsa, a parametr nechta qiymat qabul qiladi?

A) *cheksiz ko'p* B) *1* C) *2* D) *0*

52. Akvariumning bo'yi 80 sm, eni 50 sm, balandligi 40 sm. Suv sathi yuqoridan 10 sm pastda bo'lishi uchun akvariumga necha litr suv quyish kerak?

A) *120* B) *12* C) *160* D) *140*

53. $4 + \frac{2}{5^x - 1} = \frac{3}{5^{x-1}}$ tenglamaning kichik ildizini toping.

A) $1 - \log_5 4$ B) $\log_5 6\frac{1}{4}$ C) 1 D) $\log_5 3$

54. $y > 0$ bo'lsin. To'rtburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(1;0)$, $B(1;y)$, $C(-3;y)$ va $D(-5;0)$. To'rtburchak diagonallarining o'rtalari orasidagi masofani toping.

A) *2* B) *y ga bog'liq* C) 1 D) $\sqrt{2}$

55. $a = -5$ bo'lsa, $\int_a^{a+1} (\sin^2 2x + \cos^2 2x)dx$ aniq integralni hisoblang.

A) $\sqrt{2}$ B) $2\sqrt{2}$ C) $\frac{\sqrt{2}-1}{2}$ D) 1

56. Hisoblang: $\sin 10° \cdot \sin 50° \cdot \sin 70°$.

A) $\frac{\sqrt{3}}{8}$ B) $\frac{1}{8}$ C) $\frac{\sqrt{2}}{2}$ D) $\frac{\sqrt{2}}{4}$

137-variant

$a_1, a_2, \ldots, a_8$ ketma-ketlikda ixtiyoriy uchta ketma-ket hadining yig'indisi 50 ga teng. Agar ketma-ketlikning uchinchi hadi 8 ga teng bo'lsa, birinchi va sakkizinchi hadlarining yig'indisi nechaga teng?

A) *42* B) *44* C) *16* D) *8*

a ning qanday qiymatida $x^2 + 2ax\sqrt{a^2-3} + 4 = 0$ kvadrat tenglama ikkita o'zaro teng ildizga ega bo'ladi?

A) -2 B) ± 2 C) 2 D) $\sqrt{3}$

$\{x | x \in N, x^2 < 34\}$ to'plamni nechta usul bilan ikkita kesishmaydigan qism-to'plamlarga ajratish mumkin?

A) *32* B) *5* C) *16* D) *34*

$y = 4\sin^2 2x + 4\sqrt{3}\sin x \cos x + 1,5\cos 4x + 1,5 - 2\sqrt{3}$ funksiyaning qiymatlar sohasiga tegishli tub sonlar nechta?

A) *1 ta* B) *0* C) *3 ta* D) *2 ta*

$k \in N$ da $S_k = x^k + y^k$ darajali yig'indi, $\sigma_1 = x + y$, $\sigma_2 = xy$ bo'lsa, u holda quyidagi qaysi munosabat doim o'rinli?

A) $S_3 = S_2\sigma_1 + S_1\sigma_2$ B) $S_3 = S_1\sigma_1 - S_2\sigma_2$
C) $S_3 = S_2\sigma_2 + S_1\sigma_1$ D) $S_3 = S_2\sigma_1 - S_1\sigma_2$

. Agar barcha x, y lar uchun $x^3 + 4x^2y + axy^2 + 3xy - bx^cy + 7xy^2 + dxy + y^2 = x^3 + y^2$ ayniyat bajarilsa, c ni toping. $(c > 1)$

A) 2 B) -2 C) 3 D) -4

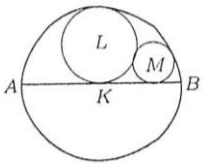
. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(1;4)$, $C(2;0)$. Uchburchak yuzini toping.

A) $3\sqrt{2}$ B) $2\sqrt{3}$ C) *3* D) *4*

. $x = -y$, $z = 2$ bo'lsa, $\dfrac{x^3 + y^3 + z^3 - 3xyz}{x^2 + y^2 + z^2 - xy - xz - yz}$ ifodaning qiymatini toping.

A) -2 B) *0* C) *2* D) *1*

. AB kesma K aylananing diametri bo'lsin. L aylana K aylanaga hamda AB to'g'ri chiziqqa K aylananing markazida urinadi; M aylana K va L aylanaga hamda AB to'g'ri chiziqqa urinadi (chizmaga qarang). Agar M aylana radiusi 0,5 ga teng bo'lsa, K aylana radiusini toping.



A) *2* B) *aniqlab bo'lmaydi* C) *3* D) *4*

. Poyezd 5 minutda 10 kilometr masofani, motosikl 6 minutda 10 kilometr masofani bosib o'tdi. Motosiklchining tezligi poyezd tezligining necha foizini tashkil etadi?

A) $83\frac{1}{3}\%$ B) $81\frac{2}{3}\%$ C) $63\frac{1}{3}\%$ D) *80%*

. Kitobda 128 ta sahifa mavjud. Agar har bir sahifada 32 ta satr va har bir satrda 64 ta belgi bo'lsa, bu kitob necha megabayt axborot hajmiga ega?

A) *0,125* B) *0,25* C) *0,5* D) *0,24*

. Tenglik o'rinli bo'lishi uchun sonlarning asosi qanday bo'lishi kerak? $5_{(x)} * 4_{(x)} = 26_{(x)}$

A) *To'qqizlik* B) *Yettilik* C) *Sakkizlik* D) *Oltilik*

. ... – bu kompyuter va uning qurilmalari ishini boshqaruvchi, foydalanuvchi bilan muloqotni tashkil etuvchi dasturdir.

A) *Utilitlar* B) *Operatsion tizim (sistema)*
C) *Drayverlar* D) *Antiviruslar*

70. MS Excel. A1=12; A2=18; A3=-12; A4=-17 ga teng bo'lsa, ... (A1;A3-A2;A4)=-30 tenglik o'rinli bo'lishi uchun nuqtala o'rnida qaysi funksiya qo'llangan bo'lishi kerak?

A) *МИН* B) *СУММ* C) *СРЗНАЧ* D) *МАКС*

71. Internetdagi ma'lumotlarni tarmoqda uzatish qoidalari ... deyiladi.

A) *protokollar* B) *provayderlar* C) *promouterlar*
D) *dasturlar*

72. Quyidagi to'plamni Paskal tilida yozilishini aniqlang: $X^2 + Y^2 < R^2$, $y \geq 0$, $x < a$

A) *(x*x+sqr(y)<r*r) and (x<a) and Not(y<0)*
B) *(sqr(x)+sqr(y)<sqr(r)) or (x<a) or (y>=0)*
C) *(X*X+Y*Y)<R*R) and (y>=0) and Not(x>A)*
D) *(x*x+sqr(y)<sqr(r)) and (x<=a) or (y>0)*

138-variant

MATEMATIKA (INFORMATIKA BILAN)

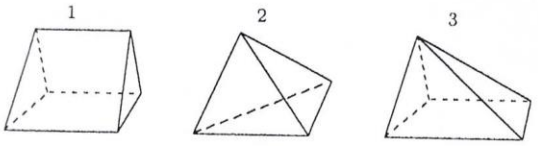
37. $\log_{0,5}(4^x - 5\cdot 2^x + 6) \geq -1$ tengsizlikni qanoatlantiradigan barcha butun sonlar yig'indisini toping.

A) *0* B) -1 C) *2* D) *4*

38. Hisoblang: $\dfrac{\sin^2\frac{3\pi}{7} - \sin^2\frac{\pi}{7}}{\sin\frac{2\pi}{7}\sin\frac{3\pi}{7}}$

A) *1* B) *2* C) $\sqrt{2+\sqrt{2}}$ D) $\sqrt{2-\sqrt{2}}$

39. Quyidagi ko'pyoqlardan qaysi birida 4 ta yoq bor?



A) *1, 3* B) *2* C) *1* D) *3*

40. a ning qanday qiymatida $(a-1)x^2 + (2a+2)x + a - 2 = 0$ kvadrat tenglama ikkita o'zaro teng ildizga ega bo'ladi?

A) 0 B) 0,5 C) 1 D 0,2

41. $y = \ln(\sin^2 3x + \cos^2 3x)$ funksiyaning $x = \dfrac{1}{2}$ nuqtadagi ikkinchi tartibli hosilasining qiymatini toping.

A) *1* B) $\ln 2$ C) *0* D) $-\ln 2$

42. Ushbu $f(x) = \dfrac{2x-7}{x^2-7x+12}$ funksiyaning boshlang'ich funksiyasini toping.

A) $\ln(|x-3|\cdot|x-4|) + C$ B) $\ln|x-4| + C$

C) $\dfrac{2x^2}{x-3} + C$ D) $\ln(x-3) + C$

43. Ixtiyoriy x, y haqiqiy sonlar uchun $a = \dfrac{x^2+4y^2}{2}$ va $b = 2|xy|$ bo'lsin. Qaysi tengsizlik har doim o'rinli?

A) $a \leq b$ B) $a \geq b$ C) $a > b$ D) $a < b$

44. Agar $|x+1| = \dfrac{x}{2} + a$ tenglama a parametrning nechta natural qiymatida yechimga ega emas?

A) *1* B) *0* C) *3* D) *2*

45. Agar $\operatorname{ctg}^2\alpha = \dfrac{1}{3}$ va $\alpha \in \left(0; \dfrac{\pi}{2}\right)$ bo'lsa, $\cos^2\alpha - \sin^2\alpha$ ni hisoblang.

A) $-\dfrac{1}{3}$ B) $\dfrac{1}{2}$ C) $-\dfrac{1}{4}$ D) $-\dfrac{1}{2}$

46. To'g'ri burchakli uchburchakning bir kateti 6 gà teng. Uning medianalari kesishish nuqtasidan ikkinchi katetigacha bo'lgan masofani toping.

A) *3* B) *1,5* C) *2* D) *1,2*

47. $\{x | x \in N, x^2 \leq 23\}$ to'plamning nechta qism-to'plamlari mavjud?

A) *16* B) *4* C) *23* D) *32*

48. Hisoblang: $2\sqrt{20} - 3\cdot\sqrt{125} + 7\sqrt{80} - \dfrac{2\sqrt{405}}{3}$

A) $3\sqrt{5}$ B) $11\sqrt{5}$ C) $9\sqrt{5}$ D) *0*

49. ABC uchburchakning BC tomonidan D nuqta tanlab olingach tomoni 4 ga teng muntazam ABD uchburchak hosil bo'ldi. Agar CD=2 bo'lsa AC tomon uzunligini toping.

A) *7* B) $3\sqrt{7}$ C) *6* D $2\sqrt{7}$

50. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(-1;-2)$ $C(-2;0)$. Uchburchak yuzini toping.

A) $2\sqrt{3}$ B) *2* C) $2\sqrt{2}$ D) *3*

51. $a = 5$ bo'lsa, $\int\limits_a^{a+1} (ln(\sin^2 2x + \cos^2 2x) + 1)dx$ aniq integralni hisoblang.

A) $\sqrt{2}$ B) $\frac{\ln 2 - 1}{2}$ C) *1* D) $2\sqrt{2}$

52. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(1;0)$, $B(6;0)$, $C(1;5)$. O'tkir burchaklar medianalari orasidagi o'tmas burchak kosinusini toping.

A) $-\dfrac{5}{7}$ B) $-\dfrac{4}{7}$ C) $-\dfrac{4}{5}$ D) $-\dfrac{3}{5}$

53. Kompyuter xotirasiga virus tushdi. Birinchi sekundda u xotiraning yarmini, ikkinchi sekundda qolganining uchdan birini, uchinchi sekundda qolganining to'rtdan birini, to'rtinchi sekundda qolganining beshdan bir qismini ishdan chiqardi. Shu paytda xotiraning qancha qismiga virus tushmagan?

A) $\dfrac{1}{5}$ B) $\dfrac{1}{10}$ C) $\dfrac{1}{12}$ D) $\dfrac{1}{6}$

54. $\log^2_{\frac{1}{5}}(9-x^2) - 2\log_{\frac{1}{5}}(9-x^2) - 8 \leq 0$ tengsizlikning barcha natural yechimlari yig'indisini toping.

A) *10* B *3* C) *6* D) *15*

55. $|x^2 + 2x - 8| = 3a$ tenglama a ning qanday qiymatlarida haqiqiy yechimga ega emas?

A) $1 < a < 3$ B) $a < 0$ C) $(0;3)$ D) $a > 3$, $a = 0$

56. $y = \ln x$ funksiya grafigi berilgan bo'lib, uni parallel ko'chirish yordamida $y = \ln(x+a) + b$ funksiya grafigi hosil qilingan. Bunday parallel ko'chirishda koordinata boshi qanday nuqtaga ko'chadi? Bunda, $x > -a$, $x > 0$

A) $N(b;a)$ B) $N(a;b)$ C) $N(a;-b)$ D) $N(-a;b)$

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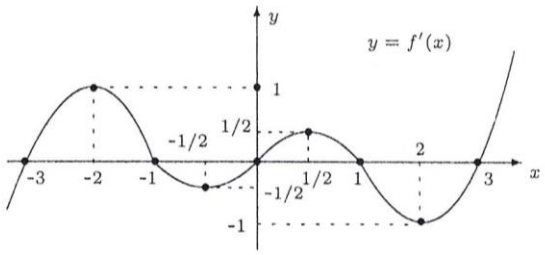
57. Rasmda $y = f'(x)$ funksiya grafigi tasvirlangan. $y = f(x)$ funksiya grafigiga $x_0 = 2$ nuqtada o'tkazilgan urinmaning burchak koeffitsiyentini toping.



A) 0 B) 1 C) 3 D) -1

58. O'zaro teng bo'lmagan x va y sonlari $x^2 + 24y = y^2 + 24x$ tenglikni qanoatlantirsa, $x + y$ ni toping.

A) *24* B) *12* C) *0* D) *34*

59. Agar barcha x, y lar uchun
$x^3 + 4x^2y + axy^2 + 3xy - bx^cy + 7xy^2 + dxy + y^2 = x^3 + y^2$
ayniyat bajarilsa, $b - d$ ni toping. $(c > 1)$

A) *6* B) -2 C) -4 D) *7*

60. $y = x^2 - 6x + 13$ parabolaning uchi koordinatalar boshidan qanday masofada joylashgan?

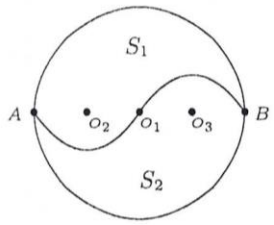
A) *5* B) *1* C) *4* D) *2*

61. Akvariumning bo'yi 120 sm, eni 70 sm, balandligi 90 sm. Suv sathi yuqoridan 10 sm pastda bo'lishi uchun akvariumga necha litr suv quyish kerak?

A) *77* B) *672* C) *756* D) *670*

62. $(0,2)^{\frac{1}{2}\log_5 4 - \log_{25} 16}$ sonidan katta bo'lmagan natural sonlar nechta?

A) *3* B) *2* C) *0* D) *1*



63. Rasmda AB katta aylana diametri, O_1 katta aylana markazi, O_2 va O_3 kichik aylana markazlari bo'lib, ular uchun $AO_1 : O_1O_2 = O_2O_3 : O_3B$ tenglik o'rinli. S_1 va S_2 sohalar perimetrlari yig'indisini ifodalaydigan son S_1 soha yuzini ifodalaydigan sondan 25% ga kichik bo'lsa, katta aylana uzunligini toping.

A) $\frac{64}{3}\pi$ B) 32π C) 16π D) $\frac{32}{3}\pi$

64. $y = ln(-6sin^2x + \frac{3}{4}cos^2 2x + 5\frac{1}{4})$ funksiyaning qiymatlar sohasiga tegishli butun sonlar nechta?

A) *2 ta* B) *1 ta* C) *cheksiz ko'p* D) *3 ta*

65. Qirrasi $4\sqrt{3}$ ga teng bo'lgan kubning qo'shni yoqlarining ayqash diagonallari orasidagi masofani toping.

A) 4 B) *5* C) $3\sqrt{2}$ D) $2\sqrt{3}$

66. Geometrik progressiya n-hadi $b_n = \frac{1}{3} \cdot 5^{n+1}$ ga teng.
Progressiyaning maxrajini toping.

A) -5 B) *0,2* C) *0,5* D) *5*

67. Ingliz tilidagi qaysi so'zlardan bit atamasi hosil qilingan?

A) *bitmap digit* B) *binary digit* C) *binom digital*
D) *binary disk*

68. *D*095, 209*A* butun sonlarni barchasini yozish mumkin bo'lgan eng kichik asosli sanoq sistemasida shu sonlar yig'indisini hisoblang va natijani o'nlik sanoq sistemasida tasvirlang.

A) *61743* B) *33204* C) *50910* D) *41427*

69. Faylga yo'l berilgan: C : *My pictures\klass\picture.bmp* Uning ustki katalogini ko'rsating.

A) *picture* B) *My pictures* C) *C:* D) *klass*

70. $A1$=–7, $A2$=–1, $B1$=7, $B2$=5 bo'lsin. Natijasi –8 ga teng bo'ladigan formulani aniqlang.

A) = МИН($-A1 - B2; A2 - B1$)
B) = СЧЕТЕСЛИ($A1 : B2$;" < 7")
C) = МАКС($ABS(A1) + B2; A2 + B1$)
D) = СТЕПЕНЬ($B2; A2 + 1$)

71. Web brauzerda matnning ko'rinishi quyidagicha bo'lishi uchun uning HTML kodi qanday bo'lishi kerak?
Chala kvadrat tenglama $ax^2+c=0$ ko'rinishida bo'ladi.

A) * Chala kvadrat tenglama ax ² +c=0 ko'rinishida bo'ladi. *
B) * Chala kvadrat tenglama ax ² +c=0 ko'rinishida bo'ladi. *
C) * Chala kvadrat tenglama ax² +c=0 ko'rinishida bo'ladi. *
D) * <cite>Chala kvadrat tenglama ax ² +c=0 ko'rinishida bo'ladi.</cite> *

72. Paskal. Quyidagi dastur natijasini aniqlang.

```
Var x, y, z : Real;
Begin y:=-1; x:=0;
IF (x>=0) and (1+Sqrt(x) <>0) THEN
Begin z:=Sqr(1+y+x)/(1+Sqrt(x));
Write('Z=', z:5:2); end
ELSE Write('Hisoblab bo'lmaydi'); End.
```

A) *Hisoblab bo'lmaydi*
B) *Kompilyatsiyada xatolik xabari chiqadi*
C) *Z= 0.00*
D) *Z= 2.00*

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MATEMATIKA (INFORMATIKA BILAN)

37. $\log_{\frac{1}{6}} \log_{\frac{1}{4}} \frac{x+4}{2x-1} < 0$ tengsizlikni qanoatlantiradigan eng kichik va eng katta butun sonlar ayirmasini toping.

A) -3 B) -2 C) 0 D) -4

38. Agar $f(x) = 7^x \cdot 3x$ bo'lsa, $f'(x) = 0$ tenglamani yeching.

A) $-\log_7 e$ B) $\ln 7$ C) 0 D) $\log_7 e$

39. Beshta a_1, a_2, a_3, a_4, a_5 tub sonlar ayirmasi 6 ga teng bo'lgan arifmetik progressiyani tashkil qiladi. a_4 ni toping.

A) 11 B) 13 C) 23 D) 17

40. $a = -2$ bo'lsa, $\int_a^{a+1} (ln(\sin^2 3x + \cos^2 3x) + 1)dx$ aniq integralni hisoblang.

A) $\frac{\ln 2 - 1}{3}$ B) 1 C) $2\sqrt{2}$ D) $\sqrt{2}$

41. To'g'ri burchakli uchburchak gipotenuzasiga tushirilgan balandligi $\sqrt{3}$ ga, to'g'ri burchak bissektrisasi $\sqrt{5}$ ga teng. Uchburchakning yuzini toping.

A) 15 B) 18 C) 25 D) 45

42. $y = \sqrt{x^2} + |2x - 4| + 1$ funksiyaning eng kichik qiymatini toping.

A) 3 B) 5 C) 2 D) 4

43. Agar barcha x y lar uchun $x^3 + 4x^2y + axy^2 + 3xy - bx^cy + 7xy^2 + dxy + y^2 = x^3 + y^2$ ayniyat bajarilsa, $a + b - c + d$ ni toping. $(c > 1)$

A) -2 B) -4 C) -8 D) 3

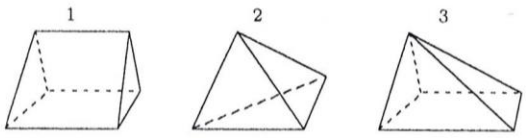
44. Hisoblang: $\log_2 \left(\frac{1+\sqrt{7}}{\sqrt{4+\sqrt{7}}} - \frac{1-\sqrt{5}}{\sqrt{3-\sqrt{5}}} \right)$

A) $1{,}5$ B) 0 C) 1 D) $-1{,}2$

45. $y > 0$ bo'lsin. To'rtburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(0;y)$, $C(-2;y)$ va $D(-4;0)$. To'rtburchak diagonallarining o'rtalari orasidagi masofani toping.

A) y ga bog'liq B) 1 C) $\sqrt{2}$ D) 2

46. Quyidagi ko'pyoqlardan qaysi birida 5 ta yoq, 8 ta qirra va 5 ta uchi bor?



A) 2 B) 3 C) 1 D) $1, 2$

47. Agar $|x - 10| = \frac{x}{2} + a$ tenglama ikkita yechimga ega bo'lsa a ning eng kichik butun qiymatini toping.

A) -4 B) -3 C) -5 D) -1

48. $x^8 - 18x^4 + 32 \leq 0$ tengsizlikning barcha butun yechimlari ko'paytmasini toping.

A) 2 B) -4 C) 4 D) -2

49. Ixtiyoriy x, y haqiqiy sonlar uchun $a = 9x^2 + \frac{1}{9}y^2$ va $b = 2|xy|$ bo'lsin. Qaysi tengsizlik har doim o'rinli?

A) $a \leq b$ B) $a \geq b$ C) $a > b$ D) $a < b$

50. $x = -y$, $z = 1$ bo'lsa, $\frac{x^3 + y^3 + z^3 - 3xyz}{x^2 + y^2 + z^2 - xy - xz - yz}$ ifodanin qiymatini toping.

A) -1 B) -2 C) 1 D) 2

51. $\alpha = 22,5°$, $a = (\text{tg}\,\alpha)^{\text{tg}\,\alpha}$, $b = (\text{tg}\,\alpha)^{\text{ctg}\,\alpha}$, $c = (\text{ctg}\,\alpha)^{\text{tg}\,\alpha}$, $d = (\text{ctg}\,\alpha)^{\text{ctg}\,\alpha}$ bo'lsa quyidagilardan qaysi biri o'rinli?

A) $d > c > b > a$ B) $d > c > a > b$ $c > d > a > b$
D) $d > a > c > b$

52. Muntazam uchburchakli piramida asosining tomonidan ung ayqash yon qirraga perpendikular bo'lgan tekislik o'tkazilgan. Kesuvchi tekislik yon qirrani uchidan hisoblaganda 3:2 nisbatda kesadi. Asos tomoni $a\sqrt{2}$ ga teng bo'lsa, piramida yon sirtining yuzini toping.

A) $3a^2$ B) $2,5a^2$ C $1,5a^2$ D) $2a^2$

53. Poyezd 4 minutda 9 kilometr masofani, motosikl 6 minutda 9 kilometr masofani bosib o'tdi. Motosiklchining tezligi poyezd tezligining necha foizini tashkil etadi?

A) $67\frac{2}{3}\%$ B) $73\frac{1}{3}\%$ C) $66\frac{2}{3}\%$ D) 70%

54. $\begin{cases} \frac{a-b}{b} = \frac{3}{2}, \\ sin\frac{\pi}{2} - \frac{b}{a} = c \end{cases}$ bo'lsa, c–?

A) 8 B) $\frac{2}{5}$ C) $\frac{4}{5}$ D) $\frac{3}{5}$

55. $\begin{cases} x + y = -4 \\ \frac{1}{x} + \frac{1}{y} = \frac{4}{21} \end{cases}$ tenglamalar sistemasini yeching.

A) $\{3;-7\}$ va $\{7;-3\}$ B) $\{3;-7\}$ va $\{-7;3\}$
C) $\{3;-7\}$ va $\{7;3\}$ D) $\{-5;1\}$ va $\{1;-5\}$

56. $a = -3$ bo'lsa, $\int_a^{a+1} (\sin^2 3x + \cos^2 3x)dx$ integralni hisoblang.

A) $\frac{\sqrt{2}-1}{3}$ B) $2\sqrt{2}$ C) $\sqrt{2}$ D) 1

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7. Kasrning maxrajini irratsionallikdan qutqaring. $\frac{6}{\sqrt[3]{11}-\sqrt[3]{5}}$

A) $\sqrt[3]{11}+\sqrt[3]{5}+\sqrt[3]{55}$
B) $\sqrt[3]{121}-\sqrt[3]{25}$
C) $\sqrt[3]{25}+\sqrt[3]{55}+\sqrt[3]{121}$
D) $\sqrt[3]{25}-\sqrt[3]{55}+\sqrt[3]{121}$

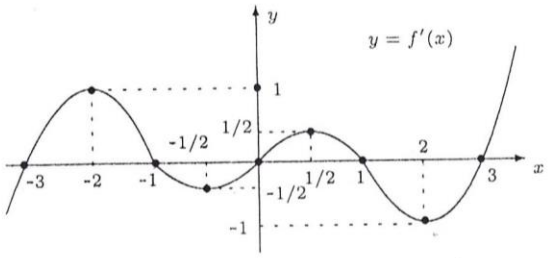
8. $y=\sqrt{6+2(sin^2x-3sin4x)+cos2x+cos8x}$ funksiyaning eng katta qiymati a bo'lsa, a^2 ni toping.
A) *9* B) *12* C) *14* D) *4*

9. Prizmaning qirralari soni 75 ga teng. Uning yoqlari sonini toping.
A) *75* B) *bir qiymatli aniqlab bo'lmaydi* C) *25* D) *2*

10. To'g'ri burchakli trapetsiyaning asoslari 15 va 5 ga teng. Unga ichki chizilgan aylana radiusini toping.
A) *3,5* B) *3* C) *,75* D) *4*

11. $y=\cos x$ funksiya grafigi berilgan bo'lib, uni parallel ko'chirish yordamida $y=\cos(x+a)+b$ funksiya grafigi hosil qilingan. Bunday parallel ko'chirishda koordinata boshi qanday nuqtaga ko'chadi?
A) $N(-a;b)$ B) $N(b;a)$ C) $N(a;-b)$ D) $N(a;b)$

12. Rasmda $y=f'(x)$ funksiya grafigi tasvirlangan. $y=f(x)$ funksiya grafigiga $x_1=2$ va $x_2=-1$ abssissali nuqtalarida o'tkazilgan urinmalar orasidagi o'tkir burchakni toping.



A) $\frac{\pi}{4}$ B) $\frac{\pi}{3}$ C) $\frac{5\pi}{12}$ D) $\frac{\pi}{2}$

13. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(-1;-4)$, $C(-2;0)$. Uchburchak yuzini toping.
A) *3* B) $3\sqrt{2}$ C) $2\sqrt{3}$ D) *4*

14. To'g'ri burchakli uchburchak tomonlariga yasalgan kvadratlar yuzlarining yigindisi 48 ga teng. Gipotenuza uzunligini toping.
A) $2\sqrt{6}$ B) *12* C) $2\sqrt{3}$ D) *10*

15. Ifodani soddalashtiring: $\sin^4 4\alpha-\cos^4 4\alpha+\sin 8\alpha$

A) $\sqrt{2}\sin(45^\circ-8\alpha)$
B) $\sin(4\alpha-45^\circ)$
C) $\sqrt{2}\cos(8\alpha-45^\circ)$
D) $\sqrt{2}\sin(8\alpha-45^\circ)$

16. $\{x|x\in N, 2\le x^2\le 38\}$ to'plamning nechta qism-to'plamlari mavjud?
A) *38* B) *32* C) *5* D) *16*

17. 4 terabayt necha gigabaytga teng?
A) 2^{32} *gigabayt* B) 2^{12} *gigabayt* C) 2^{25} *gigabayt*
D) 2^{22} *gigabayt*

18. Tenglik o'rinli bo'lishi uchun sonlarning asosi qanday bo'lishi kerak? $24005_{(x)}=26010_{(x)}-2003_{(x)}$
A) *Yettilik* B) *Oltilik* C) *Sakkizlik* D) *To'qqizlik*

19. proba.txt fayli joylashgan katalogni ko'rsating:
$C:\backslash doc\backslash 1\backslash proba.txt$
A) *proba* B) *doc* C) *1* D) $C:\backslash$

20. MS Excel dasturida formulaning natijasini aniqlang:
$A1=16;\ B1=-12;\ =-1*\text{КОРЕНЬ}(A1)+\text{ЗНАК}(B1)$
A) *5* B) *-8* C) *8* D) *-5*

21. Web brauzerda matnning ko'rinishi quyidagicha bo'lishi uchun uning HTML kodi qanday bo'lishi kerak?
Bikvadrat tenglama $ax^5+bx^2+c=0$ ko'rinishida bo'lmaydi.

A) Bikvadrat tenglama ax ⁵ +bx² +c=0 ko'rinishida bo'lmaydi.
B) <s><cite>Bikvadrat tenglama ax ⁵ +bx² +c=0 ko'rinishida bo'lmaydi.</cite></s>
C) Bikvadrat tenglama <s>ax ⁵ +bx² +c=0</s> ko'rinishida bo'lmaydi.
D) Bikvadrat tenglama ax⁵ +bx² +c=0 ko'rinishida bo'lmaydi.

22. Paskal tilida quyidagi dastur lavhasi takrorlanish operatoridagi takrorlanishlar sonini aniqlang:
I:=0; Repeat I:=I+1
Until 0>I;
A) *0 marta* B) *2 marta* C) *cheksiz marta* D) *1 mar*

Kun va tunning almashishi axborotning qaysi turiga kiradi?
A) *ishonchli* B) *to'liq* C) *uzluksiz* D) *diskret*

68. Quyidagi mantiqiy ifodaga teng kuchli ifodani aniqlang:
$A \wedge B \vee \neg A$
A) $\neg(A \wedge \neg B)$ B) $\neg(A \vee \neg B)$ C) $A \wedge \neg B$ D) $\neg A \wedge B$

69. Sinovdan o'tkazish muddatiga ega bo'lgan dasturlar – bu ...
A) *Hardware* B) *Software* C) *Freeware* D) *Shareware*

70. $A1$=–7, $B1$=8, $B2$=3 bo'lsin. Quyidagi formula natijasi –57 ga teng bo'lishi uchun $A2$ katakka kiritilishi kerak bo'lgan qiymatni aniqlang.
=ЕСЛИ(ИЛИ($A1+B2<=A2*B1$;$A1*B1>0$);
$A1*B2+B1-A2$;$A1*B1+B2+A2$)
A) –2 B) –4 C) –7 D) –6

71. Rasm joylashtirish tegi to'g'ri ko'rsatilgan qatorni tanlang.
A) *<a href="fayl nomi">* B) *<img scr="fayl nomi">*
C) *<img src="fayl nomi">* D) *<frame src="fayl nomi">*

72. Paskal tilida 50 ta elementdan iborat butun turdagi chiziqli massiv to'g'ri tavsiflangan javobni ko'rsating.
A) *Var F: array[-50..-1] of Boolean;*
B) *Var C: array[-54..-5] of word;*
C) *Var B: array[5..55] of integer;*
D) *Var K: array[1..49] of real;*

MATEMATIKA (INFORMATIKA BILAN)

37. Hisoblang: $\cos\left(2\operatorname{arcctg}\frac{1}{5}\right)$
A) $-\frac{11}{13}$ B) $-\frac{12}{13}$ C) 1 D) $\frac{12}{13}$

140-variant

Agar $|x+3| = \frac{x}{2} + a$ tenglama a parametrning nechta natural qiymatida yechimga ega emas?

A) 3 B) 1 C) 2 D) 0

39. 123451234512345123451234512345 sonida 10 ta raqam shunday o'chirilganki, hosil bo'lgan son eng katta bo'ldi. Shu sonning 9-raqamini toping.

A) 2 B) 4 C) 3 D) 5

40. Sharga asosining tomoni $5\sqrt{2}$ ga, balandligi 10 ga teng bo'lgan muntazam to'rtburchakli piramida ichki chizilgan. Shar radiusini toping.

A) 6 B) 6,5 C) 4,25 D) 6,25

41. $y = \operatorname{arctg} x$ funksiya grafigi berilgan bo'lib, uni parallel ko'chirish yordamida $y = \operatorname{arctg}(x-a)+b$ funksiya grafigi hosil qilingan. Bunday parallel ko'chirishda koordinata boshi qanday nuqtaga ko'chadi?

A) $N(a;-b)$ B) $N(-a;b)$ C) $N(b;a)$ D) $N(a;b)$

42. $y = 1 + 2(sin^2x - 3sin4x) + cos8x + cos2x$ funksiyaning qiymatlar sohasiga tegishli nomanfiy butun sonlar nechta?

A) 7 ta B) 9 ta C) 6 ta D) 8 ta

43. $a = 2$ bo'lsa, $\int_a^{a+1} (ln(\sin^2 2x + \cos^2 2x) + 1)dx$ aniq integralni hisoblang.

A) $\frac{\ln 2-1}{2}$ B) 1 C) $2\sqrt{2}$ D) $\sqrt{2}$

44. Agar barcha x, y lar uchun $x^3 + 4x^2y + axy^2 + 3xy - bx^cy + 7xy^2 + dxy + y^2 = x^3 + y^2$ ayniyat bajarilsa, $|a+b+c|(b+d)$ ni toping. $(c > 1)$

A) 1 B) -4 C) -2 D) 3

45. $\sqrt[3]{x^2} = \sqrt[3]{x} + 6$ tenglamani yeching.

A) 8 va -27 B) -8 va -27 C) -8 va 27 D) 8 va 27

46. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(0;0)$, $B(-1;3)$, $C(-2;0)$. Uchburchak yuzini toping.

A) 3 B) $2\sqrt{3}$ C) 2 D) $2\sqrt{2}$

47. O'zaro teng bo'lmagan x va y sonlari $x^2 - 16x = y^2 - 16y$ tenglikni qanoatlantirsa, $x+y$ ni toping.

A) 24 B) 0 C) 16 D) 26

48. $5 \cdot 0,2^{\lg x} > 0,04^{\lg 2}$ tengsizlikni qanoatlantiruvchi eng katta va eng kichik natural sonlar nisbatini toping.

A) 40 B) 20 C) 39 D) 18,5

49. $\sqrt{2x+1} \le \sqrt{x^3 - 4x^2 + x + 5}$ tengsizlikni qanoatlantirmaydigan musbat butun yechimlari nechta?

A) 1 B) 2 C) 3 D) cheksiz ko'p

50. Poyezd 4 minutda 8 kilometr masofani, motosikl 6 minutda 8 kilometr masofani bosib o'tdi. Motosiklchining tezligi poyezd tezligining necha foizini tashkil etadi?

A) 70% B) $53\frac{1}{3}\%$ C) $66\frac{2}{3}\%$ D) $65\frac{2}{3}\%$

51. $\int_1^2 \frac{x}{x+1}dx$ integralni hisoblang.

A) $\ln\frac{2e}{3}$ B) $\ln 3e$ C) $\ln 2e$ D) 1

52. Rombning tomoni 6 ga, o'tkir burchagi 60° ga teng. Rombning tomonlari va kichik diagonaliga urinuvchi aylana radiusini toping.

A) $0,5\sqrt{3}$ B) $2\sqrt{3}$ C) 3 D) $\sqrt{3}$

53. Teng yonli ucburchakning yon tomoniga o'tkazilgan medianasi asosi bilan 30° li burchak tashkil etadi. Ucburchakning asosidagi burchak tangensini toping.

A) $1,5\sqrt{2}$ B) 3 C) $2\sqrt{3}$ D) $\sqrt{3}$

54. Beshta a_1, a_2, a_3, a_4, a_5 tub sonlar ayirmasi 6 ga teng bo'lgan arifmetik progressiyani tashkil qiladi. $2a_1 + a_2$ ni toping.

A) 34 B) 27 C) 21 D) 37

55. $\{x | x \in N, -2 < x \le 5\}$ to'plamni nechta usul bilan ikkita kesishmaydigan qism-to'plamlarga ajratish mumkin?

A) 8 B) 7 C) 32 D) 16

56. Agar $f(x) = 7^x \cdot 3x$ bo'lsa, $f'(x) = 0$ tenglamani yeching.

A) 0 B) $-\log_7 e$ C) $\log_7 e$ D) $\ln 7$

57. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan: $A(3;0)$, $B(0;3)$, $C(0;0)$. O'tkir burchaklar medianalari orasidagi o'tmas burchak kosinusini toping.

A) $-\frac{3}{5}$ B) $-\frac{5}{7}$ C) $-\frac{4}{7}$ D) $-\frac{4}{5}$

58. $y = 3sin4x + 2sin6x$ funksiyaning hosilasini toping.

A) $24cosx \cdot cos5x$ B) $24sinx \cdot cos5x$ C) $-24cosx \cdot sin5x$ D) $24sinx \cdot sin5x$

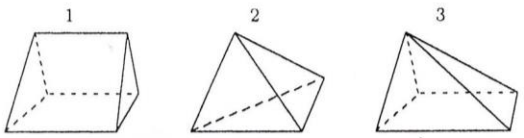
59. Teng yonli trapetsiyaning yon tomoni 4 ga, diagonali o'rta chizig'ini 1 va 2 ga teng kesmalarga ajratadi. Trapetsiyaning yuzini toping.

A) $2\sqrt{15}$ B) $3\sqrt{15}$ C) 9 D) 12

60. Hisoblang: $\sin 25° \cdot \sin 35° \cdot \sin 85°$.

A) $\frac{\sqrt{2+\sqrt{3}}}{8}$ B) $\frac{\sqrt{2-\sqrt{3}}}{16}$ C) $\frac{\sqrt{2+\sqrt{3}}}{16}$ D) $\frac{\sqrt{2-\sqrt{3}}}{8}$

61. Quyidagi ko'pyoqlardan qaysi birida 4 ta yoq, 6 ta qirra bor?



A) 2 B) 1 C) 1, 2 D) 3

62. Hisoblang: $\log_{64}\left(0,(3)^{\log_3\left(1+\frac{1}{2}+\frac{1}{2^2}+\frac{1}{2^3}+\cdots\right)}\right)$

A) $-\frac{1}{3}$ B) 1 C) $\frac{1}{6}$ D) $-\frac{1}{6}$

63. $\alpha > 0$, $\beta < 0$ haqiqiy sonlar uchun qanday munosabat doimo o'rinli?

A) $|\alpha - \beta| \le \alpha + \beta$ B) $|\alpha - \beta| < \alpha - \beta$
C) $|\alpha - \beta| \ge \alpha + \beta$ D) $|\alpha - \beta| < \alpha + \beta$

64. Akvariumning bo'yi 80 sm, eni 60 sm, balandligi 40 sm. Suv sathi yuqoridan 10 sm pastda bo'lishi uchun akvariumga necha litr suv quyish kerak?

A) 144 B) 140 C) 288 D) 72

65. Ikkita sonning yig'indisi 32 ga, kvadratlarining ayirmasi 192 ga teng. Shu ikkita sonning kvadratlari yig'indisini toping.

A) 630 B) 570 C) 480 D) 530

66. $y = -x^2 + 6x - 1$ funksiya grafigining simmetriya o'qi koordinatasi va (5;8) nuqta orasidagi masofani toping.

A) 3 B) 2 C) 8 D) 7