

2015-YIL
MATEMATIKA VA
INFORMATIKA
FANIDAN
VARIANTLAR
TO'PLAMI

Olot-2018 yil

MATEMATIKA (INFORMATIKA BILAN)

- $\sin x = 0$, $1x$ tenglama nechta ildizga ega?
A) 5 ta B) 7 ta C) 3 ta D) 10 ta
- $y = \frac{\sqrt{x+1} - \sqrt{x}}{x^2 + 2x - 3}$ funksiyani aniqlanish sohasini toping.
A) $[0; 1) \cup (1; +\infty)$ B) $(-\infty; -1) \cup (-1; 0) \cup (0; 1)$
C) $[0; +\infty)$ D) $[-1; 0]$
- Agar $xy + yz + zx = 16$ bo'lsa, $(x + y + z)^2$ ning eng kichik qiymatini toping.
A) 96 B) 64 C) 72 D) 48
- $f(x) = (2x - 7)^2$ funksiyani hosilasini hisoblang.
A) $8x - 28$ B) $4x - 28$ C) $8x + 28$ D) $4x - 14$
- Teng yonli uchburchakka ichki chizilgan aylanani markazi uning asosiga tushirilgan balandligini, uchidan boshlab hisoblaganda 5 va 3 ga teng kesmalarga ajratadi. Uchburchakning yuzini toping.
A) 48 B) 50 C) 54 D) 52
- 2 va 162 sonlari orasiga shunday 3 ta son qo'yildiki, ular birgalikda ishorasi almashinuvchi geometrik progressiyani tashkil qildi. Oraga qo'yilgan sonlar yig'indisini toping
A) -42 B) 42 C) 78 D) 0
- $3 \cdot 13 \cdot 31^2 \cdot 33 \cdot 37^2$ ko'paytmaning natural bo'luvchilari sonini toping.
A) 216 B) 106 C) 54 D) 108
- $0,5(3x - 9) + 0,2(x - 1) = 0$, $(3)x - 2$ tenglamani yeching.
A) $\frac{81}{41}$ B) $\frac{1}{3}$ C) $\frac{85}{41}$ D) $\frac{80}{41}$
- Diagonallarining soni tomonlarining soniga teng bo'lgan qavariq muntazam ko'pburchakning ichki burchaklaridan birini toping.
A) 60° B) 120° C) 90° D) 108°
- Natural sonlardan birini ikkinchisiga bo'lganda, shunday o'nli kasr hosil bo'ldiki, uning butun qismi bo'luvchiga, kasr qismi esa bo'linuvchiga teng bo'ldi. Bo'linuvchini toping.
A) 5 B) 3 C) 2 D) 10
- $\sqrt[3]{9 - \sqrt{80}} \cdot \sqrt[4]{11 + 2\sqrt{18}} \cdot \sqrt[5]{9 + \sqrt{80}}$ ni hisoblang.
A) $\sqrt{2} + 3$ B) $\sqrt{3 + \sqrt{2}}$ C) $\sqrt{3} + 2$ D) $\sqrt{2}$
- $\frac{0, (1)}{0, (5)} + \frac{0, (13)}{0, (65)} + \frac{0, (19)}{0, (95)} - 0, (9)$ ni hisoblang.
A) -0,4 B) -0,6 C) 0, (6) D) 0,4
- $x - \sqrt{x + 3} - 27 = 0$ tenglamaning ildizlari ko'paytmasini toping.
A) 48 B) 55 C) 33 D) 36
- $3^{2x} \cdot x^2 + 5x - 6 \leq x^2 + 5x \cdot 3^{2x} - 2 \cdot 3^{2x+1}$ tengsizlikning eng katta manfiy butun yechimining moduli bilan eng kichik musbat yechimi ko'paytmasini toping.
A) 3 B) $-\frac{1}{2}$ C) 1 D) 2
- $1, 2y - 3x + 0,5 = 0$ to'g'ri chiziq Ox o'qi bilan hosil qilgan burchakning sinusini toping.
A) $\pm \frac{5}{\sqrt{29}}$ B) $\frac{\sqrt{2}}{2}$ C) $\frac{5}{\sqrt{29}}$ D) $-\frac{420}{421}$
- $2 \cdot 2^{x-1} = 3 \cdot 2^{x+1} - 5$ tenglamani yeching.
A) 1 B) 0 C) 2 D) 3
- Quyidagilardan o'zaro tub sonlarni toping.
• 1) (169; 143); 2) $(n; n+1)$, $n \in N$; 3) $(n; n+2)$, $n \in N$; 4) (121; 144)
A) 1, 4 B) 1, 3 C) 1, 2 D) 2, 4
- $x^2 - 4|x| - a + 3 = 0$ tenglama a ning qanday qiymatlarida bitta manfiy va 2 ta musbat ildizga ega?
A) $a \geq 3$ B) 0 C) $a > 3$ D) $\emptyset$
- $\sqrt{3}\cos 2\alpha + \sin 2\alpha = 2$ tenglamani yeching.
A) $\frac{\pi}{3} + \pi k$ B) $\frac{\pi}{12} + \pi k$ C) $\frac{\pi}{4} + 2\pi k$ D) $\frac{\pi}{2} + \pi k$
- Konusning yasovchisi 25 ga, balandligi 15 ga teng. Konusga ichki chizilgan sharning radiusini toping.
A) 9 B) $6\frac{2}{3}$ C) $9\sqrt{3}$ D) 12
- $AB=50$ sm kesmaning uchlaridan berilgan tekislikgacha bo'lgan masofalar $BD=44$ sm va $AC=30$ sm. AB kesmani shu tekislikdagi proyeksiyasini (sm) toping.
A) 42 B) 36 C) 44 D) 48
- ABCD kvadratning D uchidan AB tomonining o'rtasiga D kesma tushirildi. AC diagonal uni L nuqtada $KL=2,5$ sm uzunlikdagi kesmaga ajratdi. Kvadratning tomonini toping
A) $3\sqrt{5}$ B) $4\sqrt{5}$ C) $\frac{3\sqrt{5}}{2}$ D) $5\sqrt{5}$
- $\frac{1}{\frac{1}{10} - \frac{1}{12}}$ ni hisoblang.
 $\frac{1}{\frac{1}{8} - \frac{1}{6}} + \frac{1}{\frac{1}{5} - \frac{1}{6}}$
A) 10 B) $\frac{1}{2}$ C) 12 D) 1
- Diagonallarining soni tomonlari sonidan 3 marta ko'p bo'lgan qavariq muntazam ko'pburchak markazidan ko'pburchak qo'shni uchlariga o'tkazilgan kesmalar hosil qilgan burchakni toping.
A) 45° B) 40° C) 30° D) 36°
- Teng yonli uchburchakning uchidagi burchagi α ga teng. Uchburchakka ichki va tashqi chizilgan doiralar radiuslari nisbatini toping.
A) $\cos \alpha \frac{\pi + \alpha}{4} \cos \alpha$
B) $\frac{\pi - \alpha}{4} \cos \alpha$
C) $\frac{\pi + \alpha}{4} \sin \alpha$
D) $\frac{\pi - \alpha}{4} \sin \alpha$
- $y = 3 \operatorname{ctg} x$ funksiyani $F(\frac{\pi}{2}) = 9$ shartni qanoatlantiruv boshlang'ichini topib, $F(\frac{5\pi}{2})$ ning qiymatini toping.
A) 9 B) 10 C) 12 D) 18
- $1 + \{x\} = \cos(3x)$ tenglamani yeching, bunda $\{x\} - x$ n kasr qismi.
A) $x = 1$ B) $x = 0$ C) $x = -1$ D) $x = 2\pi$
- $A(-3, 5; 3, 5)$ nuqtadan o'tuvchi va $\vec{a}(3; 4, 5)$ vektorga perpendikulyar bo'lgan to'g'ri chiziq tenglamasini toping
A) $2x - 3y - 3,5 = 0$ B) $2x - 3y + 3,5 = 0$
C) $2x + 3y - 3,5 = 0$ D) $2x + 3y + 3,5 = 0$

29. $f(x) = \sin e^{-x}$ bo'lsa, $f'(\ln \frac{3}{\pi})$ ni toping.

- A) $\frac{\pi}{3}$ B) $-\frac{\pi}{6}$ C) $\frac{1}{2}$ D) $\frac{3}{\pi}$

30. $\begin{cases} x^2 + y^2 = 2(xy + 2) \\ x + y = 6 \end{cases}$ tenglamalar sistemasidan $|x - y|$ ni toping.

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

31. Bir petabayt necha gigabaytga teng?

- A) 2^{30} gigabayt B) 2^{25} gigabayt C) 2^{20} gigabayt
D) 2^{10} gigabayt

32. Quyidagi mantiqiy ifodaga teng kuchli ifodani aniqlang:

$$A \wedge B \vee \neg A$$

- A) $A \vee \neg B$ B) $\neg A \wedge B$ C) $A \wedge \neg B$ D) $\neg A \vee B$

33. ... - disklar va kompyuterga ulangan boshqa qurilmalarni ko'rish, shuningdek, ular bilan ishlash imkonini beruvchi dastur oynasini ochadi.

- A) Сетевое окружение (Tarmoq muhiti)
B) Корзина (Savatcha)
C) Мои документы (Mening hujjatlarim)
D) Мой компьютер (Mening kompyuterim)

34. MS Excel 2003 dasturida yozilgan quyidagi funksiyaning qiymatini toping.

$$=CPЗНАЧ(31;10;12;7)$$

- A) 15 B) 16 C) 14 D) 12

35. Brauzerda " x^2 " yozuvini aks ettirish uchun teglar to'g'ri berilgan javobni ko'rsating.

- A) $x < \text{sub} > 2 < / \text{sub} >$ B) $x < u > 2 < / u >$ C) $x < i > 2 < / i >$
D) $x < \text{sup} > 2 < / \text{sup} >$

36. Paskal tilida butun va $(-1;121)$ oraliqdagi A, belgilari soni 21 tadan oshmaydigan B, qiymati faqat lotin harflaridan iborat M o'zgaruvchilar uchun xotiradan eng kam joy egallashi ko'zda tutilgan tavsif to'g'ri berilgan javobni aniqlang.

A) Var

A: shortint;
B: string[20];
M: string;

B) Var

A: byte;
B: string[20];
M: boolean;

C) Var

A: byte;
B: string[21];
M: string;

D) Var

A: byte;
B: string[21];
M: char;

MATEMATIKA (INFORMATIKA BILAN)

1. $y = \frac{1}{3} \sin \frac{x}{2} \cos \frac{x}{2}$ funksiyaning davrini toping.

- A) 4π B) π C) $\frac{\pi}{4}$ D) 2π

2. $\begin{cases} y = \frac{4x^2 - x^4}{x^2 - 4} \\ x = y + 6 \end{cases}$ ni qanoatlantiruvchi yechimlar nechta?

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

3. Uchburchakning tomonlari 6; 5 va 4 m. 5 m li tomonning 6 m li tomondagi proyeksiyasi necha metr?

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

4. Asoslari 13 va 17 ga teng bo'lgan teng yonli trapetsiyaning diagonallari o'zaro perpendikulyar. Trapetsiyaning yuzini toping.

- A) 225 B) 220 C) 210 D) 215

5. Diagonallarining soni tomonlarining sonidan 2 marta kam bo'lgan qavariq muntazam ko'pburchak markazidan uning qo'shni uchlariga o'tkazilgan kesmalar hosil qilgan burchakni toping.

- A) 108° B) 60° C) 72° D) 90°

6. ABC to'g'ri burchakli uchburchakning katetlarini diametr qilib yuzlari 30π va 20π bo'lgan yarim doiralar chizilgan bo'lsa, gipotenuzaning uzunligini toping.

- A) 10 B) 22 C) 15 D) 20

7. $\begin{cases} x^{\sqrt{y}} = y \\ y^{\sqrt{x}} = x^4 \end{cases}$ sistema ildizlarini ifodalovchi nuqtalar orasidagi masofani toping ($x > 0$).

- A) $2\sqrt{2}$ B) 3 C) $\sqrt{7}$ D) $\sqrt{10}$

8. $\sqrt{x-2} + \sqrt{23+x} = \sqrt{9x+7} + \sqrt{2-x}$ tenglamani yeching.

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

9. $P(-2; 2)$ nuqtadan o'tuvchi va $\vec{a}(6; 4)$ vektorga perpendikulyar bo'lgan to'g'ri chiziqli tenglamasini toping.

- A) $3x - 2y - 2 = 0$ B) $3x - 2y + 2 = 0$
C) $3x + 2y + 2 = 0$ D) $3x + 2y - 2 = 0$

10. $|x^2 - 5ax| = 15a$ tenglama a ning qanday qiymatlarida faqat -2 ta yechimga ega bo'lib, $x_1 < 0 < x_2$ shartni qanoatlantiradi?

- A) (0; 2; 5) B) (0; 2; 4) C) [2; 5; ∞) D) (2; 4; ∞)

11. Yig'indining oxirgi raqamini toping.

$$2014^{2015} + 2015^{2014}$$

- A) 3 B) 11 C) 9 D) 7

12. $\int_0^1 x^4 dx$ ni hisoblang.

- A) $\frac{5}{6}$ B) $\frac{3}{8}$ C) $\frac{1}{5}$ D) $\frac{2}{7}$

13. $3(\sin^4 \beta + \cos^4 \beta) - 2(\sin^6 \beta + \cos^6 \beta)$ ni soddalashtiring.

- A) $\frac{1}{4} \sin^2 2\beta$ B) 0 C) 1 D) $\sin^2 2\beta$

14. Muntazam uchburchak ichidan olingan nuqtadan uchburchak tomonlarigacha bo'lgan masofalar mos holda $\vec{c}(2; 3; 1)$, $\vec{b}(1; 2; 1)$ va $\vec{a}(1; 2; 3)$ vektorlarning absolyut qiymatlariga teng bo'lsa, uchburchak balandligini toping.

- A) $\sqrt{6} + \sqrt{14}$ B) 18 C) 16 D) $2\sqrt{14} + \sqrt{6}$

15. XOY dekart koordinatalar tekisligida $A(3; 2)$, $B(1; 3)$, $M(2; 1)$ va $N(z; -1)$ nuqtalar belgilangan bo'lib, ulardan tuzilgan $\vec{AM}$ va $\vec{MN}$ vektorlar o'zaro parallel bo'lsa, z nechga teng?

- A) 3 B) 6 C) 1 yoki 3 D) 5

16. Silindr asosining radiusi 10 sm, balandligi 16 sm. Silindrni o'qiga parallel kesim o'tkazilgan va u o'qdan 60 mm uzoqlikda yotadi. Shu kesimning yuzini (sm^2) toping.

- A) 216 B) 208 C) 256 D) 196

17. Arifmetik progressiyada $a_1 + a_3 + a_5 + \dots + a_9 = 50$, $a_2 + a_4 + a_6 + \dots + a_{10} = 75$ bo'lsa, d ni toping.

- A) 5 B) 3 C) 15 D) 6

18. $\int (5x + 6 + x^2) dx$ ni hisoblang.

A) $\frac{x^3}{3} + \frac{x^2}{2} + 6x + c$ B) $\frac{x^3}{3} + \frac{5x^2}{2} + 6x + c$

C) $\frac{x^3}{3} + \frac{5x^2}{2} + 3x + c$ D) $\frac{x^3}{3} - \frac{5x^2}{2} + 6x + c$

19. $-b^{\frac{1}{3}} + \frac{a^{-\frac{4}{3}}b^{-2} - a^{-2}b^{-\frac{4}{3}}}{a^{-\frac{5}{3}}b^{-2} - b^{-\frac{5}{3}}a^{-2}} + a^{\frac{1}{3}}$ ni soddalashtiring. ($a \neq b$; $a \cdot b \cdot (a - b) \neq 0$)

- A) $2a^{\frac{1}{3}}$ B) $a^{\frac{1}{3}} - b^{\frac{1}{3}}$ C) $a^{\frac{1}{3}} + b^{\frac{1}{3}}$ D) 1

20. Yo'lovchi birinchi soatda yo'lning $\frac{1}{5}$ qismini, ikkinchi soatda

qolgan yo'lning $\frac{1}{3}$ qismini, uchinchi soatda esa qolgan

yo'lning yarmini yurgach, manzilgacha 4 km masofa qoldi.

Yo'lovchi jami qancha (km) yo'l yurishi kerak?

- A) 11 B) 12 C) 16 D) 15

21. $y = 8\sin 2x + \sin 16x$ funksiyaning hosilasini toping.

- A) $32\sin 7x \cdot \sin 9x$ B) $32\sin 7x \cdot \cos 9x$
C) $32\cos 7x \cdot \cos 9x$ D) $-32\cos 7x \cdot \sin 9x$

22. $\left(1 + \frac{2}{3}\right) \left(1 + \frac{2}{4}\right) \left(1 + \frac{2}{5}\right) \dots \left(1 + \frac{2}{98}\right)$ ni hisoblang.

- A) 825 B) 980 C) 1 D) 625

23. $\begin{cases} \log_3 \left(\log_{\frac{x}{y}} \frac{x}{y} \right) = 0 \\ \log_{\sqrt{x}} xy = 8 \end{cases}$ tenglamalar sistemasini yeching.

- A) (3; 9) B) (3; 27) C) $\left(3; \frac{1}{3}\right)$ D) (9; 27)

24. Agar $xy + yz + zx = 16$ bo'lsa, $(x + y + z)^2$ ning eng kichik qiymatini toping.

- A) 96 B) 48 C) 72 D) 64

25. Qo'shni burchaklardan biri ikkinchidan 11 marta katta bo'lsa, shu burchaklardan kichigini toping.

- A) 30° B) 12° C) 15° D) 20°

26. $-0, (44)$ ning teskarisiga qarama-qarshi bo'lgan sonning kvadrat ildizini toping.

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

27. $y = \frac{x^2 + 6x + 21}{11 + 6x + x^2}$ funksiyaning eng katta va eng kichik butun qiymatlari yig'indisini toping.

- A) 7 B) 20 C) 8 D) 21

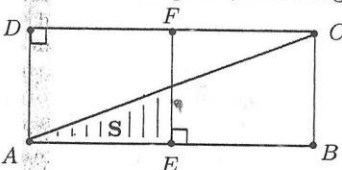
28. Hisoblang: $\sin 18^\circ \cdot \cos 36^\circ$

- A) 0,45 B) 0,25 C) 0,5 D) 0,125

29. Agar $a + b + c + d + 5 = a + 1 = b + 2 = c + 3 = d + 4$ bo'lsa, $a + b + c + d$ ni toping.
A) $-7/3$ B) $-10/3$ C) $5/3$ D) -5
30. Ifoda qiymatining oxirgi raqamini toping.
 $5 \cdot |2015^{2013} - 2014^{2014}| + 7$
A) 2 B) 4 C) 8 D) 6
31. ASCII yoyilmasi to'g'ri ko'rsatilgan qatorni ko'rsating:
A) American Standart Code for Information Integer
B) American Special Code for Information Interchange
C) American Standart Code for Information Interchange
D) American Standart Computer for Information Interchange
32. $A = \text{"Skaner - axborotni kiritish qurilmasi"}$, $B = \text{"1001}_2 = 9_{16}"$, $C = \text{"1 Kbayt = 1024 bayt"}$ mulohazalar qiymati asosida quyidagi mantiqiy ifoda qiymatini aniqlang:
 $\neg(A \wedge \neg B \vee C)$
A) Sodda mulohazalardan ba'zilarini qiymatini aniqlab bo'lmaydi
B) Mantiqiy ifoda xato yozilgan
C) Rost
D) Yolg'on
33. Boshqarish panelidagi "Дата/время" yorlig'ining vazifasi to'g'ri ko'rsatilgan qatorni belgilang.
A) hujjatning yaratilgan vaqti va sanasini o'zgartirish
B) papka yaratish vaqti va sanasini o'zgartirish
C) tizim vaqti va sanasini o'zgartirish
D) faylning vaqti va sanasini o'zgartirish
34. MS PowerPoint 2003 dasturida slaydga qo'shimcha matnli maydon kiritish ketma-ketligini ko'rsating
A) Вставка менюсидан Текст buyrug'i tanlanadi
B) Вставка менюсидан Надпись buyrug'i tanlanadi
C) Формат менюсидан Надпись buyrug'i tanlanadi
D) Формат менюсидан Текст buyrug'i tanlanadi
35. Internet orqali ikki kishining o'zaro yuzma-yuz ovozli suhbatini amalga oshirish imkonini beruvchi xizmatlari to'g'ri ko'rsatilgan javobni aniqlang.
A) PHP, ICQ, chat B) Mapple, Skype, ICQ
C) Mail.ru Agent, Skype, ICQ
D) Outlook Express, Mail.ru Agent, ICQ
36. Paskal tilida quyidagi dastur qismining bajarilishi natijasida ekranga chiqariladigan axborotlarni aniqlang:
 $K := 12; B := 5; C := \text{INT}(\text{sqrt}(K - B));$
If $C > 4$ then write ('B = ', B) else write ('K = ', K);
A) 5000 B) $B = 5$ C) 12 D) $K = 12$

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- Birinci 3 ta toq son yig'indisining birinchi 3 ta tub son yig'indisiga nisbatini toping
A) 0,8 B) 0,95 C) 1 D) 0,9
- $(1+3x+x^2)(3-3x-x^2) \leq -5$ tengsizlikni yeching.
A) $[-2; -1] \cup [1; \infty)$
B) $(-\infty; -4] \cup [-2; -1] \cup [1; \infty)$
C) $[-4; -2] \cup [1; \infty)$
D) $[-2; -1]$
- Agar $d : c = -\sqrt{7}$ bo'lsa, $d^2 - 7c^2$ ni hisoblang.
A) 7 B) $\sqrt{7}$ C) -7 D) 0
- Aniq integralni hisoblang:
$$\int_0^{\frac{\pi}{2}} \frac{dx}{\cos^2 \frac{2x}{9}}$$

A) $\frac{9\sqrt{3}}{2}$ B) $\frac{11\sqrt{3}}{2}$ C) $\frac{5\sqrt{3}}{2}$ D) $\frac{7\sqrt{3}}{2}$
- ABC uchburchakning BC tomoniga tushirilgan AD kesma ADC teng yonli uchburchak (AC asosli) hosil qiladi. Agar ABD va ABC uchburchaklarning perimetrlari mos ravishda 27 sm va 39 sm ga teng bo'lsa, AC ni (sm) toping.
A) 13 B) 12 C) 10 D) 15
- $AD=AE=EB=8$ bo'lganda, shtrixlangan S yuzani toping.

A) 48 B) 24 C) 32 D) 16
- Arifmetik progressiyada $d = 6$, $n = 40$, $a_n = 254$ bo'lsa, a_2 ni toping.
A) 40 B) 20 C) 26 D) 10
- $\vec{a}$ va $\vec{b}$ vektorlar orasidagi burchakning radian o'lchovi $\pi/4$ ga teng va $\vec{a} \cdot \vec{b} = 6$ bo'lsa, shu vektorlarga qurilgan uchburchakning yuzini hisoblang.
A) 3 B) $\frac{3}{\sqrt{2}}$ C) 6 D) $6\sqrt{2}$
- Qavariq beshburchakning burchaklaridan biri to'g'ri, qolganlari 3:3:4:5 nisbatda bo'lsa, uning katta burchagini toping.
A) 150° B) 135° C) 140° D) 120°
- $|x^2 - 5ax| = 15a$ tenglama a ning qanday qiymatlarida faqat 2 ta yechimga ega bo'lib, $x_1 < 0 < x_2$ shartni qanoatlantiradi?
A) $(0; 2; 4)$ B) $(2; 4; \infty)$ C) $(0; 2; 5)$ D) $[2; 5; \infty)$
- $y = 5\cos x + \cos 5x$ funksiyaning hosilasini toping.
A) $10\sin 2x \cdot \cos 3x$ B) $10\cos 2x \cdot \cos 3x$
C) $-10\cos 2x \cdot \sin 3x$ D) $10\sin 2x \cdot \sin 3x$
- Agar $x, y, z \in [-\frac{\pi}{2}; \frac{\pi}{2}]$ va
$$\sqrt{2 - \tan x - \tan y} + \sqrt[3]{\sin y - 1} + \sqrt[4]{\cos 2z - 1} = 0$$
 bo'lsa, $\frac{2x+5z}{3y}$ ning qiymatini hisoblang.
A) $\frac{1}{6}$ B) 3 C) $\frac{1}{2}$ D) $\frac{1}{3}$

- $(4^{x+4} + 4^{-x})^{4\log_2 x - \log_2(5x^3 + 6x^2)} < 1$ tengsizlikning barcha butun yechimlari yig'indisining uchdar bir qismini toping.
A) 7 B) 3 C) 5 D) 6
- $y = \frac{1}{3} \sin \frac{x}{2} \cos \frac{x}{2}$ funksiyaning davrini toping.
A) π B) 2π C) 4π D) $\frac{\pi}{4}$
- $\frac{-x+1}{2} = \frac{\sqrt{x-3} + \sqrt{x+3}}{\sqrt{x-3} - \sqrt{x+3}}$ tenglamaning yechimlari to'plamini toping.
A) $\{5; -3\}$ B) $\{5; 10\}$ C) $\{5\}$ D) $\{3; 10\}$
- $\frac{\sqrt{2}+1}{\sqrt{2}-1} + 1 + \frac{\sqrt{2}-1}{\sqrt{2}+1} + \dots$ ni hisoblang.
A) $\sqrt{2}+1$ B) $\frac{1}{2}(\sqrt{2}+1)^3$ C) $\sqrt{2}-1$ D) 10
- Agar n ta juft son va m ta toq sonlarni qo'shganda juft son chiqsa, m ning qiymati qanday bo'ladi?
A) juft B) aniqlab bo'lmaydi C) 0 D) toq
- Ikkita shar berilgan bo'lib, ularning radiuslari 3 dm va 25 sm. Sharlar kesishish chizig'ining uzunligi 48π sm bo'lsa, ularning markazlari orasidagi masofani (sm) toping.
A) 12 yoki 20 B) 18 yoki 24 C) 11 yoki 24 D) 11 yoki 25
- $f(x) = x - \sqrt{x+2}$ funksiyaning $[-2; 2]$ kesmadagi eng katta qiymatini toping.
A) $-\frac{1}{4}$ B) 0 C) 0,5 D) $\frac{1}{4}$
- $\frac{\frac{1}{\frac{1}{10} - \frac{1}{12}}}{\frac{1}{\frac{1}{8} - \frac{1}{6}} + \frac{1}{\frac{1}{5} - \frac{1}{6}}}$ ni hisoblang.
A) 10 B) 1 C) 12 D) $\frac{1}{2}$
- $ABCD$ ($AB \parallel CD$) trapetsiyada $BC = 12$, $AB = 52$, $CD = 39$ va $DA = 5$ bo'lsa, uning yuzini toping.
A) 210 B) 260 C) 195 D) 182
- $\frac{a}{x+1} + \frac{bx+c}{x^2-x+1} = \frac{1}{x^3+1}$ tenglikni qanoatlantiradigan b, c larni toping.
A) $a = b = c = \frac{1}{3}$
B) $a = \frac{2}{3}; b = -\frac{1}{3}; c = \frac{1}{3}$
C) $a = \frac{1}{3}; b = -\frac{1}{3}; c = \frac{2}{3}$
D) $a = \frac{1}{3}; b = \frac{2}{3}; c = -\frac{1}{3}$
- $7^x \cdot (\sqrt{2})^{2x^2-6} - \frac{7^x}{2^{2x}} = 0$ tenglamaning katta ildizini toping.
A) 3 B) -3 C) -4 D) 1
- Agar $\frac{8}{a} - \frac{a}{2} = 0$ bo'lsa $\frac{2^4}{a^2} + \frac{a^2}{(-4)^2}$ ni hisoblang.
A) 2,5 B) 1 C) 1,5 D) 2

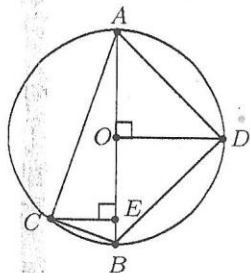
25. $y = \frac{x^2 + 6x + 21}{11 + 6x + x^2}$ funksiyaning eng kichik va eng katta butun qiymatlari nisbatini toping.

A) $\frac{1}{3}$ B) $\frac{1}{6}$ C) 6 D) $\frac{2}{5}$

26. $\sqrt[4]{\frac{2\sqrt{6}+5}{6x}} \cdot (3\sqrt{2x} - 2\sqrt{3x})^{\frac{1}{2}}$ ni soddalashtiring $x > 0$.

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

27. Rasmda ifodalanganidek OD va CE kesmalar AB diametrga perpendikulyar bo'lib, $AO = 2CE$ bo'lsa, $S_{ACB} : S_{ADB}$ nisbatini toping.

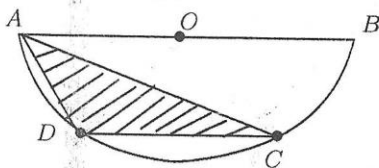


A) 3:2 B) 2:1 C) 1:4 D) 1:2

28. $1 + \{x\} = \cos(3x)$ tenglamani yeching, bunda $\{x\}$ — x ning kasr qismi.

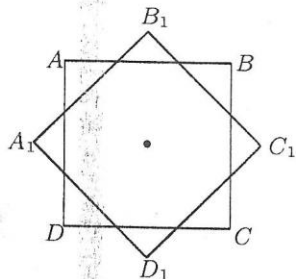
A) $x = -1$ B) $x = 0$ C) $x = 1$ D) $x = 2\pi$

29. Rasmda berilgan yarim doirada shtrixlangan soha yuzi S_{ADC} ning qiymati topilsin. Bu yerda $AO = OB = 2$, $AD = DC = BC$



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

30. Tomoni a ga teng bo'lgan $ABCD$ kvadrat simmetriya markazi O orqali 45° ga burilib, rasmdagidek shaklga keltirildi. Hosil bo'lgan bo'tiq ko'pburchakning perimetri aniqlansin.



A) $8(\sqrt{2} - 1)a$ B) $8\sqrt{2}(\sqrt{2} - 1)a$ C) $(16 - 4\sqrt{2})a$ D) $8\sqrt{2}a$

31. Uzlukli turdagi axborot, ... deyiladi.

A) analogli B) foydali C) aralash D) diskretli

32. Hisoblang va javobini 16 lik sanoq sistemada ifodalang: $1001011_{(2)} * 4_{(10)} + 234_{(8)}$

A) 1C9 B) 1CA C) 1C8 D) 1C7

33. Do'ppi kiygan pingvincha qaysi operatsion sistema (tizim)ning emblemasidir?

A) LINUX B) MULTICS C) UNIX D) DOPPIX

34. $(16^2 - 4^3)^4 + |5 + (-3)^3|$ ifodaning Microsoft Excel 2003 dasturidagi formula ko'rinishini toping.

A) =Степень(16*16-Степень(3;4);4)+ABS(5+(-3)*Степень(-3;2))

B) =Степень(16*16-Степень(4;3);4)+ABC(5+(-3)*Степень(2;-3))

C) =Степень(16*16-Степень(4;3);4)+ABS(5+(-3)*Степень(-3;2))

D) =Степень(16*16-Степень(4;3);4)+ABC(5+(-3)*Степень(-3;2))

35. Windows operatsion tizimi(sistemasi) tarkibida mavjud bo'lgan web-sahifani ko'rish vositasini aniqlang

A) Google Chrome B) Mozilla Firefox C) Opera D) Internet Explorer

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

Var k,b:integer; c:string;

Begin K:=4; B:=5; C:= '21'; If k>b then write ('C=', C:1 else write ('C=', C:4); end.

A) C=2 B) C=2121 C) C= 21 D) C=21

MATEMATIKA (INFORMATIKA BILAN)

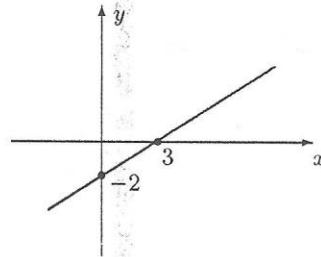
- $tg 11^\circ = a$ bo'lsa, $\frac{\sin 22^\circ \cdot ctg 191^\circ}{\sin 79^\circ \cdot \cos 349^\circ}$ ni toping.
A) $\frac{a}{a^2+1}$ B) 2 C) a^2 D) $\frac{a^2+1}{a}$
- $\log_{x^2-1}(x^4+3x^2) = \log_{x^2-1}(2x^3+6x)$ tenglamaning nechta yechimi bor?
A) 1 ta B) 4 ta C) 2 ta D) 3 ta
- 4, 6(6) soni $2\frac{5}{14}$ marta orttirilgan bo'lsa, u qanchaga ortgan?
A) 6, 3 B) 6, (3) C) 5, (3) D) 5, 3
- x ning qanday qiymat(lar)ida barcha y lar uchun $2x - 12y + 8xy - 3 = 0$ tenglik o'rinli bo'ladi?
A) $\frac{3}{2}$ B) $\frac{3}{2}$ yoki $-\frac{1}{4}$ C) $\frac{2}{3}$ D) $-\frac{2}{3}$ yoki $-\frac{1}{4}$
- $f(x) = 1 + 2x + x^2$ funksiya hosilasi qaysi oraliqda shu funksiyaning o'zidan kichik bo'lmaydi?
A) $[-1; 1]$
B) $(-1; 1)$
C) $(-\infty; -1] \cup [1; \infty)$
D) $(-\infty; -1) \cup (1; \infty)$
- Ikkita shar berilgan bo'lib, ularning radiuslari 3 dm va 25 sm. Sharlar kesishish chizig'ining uzunligi 48π sm bo'lsa, ularning markazlari orasidagi masofani (sm) toping.
A) 11 yoki 24 B) 12 yoki 20 C) 11 yoki 25 D) 18 yoki 24
- $\frac{\frac{1}{10} - \frac{1}{12}}{\frac{1}{8} - \frac{1}{6} + \frac{1}{5} - \frac{1}{6}}$ ni hisoblang.
A) $\frac{1}{2}$ B) 12 C) 1 D) 10
- $y = \frac{\sqrt{x+1} - \sqrt{x}}{x^2 + 2x - 3}$ funksiyaning aniqlanish sohasini toping.
A) $[-1; 0]$ B) $[0; +\infty)$ C) $[0; 1) \cup (1; +\infty)$
D) $(-\infty; -1) \cup (-1; 0) \cup (0; 1)$
- $f(x) = 24\cos x \cdot \sin 5x$ uchun boshlang'ich funksiyaning toping.
A) $3\cos 4x - 2\cos 6x + C$ B) $3\sin 4x - 2\sin 6x + C$
C) $-3\cos 4x - 2\cos 6x + C$ D) $3\sin 4x + 2\sin 6x + C$
- $\frac{3tgx - tg^3 x}{1 - 3tg^2 x}$ funksiyaning eng kichik musbat davrini toping.
A) $\frac{\pi}{3}$ B) 2π C) $\frac{3\pi}{2}$ D) π
- Diagonallarining soni tomonlarining sonidan 2 marta kam bo'lgan qavariq muntazam ko'pburchakning bitta ichki burchagini toping.
A) 60° B) 45° C) 90° D) 120°
- $\sqrt{2\sqrt{6}} \cdot 2^{\sqrt{x+1}} = 4^{\sqrt{x+1}}$ tenglamaning yechimiga teskari sonni toping.
A) $\frac{1}{2}$ B) 2 C) 1 D) $-\frac{1}{2}$

- Aylana tashqarisidagi O nuqtadan aylanaga kesuvchi ikki to'g'ri chiziqli o'tkazilgan. O burchak tortib turgan yoylar $5:3$ kabi. Bu burchaklar yig'indisi butun aylana yoyining $\frac{1}{3}$ qismiga teng bo'lsa, O burchakni toping.
A) 25° B) 15° C) 30° D) 20°

- $1^{25} + (-1)^{52}$ ni hisoblang.
A) 0 B) 2 C) 1 D) -1

- Diagonallarining soni tomonlari sonidan 3 marta ko'p bo'lgan qavariq muntazam ko'pburchak markazidan ko'pburchak uchiga o'tkazilgan kesma va unga yopishgan tomon orasidagi burchakni toping.
A) 65° B) 70° C) 72° D) 60°

- Rasmda $ax + by + c = 0$ tenglama bilan berilgan to'g'ri chiziqli grafik keltirilgan bo'lsa, a, b, c larning qiymatlarini toping.



- A) $a = 2, b = 3, c = -6$ B) $a = 2, b = -3, c = 6$
C) $a = -2, b = -3, c = 6$ D) $a = -2, b = 3, c = 6$

- $\left(\frac{\sqrt{x-a}}{\sqrt{x+a} + \sqrt{x-a}} + \frac{x-a}{\sqrt{x^2-a^2} - x+a} \right) : \sqrt{\frac{x^2}{a^2} - 1}$ ifodani soddalashtiring. ($x > |a| \neq 0$)
A) 1 B) a C) ± 1 D) $\sqrt{x^2 - a^2}$

- Ifoda qiymatining oxirgi raqamini toping.
 $5 \cdot |2015^{2013} - 2014^{2014}| + 7$
A) 6 B) 4 C) 8 D) 2

- $\sin^4 x + \cos^4 x = a$ tenglama a ning qanday qiymatlarida yechimga ega?

- A) $a \geq \frac{1}{2}$ B) $0 \leq a \leq \frac{1}{2}$ C) $a \leq 1$ D) $\frac{1}{2} \leq a \leq 1$

- $\frac{|2-3x|-7}{x+1} \geq -1$ tengsizlikni yeching.

- A) $[-2; -1) \cup [2; \infty)$
B) $[-2; -1] \cup (2; \infty)$
C) $[2; \infty)$
D) $[-2; -1)$

- Arifmetik progressiyada $a_1 + a_3 + a_5 + \dots + a_9 = 50$, $a_2 + a_4 + a_6 + \dots + a_{10} = 75$ bo'lsa, d ni toping.
A) 15 B) 5 C) 6 D) 3

- 9 ga bo'lganda qoldiq 7 ga, 8 ga bo'lganda esa qoldiq 3 ga teng bo'ladigan hamda ikkinchi bo'linma birinchi bo'linmadan 1 ga ortiq bo'ladigan natural sonni toping.
A) 43 B) 75 C) 61 D) 91

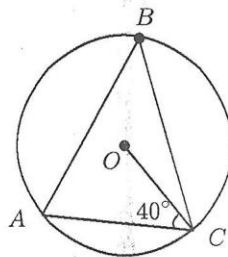
- $P(-2; 2)$ nuqtadan o'tuvchi va $\vec{a}(6; 4)$ vektorga perpendikulyar bo'lgan to'g'ri chiziqli tenglamasini toping.
A) $3x - 2y + 2 = 0$ B) $3x + 2y + 2 = 0$
C) $3x + 2y - 2 = 0$ D) $3x - 2y - 2 = 0$

24. Ikkita qarama-qarshi tomonlari yig'indisi 45 sm bo'lgan to'rtburchakka aylana ichki chizilgan. Qolgan ikkita tomoni 2:3 kabi nisbatda bo'lsa, bu tomonlardan kattasini toping (sm).
A) 29 B) 28 C) 27 D) 26
25. $2\sqrt{1-x^2} = x - 2$ tenglamani yeching.
A) $\frac{4}{5}$ B) 0 C) $0; \frac{4}{5}$ D) $\emptyset$
26. $f(x) = (2x - 7)^2$ funksiyaning hosilasini hisoblang.
A) $4x - 28$ B) $4x - 14$ C) $8x + 28$ D) $8x - 28$
27. Trapetsiyaning asoslari 4 sm va 3 sm. Uning asoslariga parallel kesma trapetsiyani ikkita tengdosh trapetsiyalarga ajratadi. Shu kesmaning uzunligini toping.
A) 3,25 B) 3,5 C) $\frac{5}{\sqrt{2}}$ D) 3,75
28. Agar $xy + yz + zx = 16$ bo'lsa, $(x + y + z)^2$ ning eng kichik qiymatini toping.
A) 48 B) 96 C) 64 D) 72
29. ABC to'g'ri burchakli uchburchakning AB gipotenuzasida shunday M va N nuqtalar olinganki, bunda $AN = 7$, $CM = 6$, $AM = BN = 3$ bo'lsa, CMN uchburchakning yuzini hisoblang.
A) 11 B) $\frac{3\sqrt{39}}{2}$ C) $3\sqrt{39}$ D) 10
30. $(x^2 + 17x + 17)(x^2 + x + 17) = 17x^2$ tenglama haqiqiy ildizlari yig'indisini toping.
A) -18 B) 18 C) -19 D) -17
31. Quyidagi keltirilgan misollardan qaysi biri uzluksiz axborot bo'la oladi?
A) teleko'rsatuv, vaqt B) harorat, vaqt
C) o'qituvchi ma'ruzasi, harorat D) dars, yozuv
32. Quyidagi mantiqiy tenglamaning yechimlari sonini aniqlang:
 $\neg A \vee B \wedge C = \text{rost}$
A) 3 B) 5 C) 4 D) 1
33. ... - fayl sistemasi tomonidan hosil qilingan diskdagi maxsus joy bo'lib, unda fayl nomi, uning hajmi, atributlari, yaratilgan vaqti saqlanadi.
A) Kontroller B) Katalog C) Klaster D) Fayl
34. MS Excel 2003 dasturida A1 katakda 9, A2 katakda 13, A3 katakda 6 qiymati berilgan bo'lsa, =MAKC(A1;A3) formula bo'yicha A4 katakda qanday natija hosil bo'ladi?
A) 6 B) 9 C) 13 D) 7
35. Fayllarning diskdagi bo'laklarini bir joyga to'plash ... deb ataladi
A) defragmentatsiya B) nazorat C) formatlash
D) fayllarni tiklash
36. Paskal tilida quyidagi dastur bajarilishi natijasida ekranga chiqariladigan axborotlarni aniqlang:
Var k,b:integer; c:string;
Begin K:=4; B:=5; C:= '21'; If k>b then write ('C=', C:1)
else write ('C=', C:4); end.
A) C=2 B) C=21 C) C= 21 D) C=2121

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1. $\frac{x-7}{\sqrt{12+4x^2-19x}} < 0$ tengsizlikni yeching.
 A) $-7 < x < -4$ B) $-4 < x < 7$ C) $x < \frac{3}{4}; 4 < x < 7$
 D) $x > \frac{3}{4}$
2. Balandligi 4 sm, asosi 16 sm bo'lgan teng yonli uchburchakka tashqi chizilgan aylana radiusini toping.
 A) 9 B) 11 C) 8 D) 10
3. $\left(\sin \alpha + \frac{1}{\sin \alpha}\right)^2 + \left(\cos \alpha + \frac{1}{\cos \alpha}\right)^2 - \left(\operatorname{tg} \alpha + \frac{1}{\operatorname{tg} \alpha}\right)^2$ ifodani soddalashtiring.
 A) 3 B) 5 C) $\sin \alpha \cos^2 \alpha$ D) 1
4. $\frac{3\operatorname{tg} x - \operatorname{tg}^3 x}{1 - 3\operatorname{tg}^2 x}$ funksiyaning eng kichik musbat davrini toping.
 A) $\frac{3\pi}{2}$ B) 2π C) $\frac{\pi}{3}$ D) π
5. $3^x \cdot 8^{\frac{x}{2}} = 6$ tenglamani yeching va ildizlari ko'paytmasini toping.
 A) $-2\ln 4$ B) $-\frac{2\ln 6}{\ln 3}$ C) $-2\ln 2$ D) 1
6. Agar $f(4) = 5$, $f(3) = 4$, $f(2) = 3$ bo'lsa, $(f^{-1}(3) + f^{-1}(4)) \cdot f(4)$ ifodaning qiymatini hisoblang. $(f^{-1}(x))$ funksiya $f(x)$ ga teskari funksiya.
 A) 25 B) 20 C) 35 D) 15
7. 2013^{2015} ni 10 ga bo'lgandagi qoldiqni toping.
 A) 7 B) 9 C) 3 D) 1
8. Ordinatasi $y_0 = -2$ bo'lgan nuqtada $y = 1 - 4x + x^2$ egri chiziqqa urinuvchi to'g'ri chiziq tenglamasini ko'rsating.
 A) $y = -2x$ va $y = 2x - 8$ B) $y = 2x$ C) $y = 8 - 2x$
 D) $y = 2x$ va $y = 8 - 2x$
9. Tenglamani yeching:
 $6 \cdot 5^{\log_3 x} + 2 \cdot 5^{\log_3 x - 1} = 3 \cdot 4^{\log_3 x + 1} + 2^{\log_3 \sqrt{3} x - 1}$.
 A) 81 B) 9 C) 27 D) 3
10. $ax^2 + bx + c = 0$ tenglamaning ildizlari x_1 va x_2 bo'lsa, ildizlari $\frac{1}{x_2}$ va $\frac{1}{x_1}$ bo'lgan kvadrat tenglama tuzing.
 A) $cx^2 + bx + a = 0$ B) $-cx^2 + bx - a = 0$
 C) $cx^2 - bx + a = 0$ D) $cx^2 - bx - a = 0$
11. Ifodani soddalashtiring.
 $\frac{1}{\sqrt{5}-2} - \left(\sqrt{5} + \frac{1}{2}\right)^2 + 5,25$
 A) 0 B) 3 C) 2 D) 1
12. Tenglamani yeching. $|5x - 15| - |4x + 20| = |x - 3|$
 A) 2 B) 1 C) -1 D) -0,5

13. ABC uchburchak O-markazli aylanaga ichki chizilgan. Agar $\angle QCA = 40^\circ$ bo'lsa, $\angle ABC$ ni toping.

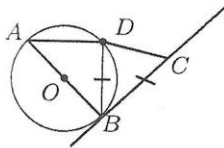


- A) 50° B) 100° C) 60° D) 40°
14. XOY dekart koordinatalar tekisligida $A(3;2)$, $B(1;3)$, $M(2;1)$ va $N(z;-1)$ nuqtalar belgilangan bo'lib, ulardan tuzilgan $\vec{AB}$ va $\vec{MN}$ vektorlar o'zaro parallel bo'lsa, z nechaga teng?
 A) 3 B) 5 C) 6 D) 1 yoki 3
15. 3 soni bilan noma'lum son orasiga shunday son qo'yilganki, bu uchta son arifmetik progressiya tashkil etadi. Agar ikkinchi son 6 ga kamaytirilsa, musbat hadli geometrik progressiya hosil bo'ladi. Arifmetik progressiyaning ikkinchi hadini toping.
 A) 27 B) 14 C) 15 D) 12
16. Agar $\frac{8}{a} - \frac{a}{2} = 0$ bo'lsa $\frac{2^4}{a^2} + \frac{a^2}{(-4)^2}$ ni hisoblang.
 A) 1 B) 2,5 C) 1,5 D) 2
17. $1 + 2 - 3 + 4 + 5 - 6 + 7 + 8 - 9 + \dots + 208 + 209 - 210$ ni hisoblang.
 A) 7445 B) 7275 C) 7245 D) 7425
18. $y = e^{(2x-3x^2)} \cdot \log_5(3x^2 - 2x)$ funksiya hosilasining $x = 1$ dagi qiymatini toping.
 A) $4(e \cdot \ln^2 5)^{-1}$ B) $4(e^2 \cdot \ln^2 5)^{-1}$ C) $4(e \cdot \ln 5)^{-1}$
 D) $4(e^2 \cdot \ln 5)^{-1}$
19. $\int (5x + 6 + x^2) dx$ ni hisoblang.
 A) $\frac{x^3}{3} + \frac{x^2}{2} + 6x + c$ B) $\frac{x^3}{3} + \frac{5x^2}{2} + 3x + c$
 C) $\frac{x^3}{3} + \frac{5x^2}{2} + 6x + c$ D) $\frac{x^3}{3} - \frac{5x^2}{2} + 6x + c$
20. $\frac{20}{1 + \frac{20}{1 + \frac{20}{\dots}}}$ ni hisoblang.
 A) 8 B) 6 C) 10 D) 5
21. $\left(1 - \frac{1}{x}\right)(x+1)\left(1 + \frac{1}{x^2}\right)(x^4+1)\left(1 + \frac{1}{x^8}\right) = x^5 + 1$ tenglamaning haqiqiy ildizlari yig'indisini toping.
 A) -1 B) 1 C) 0 D) 2
22. -0, (44) ning teskarisiga qarama-qarshi bo'lgan sonning kvadrat ildizini toping.
 A) 1,5 B) $-\frac{2}{3}$ C) -1,5 D) $\frac{2}{3}$
23. To'g'ri parallelepipedning asosi rombdan iborat bo'lib, parallelepiped diagonal kesimlarining yuzlari S_2 va S_1 bo'lsa parallelepiped yon sirtining yuzini toping.
 A) $\sqrt{S_1^2 + S_2^2}$ B) $2\sqrt{S_1^2 + S_2^2}$ C) $S_1^2 + S_2^2$
 D) $\frac{1}{2}\sqrt{S_1^2 + S_2^2}$

24. To'g'ri burchakli trapetsiyaga ichki chizilgan aylananing radiusi 2 sm, uning kattâ asosi 12 sm bo'lsa, trapetsiyaning kichik asosini (sm) toping.

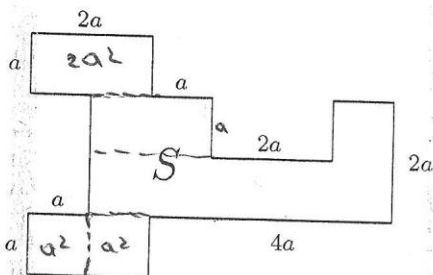
A) 2,2 B) 2,6 C) 2,4 D) 2,3

25. Rasimga ko'ra $\angle BAD = 40^\circ$, $BD=BC$ bo'lsa, $\angle DCB$ ni toping.



A) 70° B) 40° C) 50° D) 80°

26. $a=2$ bo'lganda, S soha yuzini toping.



A) 44 B) 52 C) 40 D) 48

27. Sinfda jami 36 ta o'quvchi bor. Jami o'quvchilarning 0,5 qismi matematika to'garagiga, 0,6(6) qismi ingliz tili to'garagiga, 0,4 qismi ikkala to'garakka qatnashadi. Ikkala to'garakka ham qatnashmaydigan o'quvchilar sonini toping.

A) 8 ta B) 7 ta C) 6 ta D) 9 ta

28. Uchburchakning ikkita burchagi mos ravishda 38° va 52° ga teng. Uchinchi burchak uchudan tushirilgan balandlik va medianasidagi burchakni toping.

A) 17° B) 14° C) 7° D) 10°

29. $BC=6$, $AB=5$, $AC=7$ va medianasi AD bo'lgan ABC uchburchak uchun quyidagi mulohazalardan qaysi biri to'g'ri?

A) $\widehat{ABD} = \widehat{CAD}$ B) $\widehat{ABD} > \widehat{CAD}$
C) $\widehat{ABD} < \widehat{CAD}$ D) $\widehat{BAD} = 4\widehat{CAD}$

30. $y = \sin 2x \cos 4x \cos 2x$ funksiyaning eng kichik musbat davrini toping.

A) 2π B) $\frac{\pi}{4}$ C) $\frac{\pi}{2}$ D) $\frac{\pi}{8}$

31. Semyuel Morze qanday qurilma ixtro qilgan?

A) telefaks B) telefon C) televizor
D) elektromagnit telegraf

32. Quyidagi mulohazalardan yolg'on qiymatga egalarini toping:

1. Axborot ikki turga bo'linadi
2. Web-sahifalarni hosil qilish vositasi - brauzerlar
3. Plotter-chizmalarni qog'ozga chiqarish uchun xizmat qiluvchi qurilma.
4. www.uz - milliy qidiruv tizimi emas

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

33. Windows operatsion tizim (sistema)da papka va hujjatlarni vertikal ustun shaklida tartiblash va ularni kichik ikonkalar tarzida ko'rsatish usuli qaysi javobda to'g'ri ko'rsatilgan?

A) Значок B) Таблица C) Плитка D) Список

34. MS Excel 2003 dasturida D2 katakchadagi "=\$A1*B3" formulaning E3 katakchaga nusxasini toping.

A) =\$A2*C4 B) =\$B1*C4 C) =\$A2*B4 D) =\$A1*B3

35. HTML tilida 4 ta ustun va 3 ta satrdan iborat jadval tuzishda nechta $\langle tr \rangle$ va $\langle td \rangle$ teglaridan foydalaniladi?

A) 4 ta $\langle tr \rangle$, 12 ta $\langle td \rangle$ B) 4 ta $\langle tr \rangle$, 3 ta $\langle td \rangle$
C) 3 ta $\langle tr \rangle$, 4 ta $\langle td \rangle$ D) 3 ta $\langle tr \rangle$, 12 ta $\langle td \rangle$

36. Paskal tilidagi quyidagi dastur ishga tushirilganda xatolik xabarini chiqardi:

Var a:byte; b:char;

Begin a:=5*2; b:= 'A';

if a><15 then a:=a*a else b:= 'A'; write(a);

End.

Xatolikka sabab bo'lgan qismni aniqlang.

A) a:=5*2 B) b:= 'A' C) a><15 D) a:=a*a

MATEMATIKA (INFORMATIKA BILAN)

- Agar $\frac{a}{4} - \frac{8}{a} = -1$ bo'lsa $\frac{a^2}{64} + \frac{2^4}{a^2}$ ni toping.
A) 1,5 B) 1,25 C) 1 D) 2
- Agar $f(a, b, c) = \frac{a}{b-c}$ bo'lsa,
 $f(f(1, 2, 3), f(2, 3, 1), f(3, 1, 2))$ ni toping.
A) 1 B) $-\frac{1}{2}$ C) 0 D) $-\frac{1}{4}$
- $\left(1 - \frac{1}{5^2}\right) \cdot \left(1 - \frac{1}{6^2}\right) \cdot \dots \cdot \left(1 - \frac{1}{14^2}\right) \cdot (x-1) = \frac{3}{7}$
tenglamani yeching.
A) 2 B) 1,5 C) 0,5 D) 1
- $\sin\left(\arcsin \frac{4}{5} + \arccos \frac{3}{5}\right)$ ni hisoblang.
A) $-\frac{24}{25}$ B) $\frac{24}{25}$ C) $\frac{7}{25}$ D) $\frac{12}{25}$
- $2 \cdot 2^{x-1} = 3 \cdot 2^{x+1} - 5$ tenglamani yeching.
A) 1 B) 3 C) 2 D) 0
- $y = \sin^2\left(x - \frac{3\pi}{2}\right) + \sin^2 x$ funksiyaning hosilasini toping.
A) $2\cos x$ B) 0 C) 1 D) $2\sin x$
- $y = 3\sin 7x + \sin 21x$ funksiyaning hosilasini toping.
A) $42\sin 7x \cdot \cos 14x$ B) $-42\cos 7x \cdot \sin 14x$
C) $42\sin 7x \cdot \sin 14x$ D) $42\cos 7x \cdot \cos 14x$
- $\frac{2-4+6-8+10-12+14}{3-6+9-12+15-18+21}$ ni hisoblang.
A) $\frac{2}{3}$ B) -1 C) $-\frac{2}{3}$ D) 1
- $AB=50$ sm kesmaning uchlari berilgan tekislikdagi bo'lgan masofalar $BD=44$ sm va $AC=30$ sm. AB kesmaning shu tekislikdagi proyeksiyasini (sm) toping.
A) 48 B) 42 C) 44 D) 36
- $\sqrt{3-2x-x^2}(x+2) \leq 0$ tengsizlikni eching.
A) $[-3; -2] \cup \{1\}$ B) $[-3; -2]$ C) $(-\infty; -3]$
D) $(-\infty; -2]$
- $7 \cdot 2^{4x+1} = 3 \cdot 5^{2x+1} - 19$ tenglamani yeching.
A) $\frac{3}{2}$ B) 1 C) 2 D) $\frac{1}{2}$
- Balandligi 4 sm, asosi 16 sm bo'lgan teng yonli uchburchakka tashqi chizilgan aylana radiusini toping.
A) 9 B) 10 C) 8 D) 11
- 60 km masofani bir velosipedchi ikkinchisiga qaraganda 1 soat tezroq bosib o'tdi. Agar birinchi velosipedchining tezligi ikkinchi velosipedchining tezligidan 5 km/soat kam bo'lsa, har bir velosipedchining tezligini (km/soat) toping.
A) 20; 25 B) 15; 20 C) 10; 15 D) 12; 17
- Tomonlari 13, 14 va 15 ga teng bo'lgan uchburchakka ichki chizilgan aylana radiusini toping.
A) 5 B) 4 C) 3 D) 2
- $\sigma(n) = 28$ bo'ladigan eng katta n natural sonni toping. Bu yerda $\sigma(n)$ - n sonining natural bo'luvchilari yig'indisi.
A) 10 B) 16 C) 27 D) 12
- $D(-1; 0), C(0; -1), B(1; 0), A(0; 1)$ nuqtalardan hosil bo'lgan $ABCD$ to'rtburchak simmetriya nuqtasi koordinatalarini toping.
A) $(-1; -1)$ B) $(1; 1)$ C) $(0; -1)$ D) $(0; 0)$
- Agar ABC uchburchakda BE mediana va AD bissektrisalar o'zaro perpendikulyar bo'lsa, $AB : AC$ nisbatni toping.
A) 1:2 B) 3:1 C) 2:1 D) 1:3
- $\frac{\cos 5\alpha + \cos 11\alpha}{\cos^2 4\alpha - \sin^2 4\alpha}$ ni soddalashtiring.
A) $\cos 3\alpha$ B) $2\cos 4\alpha$ C) $2\cos 8\alpha$ D) $2\cos 3\alpha$
- Silindr asosining radiusi 10 sm, balandligi 16 sm. Silindrning o'qiga parallel kesim o'tkazilgan va u o'qdan 60 mm uzoqlikda yotadi. Shu kesimning yuzini (sm^2) toping.
A) 196 B) 216 C) 208 D) 256
- $A(-3; 5; 3; 5)$ nuqtadan o'tuvchi va $\vec{a}(3; 4; 5)$ vektorga perpendikulyar bo'lgan to'g'ri chiziq tenglamasini toping.
A) $2x + 3y - 3,5 = 0$ B) $2x + 3y + 3,5 = 0$
C) $2x - 3y + 3,5 = 0$ D) $2x - 3y - 3,5 = 0$
- $n + S(n) = 125$ shartni qanoatlantiruvchi $n(n \in \mathbb{N})$ ning natural bo'luvchilari sonini toping. Bunda $S(n)$ - n sonining raqamlari yig'indisi.
A) 4 B) 3 C) 2 D) 5
- Ifodani soddalashtiring.
$$\frac{1,6 + 5,4}{\sqrt[3]{2,56} - \sqrt[3]{8,64} + \sqrt[3]{29,16}} - \frac{2,25 - 1,44}{1,5 - 1,2} + \frac{27}{10}$$

A) $5\sqrt[3]{0,2}$ B) $2\sqrt[3]{0,2}$ C) 0 D) $-2\sqrt[3]{0,2}$
- $\sqrt{x-3} > \sqrt[4]{x+3}$ tengsizlikning yechimlari sohasini toping.
A) $(-\infty; 3)$ B) $(6; \infty)$ C) $-3; 3$
D) $(-\infty; -1) \cup (6; \infty)$
- Agar $x, y, z \in \left[-\frac{\pi}{2}; \frac{\pi}{2}\right]$ va
 $\sqrt{2-tgx-ctgx} + \sqrt[3]{\sin y - 1} + \sqrt[4]{\cos 2z - 1} = 0$
bo'lsa, $\frac{2x+5z}{3y}$ ning qiymatini hisoblang.
A) $\frac{1}{3}$ B) $\frac{1}{2}$ C) $\frac{1}{6}$ D) 3
- $\frac{28-16x}{x^2-5x+6} \geq x+5$ tengsizlikni yeching.
A) $(-\infty; -2) \cup [2; 3)$
B) $(-\infty; -2] \cup [1; 2) \cup (2; 3)$
C) $(-\infty; 1] \cup (2; 3) \cup \{5\}$
D) $(-\infty; -2] \cup \{1\} \cup (2; 3)$
- Uchburchakning ikkita burchagi mos ravishda 38° va 52° ga teng. Uchinchi burchak uchudan tushirilgan balandlik va mediana orasidagi burchakni toping.
A) 17° B) 10° C) 14° D) 7°
- $\frac{1}{4}$ va $\frac{2}{3}$ sonlari orasida joylashgan, maxraji 24 ga teng qisqarmas kasrlar yig'indisini toping.
A) $\frac{17}{24}$ B) 1 C) $1\frac{5}{24}$ D) $1\frac{7}{24}$
- $\int_2^5 \frac{dx}{2x-3}$ ni hisoblang.
A) $\ln \sqrt{7}$ B) $\ln 7$ C) $\sqrt{7}$ D) 7

29. Teng yonli uchburchakning perimetri 52 sm. Agar uning asosi yon tomonining 0,6 qismini tashkil qilsa, unga tashqi chizilgan doira yuzini (sm^2) toping.
- A) $\frac{10000\pi}{91}$ B) $\frac{100\sqrt{91}}{91}$ C) $\frac{6\sqrt{91}}{13}$ D) $\frac{100\pi}{91}$
30. To'g'ri burchakli uchburchak burchaklari geometrik progressiya tashkil qiladi. Bu progressiyaning ikkinchi hadini toping.
- A) $\frac{\pi}{3}$ B) $\frac{\sqrt{5}-1}{4}\pi$ C) $\frac{(3-\sqrt{5})\pi}{4}$ D) $\frac{\sqrt{5}\pi}{4}$
31. Nuqtalar o'rniga joylashtirish mumkin bo'lgan javobni aniqlang.
Morze kodlash usulida ... ishtirok etgan.
- A) . va - B) 1 va 2 C) . va * D) 0 va 1
32. Quyidagi mantiqiy ifodaga teng kuchli ifodani aniqlang:
 $A \vee B \wedge C$
- A) $A \vee \neg(C \vee B)$ B) $A \vee \neg C \vee \neg B$ C) $A \vee \neg(\neg C \vee \neg B)$
D) $\neg A \vee \neg C \vee \neg B$
33. Quyidagilarning qaysi biri buyruq fayllari kengaytmasi bo'ladi?
- A) .bat B) .bak C) .pas D) .bas
34. Quyidagilarning qaysi birida faqat ma'lumotlar ombori (bazasi)ni boshqarish tizimlari keltirilgan?
- A) DELPHI, C# B) PARADOX, MS ACCESS
C) PARADOX, DELPHI D) MS EXCEL, MS ACCESS
35. Web - sahifaning biror qismiga yoki boshqa Web - sahifaga bog'liqligini ko'rsatuvchi so'z yoki rasm shakli ... deyiladi.
- A) Internet manzili B) uzatish protokoli C) gipermatn
D) giperilova
36. Paskal tilidagi quyidagi dastur ishga tushirilganda xatolik xabarini chiqarmasligi uchun "?" va "??" belgilari o'rniga qo'yish mumkin bo'lgan (mos ravishda) standart funksiyalar juftligini aniqlang:
- Var a:word; b:Longint;
Begin a:=(1-125 div 3); b:= ??(a/sqr(100)); write(a,b);
End.
- A) int, abs B) abs, trunc C) round, trunc D) abs, abs

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1. $2^{10} \cdot 5^9 \cdot 4^6 \cdot 25^4$ ko'paytma necha xonali son bo'ladi?
A) 18 B) 19 C) 20 D) 17
2. 3 soni bilan noma'lum son orasiga shunday son qo'yilganki, bu uchta son arifmetik progressiya tashkil etadi. Agar ikkinchi son 6 ga kamaytirilsa, musbat hadli geometrik progressiya hosil bo'ladi. Arifmetik progressiyaning ikkinchi hadini toping.
A) 14 B) 27 C) 12 D) 15
3. $B(-4; 2)$ nuqtadan Ox o'qiga perpendikulyar tushirilgan. Shu perpendikulyar asosining koordinatalari topilsin
A) (0; 2) B) (-4; 2) C) (-4; 0) D) (4; 0)

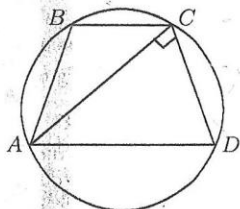
4.
$$\begin{cases} \sin^2 x + \sin^2 y = 0,5, \\ x - y = \frac{4\pi}{3} \end{cases}$$
 sistemani yeching.

- A) $\left(\frac{7\pi}{6} + 2\pi k; -\frac{\pi}{6} + 2\pi k\right), k \in \mathbb{Z}$
B) $\left(\frac{7\pi}{6} + \frac{\pi k}{6}; -\frac{\pi}{6} + \frac{\pi k}{6}\right), k \in \mathbb{Z}$
C) $\left(\frac{7\pi}{6} + \pi k; -\frac{\pi}{6} + \pi k\right), k \in \mathbb{Z}$
D) $\left(\frac{7\pi}{6} + \frac{\pi k}{2}; -\frac{\pi}{6} + \frac{\pi k}{2}\right), k \in \mathbb{Z}$

5. $y = 8\sin 2x + \sin 16x$ funksiyaning hosilasini toping.

- A) $32\cos 7x \cdot \cos 9x$ B) $32\sin 7x \cdot \cos 9x$
C) $-32\cos 7x \cdot \sin 9x$ D) $32\sin 7x \cdot \sin 9x$

6. Rasmda berilgan trapetsiya uchun $|AB| = |CD| = 8$, $\angle ACD = 90^\circ$ va $\angle CAD = 30^\circ$ bo'lsa, shu trapetsiyaga tashqi chizilgan doira yuzi topilsin.



- A) 64π B) 49π C) 36π D) 16π

7. $ABCD$ ($AB \parallel CD$) trapetsiyada $BC = 12$, $AB = 52$, $CD = 39$ va $DA = 5$ bo'lsa, uning yuzini toping.

- A) 182 B) 260 C) 195 D) 210

8. $y = 3 + 3(x-2)^2$ funksiya grafigi koordinata tekisligining qaysi choraklaridan o'tadi?

- A) I, II va IV B) I, II va III C) I va II D) barchasidan

9. n ning nechta butun qiymatida $\frac{12-2n}{n}$ ifoda natural songa teng bo'ladi?

- A) 4 ta B) 10 ta C) 6 ta D) 12 ta

10. $y = 3\cot x$ funksiyaning $F\left(\frac{\pi}{2}\right) = 9$ shartni qanoatlantiruvchi boshlang'ichini topib, $F\left(\frac{5\pi}{2}\right)$ ning qiymatini toping.

- A) 9 B) 12 C) 10 D) 18

11. $\sin^4 x + \cos^4 x = a$ tenglama a ning qanday qiymatlarida yechimga ega?

- A) $0 \leq a \leq \frac{1}{2}$ B) $\frac{1}{2} \leq a \leq 1$ C) $a \leq 1$ D) $a \geq \frac{1}{2}$

12. Tengsizlikni yeching:

$$\frac{2x+5}{1+3x} + \frac{x-3}{3x+2} \geq 1$$

- A) $\left[-\frac{5}{2}; -\frac{2}{3}\right)$ B) $\left[-\frac{5}{2}; -\frac{1}{3}\right)$ C) $\left(-\frac{2}{3}; -\frac{1}{3}\right)$
D) $\left[-\frac{5}{2}; -\frac{2}{3}\right) \cup \left(-\frac{1}{3}; \infty\right)$

13. $\left(1 + \frac{2}{3}\right)\left(1 + \frac{2}{4}\right)\left(1 + \frac{2}{5}\right) \dots \left(1 + \frac{2}{98}\right)$ ni hisoblang.

- A) 1 B) 625 C) 825 D) 980

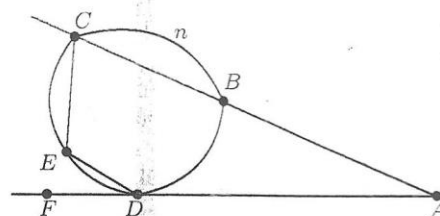
14. Metall quyma tarkibida 18 kg rux, 36 kg mis, 6 kg qalay bor. Qalay quyma tarkibiy qismining necha foizini tashkil qiladi?

- A) 20 B) 30 C) 10 D) 60

15. $ax^2 + bx + c = 0$ tenglamaning ildizlari x_1 va x_2 bo'lsa, ildizlari $\frac{1}{x_2}$ va $\frac{1}{x_1}$ bo'lgan kvadrat tenglama tuzing.

- A) $-cx^2 + bx - a = 0$ B) $cx^2 - bx - a = 0$
C) $cx^2 + bx + a = 0$ D) $cx^2 - bx + a = 0$

16. Agar $\angle ACE = 70^\circ$, $\angle EDF = 30^\circ$ va $\angle CnB$ yoyi 110° bo'lsa, $\angle CAF$ ning qiymati topilsin.



- A) 60° B) 45° C) 55° D) 50°

17. ABC uchburchakning AC tomonida D nuqta olindi. Agar $\angle ABC = \angle BDC$ bo'lib, $3AB = 4BD$ va $BC = 6$ sm bo'lsa, AC kesma uzunligini(sm) toping.

- A) 8 B) 12 C) 4,5 D) 10

18. $A(3, 01; -2, 03)$ nuqtadan o'tuvchi va $\vec{m}(-10; 20)$ vektorga perpendikulyar bo'lgan to'g'ri chiziq tenglamasini toping.

- A) $10y + 5x - 35,35 = 0$ B) $10y - 5x - 35,35 = 0$
C) $10y + 5x + 35,35 = 0$ D) $10y - 5x + 35,35 = 0$

19. $g(x) = x^3 \cdot f(x)$ kamayuvchi funksiya bo'lsa, quyidagilarning qaysi biri har doim to'g'ri bo'ladi?

- A) $x^2 \cdot f(x) > x \cdot f'(x)$ B) $f(x) > f'(x)$ C) $f'(x) > f(x)$
D) $x \cdot f'(x) < -3 \cdot f(x)$

20. Qo'shni burchaklardan biri ikkinchisining 80 foiziga teng bo'lsa, shu burchaklardan kattasini toping.

- A) 90° B) 95° C) 100° D) 80°

21. Ifodani soddalashtiring.

$$\frac{1}{\sqrt{5}-2} - \left(\sqrt{5} + \frac{1}{2}\right)^2 + 5,25$$

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

22. $|x^2 - 4ax| = a$ tenglama yagona yechimga ega bo'ladigan a ning barcha qiymatlari yig'indisini toping.

- A) 0 B) 0,5 C) 1 D) 0,25

23. Agar $xy + yz + zx = 16$ bo'lsa, $(x + y + z)^2$ ning eng kichik qiymatini toping.

- A) 64 B) 48 C) 72 D) 96

24. To'g'ri parallelepipedning asosi rombdan iborat bo'lib, parallelepiped diagonal kesimlarining yuzlari S_2 va S_1 bo'lsa, parallelepiped yon sirtining yuzini toping.

A) $S_1^2 + S_2^2$ B) $\sqrt{S_1^2 + S_2^2}$ C) $\frac{1}{2}\sqrt{S_1^2 + S_2^2}$
D) $2\sqrt{S_1^2 + S_2^2}$

25. Tenglamani yeching:

$$4^{2x-3} \cdot 2^{4-2x} = \sqrt[3]{0,5^{6x-18}}$$

A) 2 B) 3 C) 1 D) 5

26. $\text{ctg}55^\circ \cdot \text{ctg}45^\circ \cdot \text{ctg}35^\circ$ ni hisoblang.

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

27. $1^{2^5} + (-1)^{5^2}$ ni hisoblang.

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

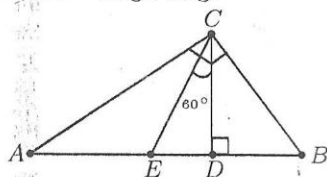
28. $\sqrt{x^2+3} + \sqrt{10-x^2} = 5$ tenglamadan x qabul qiladigan qiymatlarni toping.

A) 1; $\sqrt{6}$ B) -1; $-\sqrt{6}$ C) ± 1 ; $\pm \sqrt{6}$ D) 3; $\sqrt{6}$

29. $2 \cdot 2^{x+1} = 3 \cdot 2^{x+1} - 5$ tenglamani yeching.

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

30. Rasmda berilgan ma'lumotlarga ko'ra, S_{ABC} ni toping. Bu yerda $AC \perp BC$, $\angle ECD = 60^\circ$, $CD \perp AB$ va $CE = EB = 14$ ga teng.



A) 98 B) 88 C) 94 D) 90

31. $457_{(8)}$ soni 2 lik sanoq sistemadagi qiymatini aniqlang.

A) 111101100 B) 100111101 C) 101100111
D) 100101111

32. 2 ta mushuk 2 soatda 2 ta sichqonni yeydi. 4 ta mushuk 4 soatda nechta sichqonni yeydi?

A) 6 B) 2 C) 8 D) 4

33. Dastur interfeysida maxsus buyruqlar va amallar yig'indisi biror-bir xususiyatlari asosida birlashishiga ... deyiladi.

A) menyu B) katalog C) formatlash
D) defragmentasiya

34. MS Excel 2003 dasturida berilgan $=\text{ДЛСТП}(\text{"Informatika"})+\text{CP3HA}(\text{15;30;3})$ formulaning natijasini aniqlang.

A) 27 B) 29 C) 28 D) 26

35. HTML-hujjatga rasm joylashtirish tegi to'g'ri ko'rsatilgan qatorni tanlang.

A) $\langle a \text{ href}=\text{"fayl nomi"} \rangle$ B) $\langle \text{html href}=\text{"fayl nomi"} \rangle$
C) $\langle \text{frame src}=\text{"fayl nomi"} \rangle$ D) $\langle \text{img src}=\text{"fayl nomi"} \rangle$

36. Paskal tilida haqiqiy va manfiy A, butun va juft B, mantiqiy G va belgili M o'zgaruvchilar tavsifi to'g'ri berilgan javobni aniqlang.

A) Var

A: shortint;
B: integer;
G: char;
M: real;

B) Var

A: longint;
B: boolean;
G: word;
M: char;

C) Var

A: real;
B: integer;
G: boolean;
M: char;

D) Var

A: real;
B: string;
G: boolean;
M: byte;

MATEMATIKA (INFORMATIKA BILAN)

- Diagonallarining soni tomonlari sonidan 3 marta ko'p bo'lgan qavariq muntazam ko'pburchak markazidan ko'pburchak uchiga o'tkazilgan kesma va unga yopishgan tomon orasidagi burchakni toping.
A) 60° B) 72° C) 70° D) 65°
- Arifmetik progressiyada $a_{11} + a_7 = 6$ ga teng, $a_9^2 - 2$ ni toping.
A) 3 B) 2 C) 7 D) 1
- Teng yonli trapetsiyaning diagonali o'rta chizig'ini 1,5 va 7,5 ga teng kesmalarga ajratadi. Trapetsiyaning yuzasi 72 ga teng bo'lsa, uning yon tomonini toping.
A) 5 B) 10 C) 8 D) 20
- $\left(1 + \frac{2}{3}\right) \left(1 + \frac{2}{4}\right) \left(1 + \frac{2}{5}\right) \dots \left(1 + \frac{2}{98}\right)$ ni hisoblang.
A) 825 B) 980 C) 1 D) 625
- Tomonlari 13, 14 va 15 ga teng bo'lgan uchburchakka ichki chizilgan aylana radiusini toping.
A) 5 B) 4 C) 3 D) 2
- $(x^2 + 24x + 24)(x^2 + x + 24) = 24x^2$ tenglama haqiqiy ildizlari yig'indisini toping.
A) -23 B) -26 C) -24 D) -25
- Uchlari $A(7; 7)$ va $B(-2; -2)$ nuqtalarda bo'lgan kesmani 1 : 2 nisbatta bo'luvchi C nuqtaning koordinatlarini toping.
A) (4; 4) B) (2, 5; 2, 5) C) (4; -4) D) (-4; -4)
- $\sqrt{x + x\sqrt{x}} - \sqrt{x(1+x)} = \sqrt{1+x} - \sqrt{1+\sqrt{x}}$ tenglamaning haqiqiy ildizlari yig'indisini toping.
A) 2 B) 3 C) 0 D) 1
- $(m-2)y - (m^2-9)x - 3 = 0$, $m \in R$ tenglama bilan berilgan to'g'ri chiziqlar m ning qanday qiymatlarida Ox o'qiga parallel bo'ladi?
A) 3 B) 2 C) ± 3 D) ± 2
- ABC uchburchakning BC tomoniga tushirilgan AD kesma ADC teng yonli uchburchak (AC asosli) hosil qiladi. Agar ABD va ABC uchburchaklarning perimetrlari mos ravishda 27 sm va 39 sm ga teng bo'lsa, AC ni (sm) toping.
A) 10 B) 13 C) 12 D) 15
- Agar $x, y, z \in \left[-\frac{\pi}{2}; \frac{\pi}{2}\right]$ va $\sqrt{2 - \lg x - \lg y} + \sqrt[3]{\sin y - 1} + \sqrt[4]{\cos 2z - 1} = 0$ bo'lsa, $\frac{2x+5z}{3y}$ ning qiymatini hisoblang.
A) 3 B) $\frac{1}{3}$ C) $\frac{1}{6}$ D) $\frac{1}{2}$
- x ning qanday qiymatlarida ifoda ma'noga ega?
 $(50 + (1 - 2 + 3 - 4 + \dots - 100))^x$
A) $x = 0$ B) $x < 0$ C) $x > 0$ D) $x \in R$
- $\frac{1}{\frac{1}{x} + \frac{1}{2}} + \frac{1}{\frac{1}{x} + \frac{1}{2}} = \frac{x}{36}$ tenglamani yeching.
A) 60 B) 1 C) 36 D) 70
- $f(x) = x^4 + e^{2x}$, $f'(x) = ?$
A) $2e^x + 4x^2$ B) $2e^x + 3x$ C) $e^{2x} + x^4$ D) $2e^{2x} + 4x^3$
- Tengsizliklar sistemasini yeching.
 $\begin{cases} 4x^2 - 28x + 33 \leq 0 \\ \arcsin(x-3) > \frac{\pi}{6} \end{cases}$
A) [3, 5; 4) B) [3, 5; 4] C) (3, 5; 4) D) (3, 5; 4)
- 0, (44) ning teskarisiga qarama-qarshi bo'lgan sonning kvadrat ildizini toping.
A) -1,5 B) $-\frac{2}{3}$ C) $\frac{2}{3}$ D) 1,5
- $f(x) = \cos|2\pi + 3x| + \sqrt{2 - \frac{1}{|x|}}$ funksiyaning aniqlanish sohasini toping.
A) $x \geq \frac{1}{2}$
B) $x = \frac{1}{2}$
C) $x \leq -\frac{1}{2}$
D) $x \leq -\frac{1}{2}; x \geq \frac{1}{2}$
- Ikkita shar berilgan bo'lib, ularning radiuslari 3 dm va 25 sm. Sharlar kesishish chizig'ining uzunligi 48π sm bo'lgan markazlari orasidagi masofani (sm) toping.
A) 11 yoki 24 B) 18 yoki 24 C) 11 yoki 25 D) 12 yoki 20
- $\left(\frac{\sqrt{x-a}}{\sqrt{x+a} + \sqrt{x-a}} + \frac{x-a}{\sqrt{x^2-a^2} - x+a}\right) : \sqrt{\frac{x^2}{a^2} - 1}$ ifodani soddalashtiring. ($x > |a| \neq 0$)
A) 1 B) $\sqrt{x^2-a^2}$ C) ± 1 D) a
- Muntazam uchburchak ichidan olingan nuqtadan uchburchak tomonlarigacha bo'lgan masofalar mos holda $\vec{c}(2; 3; 1)$, $\vec{b}(1; 2; 1)$ va $\vec{a}(1; 2; 3)$ vektorlarning absolyut qiymatlariga teng bo'lsa, uchburchak balandligini toping.
A) $\sqrt{6} + \sqrt{14}$ B) 16 C) $2\sqrt{14} + \sqrt{6}$ D) 18
- $\int_2^5 \frac{dx}{2x-3}$ ni hisoblang.
A) $\ln 7$ B) 7 C) $\ln \sqrt{7}$ D) $\sqrt{7}$
- $1 - 2x - x^2 = 2^{x+1} + 2^{1-x}$ tenglamani yeching.
A) $\sqrt{2} - 1$ B) 3 C) 0 D) 1
- $2 + \log_2^2 x + \log_4 x = \log_{4x}(16x^2)$ tenglamani yeching.
A) 0 B) $\frac{1}{4}$ C) 1 D) 1; $\frac{1}{4}$
- $\int_1^2 \sqrt[3]{x\sqrt{x}} dx$ ni hisoblang.
A) $\frac{5}{7} (2\sqrt[5]{4} - 1)$
B) $\frac{5}{7} (2\sqrt[5]{4} + 1)$
C) $\frac{7}{5} (2\sqrt[5]{4} + 1)$
D) $\frac{7}{5} (2\sqrt[5]{4} - 1)$
- Zarracha har minutda ikkiga ajraladi. Agar idishga 1 ta zarracha solinsa, u 1 soatda to'ladi. Shu idishga 2 ta zarracha solinsa, u qancha minutda to'ladi?
A) 59 B) 30 C) 45 D) 49

26. a va b natural sonlar $\frac{5a-b}{b} = 11$ shartni qanoatlantirsa, $a+b$ ifodaning eng kichik qiymati nimaga teng bo'ladi?
A) 17 B) 14 C) 16 D) 13
27. Agar $2 \leq x \leq y \leq z \leq t \leq 128$ bo'lsa, $\frac{x}{y} + \frac{z}{t}$ ifodaning eng kichik qiymatini toping.
A) 0,5 B) 0,75 C) 0,25 D) 1,6
28. Diagonallarining soni tomonlari sonidan 3 marta ko'p bo'lgan qavariq muntazam ko'pburchakning ichki burchaklaridan biri topilsin.
A) 144° B) 140° C) 108° D) 120°
29. $\arccos(2 + \sqrt{3}) + \arcsin \sqrt{3}$ ni hisoblang.
A) $\frac{\pi}{12}$ B) $\frac{\pi}{4}$ C) $\frac{\pi}{8}$ D) $\frac{\pi}{6}$
30. $x^2 - 4|x| - a + 3 = 0$ tenglama a ning qanday qiymatlarida ikkita manfiy va bitta musbat ildizga ega?
A) 6 B) -2 C) 3 D) $\emptyset$
31. Kun va tunning almashishi axborotning qaysi turiga kiradi?
A) diskret B) to'liq C) ishonchli D) analog
32. Quyidagi mantiqiy ifodaga teng kuchli ifodani aniqlang:
 $A \wedge (A \vee B)$
A) $A \wedge \neg B$ B) $A \wedge B$ C) $\neg A \wedge B$ D) A
33. Boshqarish panelidagi "Дата/время" yorlig'ining vazifasi to'g'ri ko'rsatilgan qatorni belgilang.
A) faylning vaqti va sanasini o'zgartirish
B) papka yaratish vaqti va sanasini o'zgartirish
C) hujjatning yaratilgan vaqti va sanasini o'zgartirish
D) tizim vaqti va sanasini o'zgartirish
34. MS Excel 2003 dasturining joriy "лист"ida nechta ustun mavjud?
A) 253 B) 255 C) 256 D) 254
35. Fayllarning diskdagi bo'laklarini bir joyga to'plash ... deb ataladi
A) nazorat B) formatlash C) fayllarni tiklash
D) defragmentatsiya
36. Paskal tilidagi quyidagi dastur natijasini aniqlang:
Var a, k: integer;
Begin a:= -2; For k:= -21 downto 7 do a:=(-2)*a; write(a);
end.
A) 512 B) 256 C) -2 D) -512

MATEMATIKA (INFORMATIKA BILAN)

1. $(-35) : 7 - 725 : (-25) - (-91) : (-7)$ ifodaning qiymati 3 dan qancha katta?
A) 18 B) 29 C) 11 D) 8
2. $3, 1, \frac{1}{3}, \dots$ geometrik progressiyaning oltinchi va ettinchi hadlarini toping.
A) $\frac{1}{9}, \frac{1}{27}$ B) 1, 3 C) $\frac{1}{81}, \frac{1}{243}$ D) $\frac{1}{27}, \frac{1}{81}$
3. $\sqrt{1 - \cos x} = \sin x$ ($x \in [\pi; 3\pi]$) tenglamaning ildizlari yig'indisini toping.
A) 2π B) 3π C) 4π D) $4, 5\pi$
4. $\frac{58,4 \cdot 31,2 - 27,2}{31,2 + 58,4 \cdot 30,2}$ ni hisoblang.
A) 2 B) $\frac{1}{2}$ C) $\frac{1}{4}$ D) 1
5. $A(2; -5)$ nuqtadan o'tuvchi va $y = x^2 - 6x + 5$ parabola ga urinuvchi to'g'ri chiziqlarning urinish nuqtasi absissalari ko'paytmasini toping.
A) -4 B) -2 C) 4 D) 2
6. Radiusi R ga teng bo'lgan aylanaga tashqi chizilgan muntazam n -burchakning tomoni b ga teng bo'lsa, shu aylanaga ichki chizilgan muntazam n -burchakning tomonini toping.
A) $\frac{2bR}{\sqrt{4R^2 + b^2}}$ B) $\sqrt{R^2 - \frac{b^2}{4}}$ C) $\frac{2bR}{\sqrt{4R^2 - b^2}}$
D) $\sqrt{R^2 + \frac{b^2}{4}}$
7. $x - a(x^2 + 1) + x^3 + 10 = 0$ tenglama ildizlaridan biri -1 ga teng. a ni toping.
A) 0 B) 4 C) -4 D) 2
8. ABC uchburchakning AC tomonida D nuqta olindi. Agar $\angle ABC = \angle BDC$ bo'lib, $3AB = 4BD$ va $BC = 6$ sm bo'lsa, AC kesma uzunligini(sm) toping.
A) 12 B) 4,5 C) 10 D) 8
9. $\frac{1}{\sqrt{2} + \sqrt{6} - 1}$ kasrning maxrajini irratsionallikdan qutqaring.
A) $3\sqrt{6} + 9\sqrt{2} - 7$ B) $3\sqrt{6} - 4\sqrt{3} - 5\sqrt{2} + 7$
C) $\sqrt{6} - 4\sqrt{2}$ D) $\sqrt{6} + \sqrt{2}$
10. Aylanaga tashqi chizilgan muntazam oltiburchakning tomoni $\sqrt{12}$ bo'lsa, aylanaga ichki chizilgan kvadratning yuzini hisoblang.
A) 12 B) 18 C) 16 D) 24
11. To'g'ri burchakli uchburchakning bir burchagi 38° ga teng bo'lsa, to'g'ri burchak uchdan tushirilgan bissektrisa va balandlik orasidagi burchakni toping.
A) 10° B) 17° C) 7° D) 14°
12. Agar $a = -1, b = -3$ bo'lsa, $\frac{2|a+b| + 3|a-b| - |b|}{|a+b|^2}$ ni hisoblang.
A) $\frac{1}{3}$ B) $-\frac{1}{2}$ C) 15 D) $\frac{11}{16}$
13. $\frac{(a-b)^2 + ab}{(a+b)^2 - ab} : \frac{a^5 + b^5 + a^2b^3 + a^3b^2}{(a^3 + b^3 + ab^2 + a^2b)} \cdot (a^3 - b^3)$ ni soddalashtiring.
A) $a + b$ B) ab C) $a - b$ D) $\frac{1}{a-b}$

14. ABC to'g'ri burchakli uchburchakda C to'g'ri burchak, $BC=15, AC=8$ uning B burchagi sinusi va tangensi nisbatini toping.
A) $\frac{15}{17}$ B) $\frac{17}{15}$ C) $\frac{8}{15}$ D) $\frac{8}{17}$
15. $y = 3 + 3(x-2)^2$ funksiya grafigi koordinata tekisligining qaysi choraklaridan o'tadi?
A) barchasidan B) I, II va IV C) I va II D) I, II va III
16. Silindr asosining radiusi 10 sm, balandligi 16 sm. Silindrning o'qiga parallel kesim o'tkazilgan va u o'qdan 60 mm uzoqlikda yotadi. Shu kesimning yuzini (sm^2) toping.
A) 216 B) 196 C) 256 D) 208
17. $\arccotg(2 + \sqrt{3}) + \arccotg\sqrt{3}$ ni hisoblang.
A) $\frac{\pi}{8}$ B) $\frac{\pi}{6}$ C) $\frac{\pi}{4}$ D) $\frac{\pi}{12}$
18. $\log_2(x-7)(x^2 - 7x + 12) \geq 0$ tengsizlikning eng kichik tub yechimini toping.
A) 17 B) 5 C) 13 D) 11
19. $\frac{|2-3x|-7}{x+1} \geq -1$ tengsizlikni yeching.
A) $[-2; -1)$
B) $[2; \infty)$
C) $[-2; -1) \cup [2; \infty)$
D) $[-2; -1] \cup (2; \infty)$
20. $f(x) = \log_4 x + e^{2x}, f'(x) = ?$
A) $e^{2x} + \frac{1}{4}$ B) $e^{2x} + \frac{1}{x}$ C) $e^{2x-1} + \frac{1}{x \ln 4}$
D) $2e^{2x} + \frac{1}{x \ln 4}$
21. $ABCD$ kvadrat tekisligiga A uchidan AK perpendikulyar o'tkazilgan. Agar $BK = 4, AB = 3$ bo'lsa, K nuqtadan kvadratning C uchigacha bo'lgan masofani toping.
A) 4 B) 6 C) $3\sqrt{2}$ D) 5
22. $\sqrt{\sqrt{9} + 2x - x^2} \cdot (x-2) \geq 0$ tengsizlikning yechimini ko'rsating.
A) $[3; \infty)$ B) $[2; \infty)$ C) $\{-1\} \cup [2; 3]$
D) $\{-1\} \cup [3; \infty)$
23. To'g'ri to'rtburchakning yuzi 56 m^2 ga, perimetri esa 30 m ga teng. Uning tomonlari musbat ayirmasini toping.
A) 2 B) 1,2 C) 1 D) 2,5
24. Tenglamani yeching: $2\cos^2 \frac{x}{3} - 3\cos \frac{x}{3} + 1 = 0$
A) $6\pi n; n \in \mathbb{Z}$ B) $\pm\pi + 6\pi n; n \in \mathbb{Z}$
C) $\pm\pi + 3\pi n; n \in \mathbb{Z}$ D) $6\pi n; \pm\pi + 6\pi n; n \in \mathbb{Z}$
25. 3 soni bilan noma'lum son orasiga shunday son qo'yilganki, bu uchta son arifmetik progressiya tashkil etadi. Agar ikkinchi son 6 ga kamaytirilsa, musbat hadli geometrik progressiya hosil bo'ladi. Arifmetik progressiyaning ikkinchi hadini toping.
A) 12 B) 14 C) 15 D) 27
26. $4(n-1) \in \mathbb{N}$ son 1, 2, 3, 4, 5, 6, 8, 10 va 20 ga qoldiqsiz bo'lsa, n ning eng kichik natural qiymatini toping.
A) 25 B) 27 C) 31 D) 28

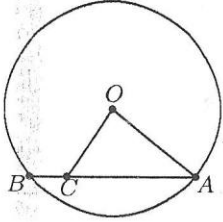
27. $f(x) = -3x^2 + 5x^4$, $F(x) = ?$

- A) $x^3 + \frac{x^5}{5} + c$ B) $x^3 + x^5 + c$ C) $-x^3 + x^5 + c$
 D) $\frac{x^3}{4} + \frac{x^4}{5} + c$

28. $\left(0, 125 - \frac{\frac{1}{18} + \frac{1}{8}}{\frac{1}{18}}\right) : \left(\frac{2}{9} + \frac{\frac{7}{45}}{\frac{2}{15} - \frac{1}{18}}\right) + \frac{1}{2 + \frac{6}{13}}$

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

29. Rasmda OA radiusli aylana berilgan va $AC=14$ sm, $BC=2$ sm, $OC=6\sqrt{2}$ sm bo'lsa, aylananing OA radiusi necha sm ga teng?



- A) 10 B) 8 C) 16 D) 12

30. $\begin{cases} x\sqrt{y} = y, \\ y\sqrt{x} = x^4 \end{cases}$ sistema ildizlarini ifodalovchi nuqtalar orasidagi masofani toping ($x > 0$).

- A) 3 B) $\sqrt{10}$ C) $2\sqrt{2}$ D) $\sqrt{7}$

31. Axborotning asosiy xossalari to'g'ri keltirilgan javobni aniqlang.

- A) go'zal, ommaviy, diskret B) qimmatli, ishonchli, to'liq
 C) uzluksiz, ishonchli, to'liq D) qisqa, tushunarli, uzlukli

32. Ikkilik sanoq sistemasida amallarni bajaring:

$$111111 + 1 \cdot 2^8 + 1 \cdot 2^5 + 1 \cdot 2^1 + 1 \cdot 2^0 - 101$$

- A) 101011100 B) 101010101 C) 101011101
 D) 101001001

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

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

34. MS Excel 2003 dasturida berilgan

=ДЛСТР("Информатика")+СР3НАЧ(15;30;3) formulaning natijasini aniqlang.

- A) 26 B) 27 C) 29 D) 28

35. HTML hujjatida qanday teg abzats hosil qilishda ishlatiladi?

- A) $\langle H1 \rangle \dots \langle /H1 \rangle$ B) $\langle U \rangle \dots \langle /U \rangle$ C) $\langle P \rangle \dots \langle /P \rangle$
 D) $\langle BR \rangle \dots \langle /BR \rangle$

36. Paskal tilida quyidagi dastur lavhasi takrorlanish operatoridagi takrorlanishlar sonini aniqlang:

I:=2; While I<10 do begin I:=I+1; P:=I*I; end;

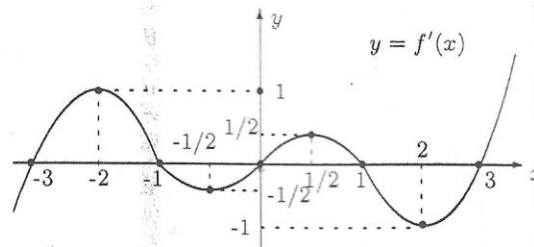
- A) 8 marta B) 0 marta C) 9 marta D) 1 marta

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- Oltin va durdan yasalgan bezakning og'irligi 3 misqol, narxi 24 dinor. Agar 1 misqol oltin 5 dinor, 1 misqol dur 15 dinor tursa, bezakda qancha misqol oltin bor?
A) 2,1 B) 1,2 C) 1,8 D) 2,4
- $\frac{1}{4}$ va $\frac{2}{3}$ sonlari orasida joylashgan, maxraji 24 ga teng qisqarmas kasrlar yig'indisini toping.
A) 1 B) $1\frac{5}{24}$ C) $1\frac{7}{24}$ D) $\frac{17}{24}$
- Hisoblang: $\frac{\sin 53^\circ - \sin 37^\circ}{1 - 2\cos^2 41^\circ}$.
A) $-\sqrt{2}$ B) -1 C) 1 D) $\sqrt{2}$
- Nechta $(m; n)$ natural sonlar ($m > n$) juftligi $\begin{cases} EKUB(m; n) = 5 \\ m + n = 20 \end{cases}$ sistemani qanoatlantiradi?
A) 3 B) 2 C) 4 D) 1
- $\operatorname{tg} \alpha + \operatorname{ctg} \alpha \geq 2$ tengsizlik qachon o'rinli?
A) $\pi n < \alpha < \frac{\pi}{2} + \pi n, n \in \mathbb{Z}$
B) $-\frac{\pi}{2} + \pi n < \alpha < \frac{\pi}{2} + \pi n, n \in \mathbb{Z}$
C) $-\pi n + \pi n < \alpha < \pi n, n \in \mathbb{Z}$
D) $\pi n < \alpha < \pi + \pi n, n \in \mathbb{Z}$
- Ifodani soddalashtiring.
 $\frac{1}{\sqrt{5}-2} - \left(\sqrt{5} + \frac{1}{2}\right)^2 + 5, 25$
A) 1 B) 3 C) 2 D) 0
- Teng yonli uchburchakning perimetri 52 sm. Agar uning asosi yon tomonining 0,6 qismini tashkil qilsa, unga tashqi chizilgan doira yuzini (sm^2) toping.
A) $\frac{10000\pi}{91}$ B) $\frac{100\pi}{91}$ C) $\frac{6\sqrt{91}}{13}$ D) $\frac{100\sqrt{91}}{91}$
- Qo'shni burchaklardan biri ikkinchidan 11 marta katta bo'lsa, shu burchaklardan kichigini toping.
A) 30° B) 12° C) 20° D) 15°
- $f(x-3) = \frac{2x-1}{x+1}$ bo'lsa, $f(f(3))$ ni hisoblang.
A) $\frac{13}{17}$ B) $\frac{17}{13}$ C) $\frac{19}{13}$ D) $\frac{13}{15}$
- $|x^2 - 4ax| = a$ tenglama uchta haqiqiy yechimga ega bo'ladigan a ning barcha qiymatlari yig'indisini toping.
A) 1 B) -1 C) 0 D) $\frac{1}{4}$
- $y = \frac{1}{3} \sin \frac{x}{2} \cos \frac{x}{2}$ funksiyaning davrini toping.
A) 2π B) π C) 4π D) $\frac{\pi}{4}$
- $x^2 + x - 2 = \frac{x^2 + x - 2}{x^2 - 1}$ tenglamaning ildizlari ko'paytmasini toping.
A) 6 B) -4 C) -2 D) 4
- Arifmetik progressiyada $a_1 + a_2 + a_3 = 0$ va $a_1^2 + a_2^2 + a_3^2 = 98$ bo'lsa, shu o'suvchi arifmetik progressiyada a_4 ni toping.
A) -14 B) 14 C) 49 D) -49

- Aylana tashqarisidagi O nuqtadan aylanaga kesuvchi ikkita to'g'ri chiziqli o'tkazilgan. O burchak tortib turgan yoylar $5:3$ kabi. Bu burchaklar yig'indisi butun aylana yoyining $\frac{1}{3}$ qismiga teng bo'lsa, O burchakni toping.
A) 20° B) 15° C) 30° D) 25°

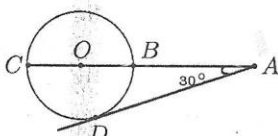
- Rasmda $y = f'(x)$ funksiya grafigi tasvirlangan. $y = f'(x)$ funksiya ekstremum nuqtalari koordinatalari ko'paytmasini toping.



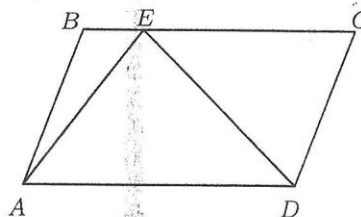
- $\frac{1}{4}$ B) -9 C) $-\frac{1}{4}$ D) 0
- $1 - 2x + \sqrt{16 - 6x + 3x^2} = 0$ tenglamaning ildizlari yig'indisini toping.
A) 5 B) -2 C) 3 D) 8
- Agar $1 + \frac{1}{2} + \frac{1}{3} + \dots + \frac{1}{10} = S$ bo'lsa, S qaysi oraliqqa tegishli?
A) (6; 7) B) $(\frac{15}{11}; \frac{23}{11})$ C) $(\frac{35}{6}; \frac{47}{6})$ D) $(\frac{23}{10}; \frac{25}{6})$
- Uchlari $A(7; 7)$ va $B(-2; -2)$ nuqtalarda bo'lgan kesmani $1:2$ nisbatda bo'luvchi C nuqtaning koordinatalarini toping.
A) (4; -4) B) (2,5; 2,5) C) (4; 4) D) (-4; -4)
- Agar α, β, γ uchburchakning ichki burchaklari bo'lsa, u holda $\sin^2 \alpha + \sin^2 \beta + \sin^2 \gamma$ yig'indining eng katta qiymatini toping.
A) 3 B) $\frac{3}{2}$ C) $\frac{3}{4}$ D) $\frac{9}{4}$
- Agar $\frac{8}{a} - \frac{a}{2} = 0$ bo'lsa $\frac{2^4}{a^2} + \frac{a^2}{(-4)^2}$ ni hisoblang.
A) 1,5 B) 1 C) 2,5 D) 2
- Asoslari a va b ga teng bo'lgan to'g'ri burchakli trapetsiya aylanaga tashqi chizilgan. Aylananing radiusini toping.
A) $|a - b|$
B) $\frac{1}{a} + \frac{1}{b}$
C) $\frac{a+b}{2}$
D) $\frac{1}{\frac{1}{a} + \frac{1}{b}}$
- Tenglama nechta butun yechimga ega?
 $8^{\log_3 x} \sqrt{4-x} + \log_4(x-2) = 8$.
A) 3 B) 1 C) 0 D) 2
- Aniq integralni hisoblang:
 $\int_0^{\frac{3\pi}{2}} \frac{dx}{\cos^2 \frac{2x}{9}}$
A) $\frac{5\sqrt{3}}{2}$ B) $\frac{11\sqrt{3}}{2}$ C) $\frac{7\sqrt{3}}{2}$ D) $\frac{9\sqrt{3}}{2}$

24. $\frac{\sqrt{x+1}}{\log_4|x-2|} \geq 0$ tengsizlikni qanoatlantiruvchi eng kichik butun son bilan eng kichik natural sonlar yig'indisini toping.
A) 1 B) 4 C) 3 D) 2
25. Ikki shara berilgan bo'lib, ularning radiuslari 3 dm va 25 sm. Sharlar kesishish chizig'ining uzunligi 48π sm bo'lsa, ularning markazlari orasidagi masofani (sm) toping.
A) 11 yoki 24 B) 12 yoki 20 C) 18 yoki 24 D) 11 yoki 25
26. To'g'ri burchakli trapetsiyaga ichki chizilgan aylananing radiusi 2 sm, uning katta asosi 12 sm bo'lsa, trapetsiyaning yuzini (sm^2) toping.
A) 32,04 B) 28,8 C) 20,24 D) 24
27. Quyidagilardan o'zaro tub sonlarni toping.
1) (169; 143); 2) $(n; n+1)$, $n \in N$; 3) $(n; n+2)$, $n \in N$; 4) (121; 144)
A) 1, 2 B) 1, 3 C) 1, 4 D) 2, 4
28. $\int \frac{1}{x+2} dx$ ni hisoblang.
A) $\ln|x+2| + c$ B) $\frac{1}{2} \lg(x+2) + c$ C) $\ln x + c$
D) $-\frac{1}{(x+2)^2} + c$
29. Oltiburchakli muntazam prizmaning balandligi 8 sm, uning katta diagonali asos tekisligi bilan 45° li burchak tashkil qiladi. Prizma asosining tomonini (sm) toping.
A) 12 B) 8 C) 6 D) 4
30. Agar $a+b+c+d+5 = a+1 = b+2 = c+3 = d+4$ bo'lsa, $a+b+c+d$ ni toping.
A) $-7/3$ B) $-10/3$ C) $5/3$ D) -5
31. 16 bit necha baytga teng?
A) 0,2 B) 2 C) 20 D) 0,02
32. Quyidagi mantiqiy tenglamaning yechimlari sonini aniqlang:
 $\neg A \wedge B \vee C = \text{yolg'on}$
A) 3 B) 5 C) 1 D) 4
33. Boshqarish panelidagi "Дата/время" yorlig'ining vazifasi to'g'ri ko'rsatilgan qatorni belgilang.
A) hujjatning yaratilgan vaqti va sanasini o'zgartirish
B) tizim vaqti va sanasini o'zgartirish
C) papka yaratish vaqti va sanasini o'zgartirish
D) faylning vaqti va sanasini o'zgartirish
34. MS Excel 2003 dasturida satr qo'shish amali to'g'ri yozilgan qatorni ko'rsating
A) Формат менюсидан Строки buyrug'i tanlanadi
B) Вставка менюсидан Строки buyrug'i tanlanadi
C) Правка менюсидан Строки buyrug'i tanlanadi
D) Данные менюсидан Строки buyrug'i tanlanadi
35. HTML hujjatida qanday teg abzats hosil qilishda ishlatiladi?
A) $\langle U \rangle \dots \langle /U \rangle$ B) $\langle BR \rangle \dots \langle /BR \rangle$
C) $\langle P \rangle \dots \langle /P \rangle$ D) $\langle H1 \rangle \dots \langle /H1 \rangle$
36. Paskal tilida quyidagi dastur lavhasi takrorlanish operatoridagi takrorlanishlar sonini aniqlang:
 $I:=1; \text{WHILE } I=5 \text{ DO begin writeln}(I); I:=I+1; \text{end};$
A) cheksiz marta B) 1 marta C) 5 marta D) 0 marta

MATEMATIKA (INFORMATIKA BILAN)

1. $(21^{x+5} + 21^{x \cos 3\pi})^{4 \log_3(x+1) - \log_3(5x^3 + 21x^2 + 17x + 61)} < 1$ tengsizlikning barcha butun yechimlari yigindisining natural bo'luvchilari soni topilsin.
A) 2 B) 4 C) 6 D) 9
2. $ABCD$ ($AB \parallel CD$) trapetsiyada $BC = 12$, $AB = 52$, $CD = 39$ va $DA = 5$ bo'lsa, uning yuzini toping.
A) 182 B) 195 C) 260 D) 210
3. $\frac{x^3 + 5x^2 + 3x - 9}{x^3 + x^2 - 5x + 3}$ kasrni qisqartiring.
A) $\frac{x+3}{x+1}$ B) $\frac{x-3}{x+1}$ C) $\frac{x+3}{x-1}$ D) $\frac{x-3}{x-1}$
4. $f(x) = \log_3 \frac{2x}{\pi} + \sin x + |x| + \cos 2x$ ning $x = \frac{9\pi}{2}$ dagi qiymatlarini toping.
A) $2 + 4,5\pi$ B) $4,5\pi$ C) $2 - 4,5\pi$ D) $-2 + 4,5\pi$
5. Piramida asosining yuzi 512 ga, uning balandligi 16 ga teng. Asosiga parallel bo'lgan kesimning yuzi 50 ga teng bo'lsa, u asosdan qanday masofada joylashgan?
A) 10 B) 8 C) 11 D) 9
6. Rasmda berilganlarga ko'ra, $\frac{AD}{AB}$ ning qiymati topilsin.
- 
- A) $\frac{3\sqrt{5}}{5}$ B) $2\sqrt{3}$ C) $\sqrt{5}$ D) $\sqrt{3}$
7. Konus o'q kesimining perimetri 72 ga, uning balandligi 24 ga teng. Uning hajmini toping.
A) 720π B) 960π C) 400π D) 800π
8. $\frac{1}{\frac{1}{\frac{1}{x} + \frac{1}{2}} + \frac{1}{\frac{1}{x} + \frac{1}{2}}} = \frac{x}{36}$ tenglamani yeching.
A) 1 B) 70 C) 60 D) 36
9. Aylanaga tashqi chizilgan muntazam oltiburchakning tomoni $\sqrt{12}$ bo'lsa, aylanaga ichki chizilgan kvadratning yuzini hisoblang.
A) 18 B) 24 C) 12 D) 16
10. Arifmetik progressiyada $a_{11} + a_7 = 6$ ga teng, $a_9^2 - 2$ ni toping.
A) 7 B) 2 C) 3 D) 1
11. $f(x) = -3x^2 + 5x^4$, $F(x) = ?$
A) $x^3 + x^5 + c$ B) $\frac{x^3}{4} + \frac{x^5}{5} + c$ C) $x^3 + \frac{x^5}{5} + c$
D) $-x^3 + x^5 + c$
12. m ning nechta qiymatida $\frac{3x-m}{3-x} + \frac{x+m}{x+1} = 2$ tenglama bitta ildizga ega?
A) 2 B) 3 C) 1 D) 4
13. $450^\circ < \alpha < 540^\circ$ va $\operatorname{tg} \alpha = -\frac{24}{7}$ bo'lsa, $\cos \frac{\alpha}{2}$ ni hisoblang.
A) $\frac{4}{5}$ B) 0,6 C) $-\frac{5}{24}$ D) -0,6

14. Rasmda berilgan ma'lumotlarga ko'ra $ABCD$ parallelogrammning yuzini hisoblang. Bu yerda $AE \perp l$, $AE = 15$, $ED = 17$ ga teng.



- A) 215 B) 514 C) 250 D) 255
15. $4\frac{4}{21} \cdot \left(\left(27 - 22\frac{5}{16} \right) : 1\frac{1}{4} - 2\frac{7}{8} \right) - 3\frac{2}{3}$ ni hisoblang.
A) $\frac{1}{2}$ B) 1 C) -1 D) 0
16. XOY dekart koordinatalar tekisligida $A(3;2)$, $B(1;3)$, $M(2;1)$ va $N(z;-1)$ nuqtalar belgilangan bo'lib, ulardan tuzilgan AM va MN vektorlar o'zaro parallel bo'lsa, z nechga teng?
A) 5 B) 6 C) 3 D) 1 yoki 3
17. $\int_0^1 x^4 dx$ ni hisoblang.
A) $\frac{5}{6}$ B) $\frac{3}{8}$ C) $\frac{2}{7}$ D) $\frac{1}{5}$
18. $1 \cdot 2 \cdot 3 \cdot \dots \cdot 30$ ko'paytmani tub ko'paytuvchilarga ajratganda ko'paytmada 2^n , 3^m va 7^k lar ishtirok etsa, $n + m + k$ ni toping.
A) 50 B) 40 C) 44 D) 46
19. To'g'ri burchakli uchburchakning perimetri 24 dm, yuzi 24 dm^2 ga teng. Uchburchakning katetlari (dm) uzunligini toping.
A) 6 va 7 B) 4 va 6 C) 7 va 8 D) 6 va 8
20. $y = 2\sin 4x - \sin 8x$ funksiyaning hosilasini toping.
A) $16\sin 2x \cdot \sin 6x$ B) $16\sin 2x \cdot \cos 6x$
C) $16\cos 2x \cdot \cos 6x$ D) $-16\cos 2x \cdot \sin 6x$
21. Tengsizliklar sistemasini yeching.
$$\begin{cases} 11x - x^2 - 24 \geq 0 \\ |x - 3| < 2 \end{cases}$$

A) (3; 5) B) [3; 5) C) [3; 5] D) (3; 5]
22. Qo'shni burchaklardan biri ikkinchisidan 40° kichik bo'lsa, katta burchakni toping.
A) 70° B) 80° C) 100° D) 110°
23. Ikki xonali sonning raqamlari orasiga 2 ni yozib uch xonali son hosil qilindi va u ikki xonali son dan to'qqiz marta katta bo'ldi. Berilgan sonning raqamlar yig'indisini toping.
A) 3 B) 7 C) 6 D) 8
24. Bo'luvchi $\frac{4}{3}$ marta orttirilsa, bo'linuvchining esa $\frac{1}{3}$ qismi yo'qotilsa, bo'linma qanday o'zgaradi?
A) 0, (8) marta oshadi B) o'zgarmaydi
C) 2 marta kamayadi D) 25% ga oshadi
25. $\begin{cases} x^{\sqrt{y}} = y \\ y^{\sqrt{x}} = x \end{cases}$ sistema ildizlarini ifodalovchi nuqtalar orasidagi masofani toping ($x > 0$).
A) $2\sqrt{2}$ B) 3 C) $\sqrt{10}$ D) $\sqrt{7}$
26. Yig'indining oxirgi raqamini toping.
 $2014^{2015} + 2015^{2014}$
A) 11 B) 3 C) 9 D) 7

27. $2 + \arcsin^2 x \leq \frac{2}{\operatorname{tg}^2 x + \operatorname{ctg}^2 x}$ tengsizlikni yeching.

A) R

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

C) $\frac{\pi}{4} + \pi n, n \in Z$

D) $\emptyset$

28. $x - \sqrt{x+3} - 27 = 0$ tenglamaning ildizlari ko'paytmasini toping.

A) 36 B) 48 C) 55 D) 33

29. $\operatorname{arccctg}(2 + \sqrt{3}) + \operatorname{arccctg}\sqrt{3}$ ni hisoblang.

A) $\frac{\pi}{4}$ B) $\frac{\pi}{8}$ C) $\frac{\pi}{6}$ D) $\frac{\pi}{12}$

30. $\frac{1}{\sqrt{2} + \sqrt{3}} + \frac{1}{\sqrt{3} + \sqrt{4}} + \frac{1}{\sqrt{4} + \sqrt{5}} + \dots + \frac{1}{\sqrt{30} + \sqrt{29}}$ ni hisoblang.

A) $\frac{\sqrt{30} - \sqrt{2}}{2}$ B) $\sqrt{29} - \sqrt{3}$ C) $\sqrt{30} - \sqrt{2}$ D) 32

31. Ssital tayloqchasi yordamida kodlash usuli qanday nomlanadi?

A) alifboni surish B) Morze usuli C) o'rin almashtirish
D) aralashtirilgan alifbo

32. Ikkilik sanoq sistemasida amallarni bajaring:

$101010 + 1 \cdot 2^6 + 1 \cdot 2^3 + 1 \cdot 2^2 + 1 \cdot 2^0 - 101$

A) 110010 B) 1110110 C) 1110010 D) 111000

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

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

34. MS Excel 2003 dasturida berilgan

=Если(Степень(3;4)>80;Сцепить("Аvto";
"bus");МАКС(15;30;4)) formulaning natijasini aniqlang.

A) 81 B) AVTOBUS C) 30 D) Avtobus

35. HTML-hujjatda jadval yaratish uchun qaysi teglar qo'llaniladi?

A) <html>... </html> B) <table>... </table>
C) <body>... </body> D) <head>... </head>

36. Paskal tilidagi quyidagi dastur ishga tushirilganda xatolik xabarini chiqardi:

Var a:byte; b:char;

Begin a:=5*2; b:='A';

if a<=15 then a:=a/2 else b:='A'; write(a);

End.

Xatolikka sabab bo'lgan qismni aniqlang.

A) b:='A'; B) a:=5*2 C) a:=a/2 D) a<=15

MATEMATIKA (INFORMATIKA BILAN)

1. Ikkita shar berilgan bo'lib, ularning radiuslari 3 dm va 25 sm. Sharlar kesishish chizig'ining uzunligi 48π sm bo'lsa, ularning markazlari orasidagi masofani (sm) toping.
 (A) 12 yoki 20 (B) 18 yoki 24 (C) 11 yoki 25 (D) 11 yoki 24
2. $\frac{0, (1)}{0, (5)} + \frac{0, (13)}{0, (65)} + \frac{0, (19)}{0, (95)} - 0, (9)$ ni hisoblang.
 (A) -0,6 (B) -0,4 (C) 0,4 (D) 0, (6)
3. Teng yonli uchburchakning yon tomoniga tushirilgan medianasi 5 sm, asosi $4\sqrt{2}$ sm bo'lsa, uchburchakning yon tomonini (sm) toping.
 (A) 5 (B) $4\sqrt{2}$ (C) 6 (D) 7
4. a va b sonlar qanday bo'lganda $2y + ax = b$ to'g'ri chiziqli absissa o'qi musbat yo'nalishi bilan 135° li burchak hosil qilib, $(0; -2)$ nuqtadan o'tadi?
 (A) $a = 4, b = -4$ (B) $a = -2, b = -4$ (C) $a = 2, b = -4$ (D) $a = -4, b = 2$
5. $2 + \log_4 x + \log_4 x = \log_{4x}(16x^2)$ tenglamani yeching.
 (A) $\frac{1}{4}$ (B) 1; $\frac{1}{4}$ (C) 1 (D) 0
6. Muntazam oltiburchakning tomoni $\sqrt{108}$ sm bo'lsa, unga tashqi va ichki chizilgan aylana radiuslarining nisbatini toping.
 (A) $\frac{\sqrt{3}}{3}$ (B) $\frac{2\sqrt{3}}{3}$ (C) $\sqrt{3}$ (D) $\frac{4\sqrt{3}}{3}$
7. $n + S(n) = 125$ shartni qanoatlantiruvchi $n(n \in \mathbb{N})$ ning natural bo'luvchilari sonini toping. Bunda $S(n)$ - n sonining raqamlari yig'indisi.
 (A) 3 (B) 2 (C) 5 (D) 4
8. $1^3 + 2^3 + \dots + 100^3$ sonli ifoda qiymatini 3 ga bo'lgandagi qoldiqni toping.
 (A) 0 (B) aniqlab bo'lmaydi (C) 1 (D) 2
9. $y = 3\cot x$ funksiyaning $F(\frac{\pi}{2}) = 9$ shartni qanoatlantiruvchi boshlang'ichini topib, $F(\frac{5\pi}{2})$ ning qiymatini toping.
 (A) 10 (B) 12 (C) 9 (D) 18
10. 60 km masofani bir velosipedchi ikkinchisiga qaraganda 1 soat tezroq bosib o'tdi. Agar birinchi velosipedchining tezligi ikkinchi velosipedchining tezligidan 5 km/soat kam bo'lsa, har bir velosipedchining tezligini (km/soat) toping.
 (A) 15; 20 (B) 12; 17 (C) 20; 25 (D) 10; 15
11. $\begin{cases} x\sqrt{y} = y, \\ y\sqrt{x} = x \end{cases}$ sistema ildizlarini ifodalovchi nuqtalar orasidagi masofani toping ($x > 0$).
 (A) 3 (B) $2\sqrt{2}$ (C) $\sqrt{7}$ (D) $\sqrt{10}$
12. $A(7; -5)$ nuqtadan absissa o'qiga perpendikulyar bo'lgan to'g'ri chiziqli tenglamasi topilsin.
 (A) $x = 7$ (B) $x = -5$ (C) $x = -7$ (D) $x = 5$
13. $y = \frac{1}{3}\sin \frac{x}{2} \cos \frac{x}{2}$ funksiyaning davrini toping.
 (A) 4π (B) 2π (C) π (D) $\frac{\pi}{4}$
14. $450^\circ < \alpha < 540^\circ$ va $\operatorname{tg} \alpha = -\frac{24}{7}$ bo'lsa, $\cos \frac{\alpha}{2}$ ni hisoblang.
 (A) $\frac{4}{5}$ (B) -0,6 (C) 0,6 (D) $-\frac{5}{24}$

15. $\frac{\frac{1}{\frac{1}{10} - \frac{1}{12}}}{\frac{1}{\frac{1}{8} - \frac{1}{6}} + \frac{1}{\frac{1}{5} - \frac{1}{6}}}$ ni hisoblang.
 (A) $\frac{1}{2}$ (B) 1 (C) 10 (D) 12

16. $\vec{a}$ va $\vec{b}$ vektorlar berilgan. $\vec{a}$ va $\vec{b}$ vektorlarning absolut qiymatlari 1 ga, ular orasidagi burchak esa 60° ga tengligi ma'lum bo'lsa, $\vec{a} + \vec{b}$ vektorning uzunligini toping.
 (A) $\sqrt{3}$ (B) 2 (C) 1 (D) $\sqrt{2}$

17. (b_n) - musbat hadli geometrik progressiyada $b_{k+m} = a$, $b_{k-m} = c$ bo'lsa, b_k ni toping ($a \cdot c > 0$).
 (A) $\frac{ac}{a+c}$ (B) $a-c$ (C) $a+c$ (D) $\sqrt{ac}$

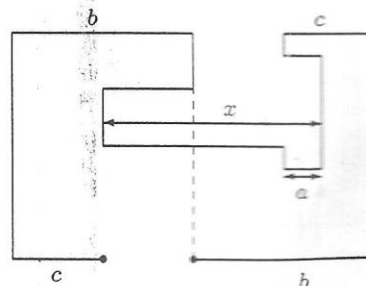
18. Teng yonli trapetsiya asosidagi burchakning sinusi 0,6 ga, asoslarining ayirmasi 4 ga teng bo'lsa, trapetsiyaning yon tomonini toping.
 (A) 3 (B) 4 (C) 2,5 (D) 2

19. $\left(1 - \frac{1}{a}\right) \left(1 - \frac{1}{a-1}\right) \left(1 - \frac{1}{a-2}\right) \dots$
 $\dots \left(1 - \frac{1}{3}\right) \left(1 - \frac{1}{2}\right) = \frac{1}{30}$ bo'lsa, a ning qiymatini toping.
 (A) 15 (B) 10 (C) 30 (D) 6

20. $\frac{x-7}{\sqrt{12+4x^2-19x}} < 0$ tengsizlikni yeching.

- (A) $x < \frac{3}{4}; 4 < x < 7$ (B) $x > \frac{3}{4}$ (C) $-4 < x < 7$
 (D) $-7 < x < -4$

21. $x = ?$



- (A) $2b - 2c + a$ (B) $b + 2c - a$ (C) $b + 2c + a$
 (D) $2b - c + a$

22. $f(x) = (2x - 7)^2$ funksiyaning hosilasini hisoblang.
 (A) $4x - 14$ (B) $8x - 28$ (C) $8x + 28$ (D) $4x - 28$

23. Agar $f(x) = \frac{2-x}{1-2x}$ funksiya berilgan bo'lsa, $f(f(x))$ funksiyaning ko'rinishini aniqlang.

- (A) $\frac{1}{2}x$ (B) $\frac{1}{x}$ (C) $\frac{x-2}{10x-5}$ (D) x

24. Agar ABC uchburchakda BE mediana va AD bissektrisalar o'zaro perpendikulyar bo'lsa, $AB : AC$ nisbatni toping.

- (A) 3:1 (B) 1:3 (C) 1:2 (D) 2:1

25. Tengsizliklar sistemasini yeching.

$$\begin{cases} 4x^2 - 28x + 33 \leq 0 \\ \arcsin(x-3) > \frac{\pi}{6} \end{cases}$$

- (A) (3, 5; 4) (B) [3, 5; 4] (C) (3, 5; 4) (D) [3, 5; 4]

26. $\frac{(\sqrt[3]{x} + \sqrt[3]{y})(x^2 - y^2)}{\sqrt[3]{x^5} + \sqrt[3]{x^2y^3} - \sqrt[3]{x^3y^2} - \sqrt[3]{y^5}} - (\sqrt[3]{xy} + \sqrt[3]{y^2})$ ifodani soddalashtiring va $x = 64$; $y = \frac{31}{78}$ da son qiymatini toping.
 (A) 18 (B) 16 (C) 12 (D) 15
27. $y = 5\cos 6x + 3\cos 10x$ funksiyaning hosilasini toping.
 (A) $60\sin 2x \cdot \sin 8x$ (B) $-60\cos 2x \cdot \sin 8x$
 (C) $60\sin 2x \cdot \cos 8x$ (D) $60\cos 2x \cdot \cos 8x$
28. $8x - 3x^2 + x^3 - 2$ ko'phadni $x^2 - x + 1$ ko'phadga bo'lgandagi qoldiqni toping.
 (A) $x - 2$ (B) $5x$ (C) $2 - x$ (D) $-5x$
29. $|x^2 - 4ax| = a$ tenglama yagona yechimga ega bo'ladigan a ning barcha qiymatlari yig'indisini toping.
 (A) 0,25 (B) 1 (C) 0,5 (D) 0
30. $x^2 + x - 2 = \frac{x^2 + x - 2}{x^2 - 1}$ tenglamaning ildizlari ko'paytmasini toping.
 (A) -2 (B) 4 (C) 6 (D) -4
31. Inson tomonidan axborotni izlash, yig'ish, saqlash, qayta ishlash va undan foydalanish usullari va vositalari ... deb yuritiladi.
 (A) axborot xavfsizligi (B) axborotni kodlash
 (C) elektromagnit maydon (D) axborot texnologiyasi
32. $A = \text{"Klaviatura - axborotni kiritish qurilmasi"}$, $B = \text{"1010}_2 = 10_{10}"$, $C = \text{"128 bayt = 16 bit"}$ mulohazalar qiymati asosida quyidagi mantiqiy ifoda qiymatini aniqlang:
 $A \vee \neg(B \wedge \neg C)$
 (A) Rost
 (B) Mantiqiy ifoda xato yozilgan
 (C) Yolg'on
 (D) Sodda mulohazalardan ba'zilarini qiymatini aniqlab bo'lmaydi
33. Mutlaqo bepul tarqatiladigan dasturlar - bu ...
 (A) Hardware (B) Software (C) Shareware (D) Freeware
34. MS Excel 2003 dasturida (A1:B3;A7:B4) maydon diapazonida nechta katakcha qamrab olingan?
 (A) 4 (B) 9 (C) 14 (D) 8
35. HTML-hujjatda matnni qalin shrift ko'rinishida yozish uchun uni qaysi HTML teglar orasiga olish zarur?
 (A) $\langle u \rangle \dots \langle /u \rangle$ (B) $\langle i \rangle \dots \langle /i \rangle$ (C) $\langle b \rangle \dots \langle /b \rangle$
 (D) $\langle p \rangle \dots \langle /p \rangle$
36. Paskal tilida quyidagi dastur lavhasi bajarilgach I o'zgaruvchi qiymatini aniqlang:
 $I := 1$; WHILE $I = 5$ DO begin writeln(I); $I := I + 1$; end;
 (A) 12345 (B) 5 (C) 0 (D) 1

MATEMATIKA (INFORMATIKA BILAN)

1. $\left(\frac{2\log_6 2 + \log_6 27}{\log_6 \sqrt[3]{0,25} + \log_6 \frac{1}{3}} \right)^2$ ni hisoblang.
 A) 9 B) $9\log_6 27$ C) 27 D) 18
2. $2(x-2)^2 + 2(1-1,5x) = 1$ tenglama ildizlari yig'indisining $\frac{2}{11}$ qismini toping.
 A) 2 B) 11 C) 1 D) $\frac{1}{11}$
3. $\frac{2-4+6-8+10-12+14}{3-6+9-12+15-18+21}$ ni hisoblang.
 A) $\frac{2}{3}$ B) -1 C) $-\frac{2}{3}$ D) 1
4. $\frac{1}{\sqrt{2} + \sqrt{6} - 1}$ kasrning maxrajini irratsionallikdan qutqaring.
 A) $\sqrt{6} - 4\sqrt{2}$ B) $3\sqrt{6} + 9\sqrt{2} - 7$ C) $\sqrt{6} + \sqrt{2}$
 D) $3\sqrt{6} + 4\sqrt{3} - 5\sqrt{2} + 7$
5. $1^{2^5} + (-1)^{5^2}$ ni hisoblang.
 A) -1 B) 2 C) 1 D) 0
6. $\sqrt{2} \leq \cos\left(7x - \frac{\pi}{8}\right) + \sin\left(7x - \frac{\pi}{8}\right)$ tengsizlikning $[0; \pi]$ kesmada nechta ildizi bor?
 A) 3 ta B) 1 ta C) 4 ta D) 5 ta
7. $1 - 2x + \sqrt{16 - 6x + 3x^2} = 0$ tenglamaning ildizlari ko'paytmasini toping.
 A) -15 B) 8 C) 3 D) 5
8. Nechta $(m; n)$ natural sonlar ($m > n$) juftligi $\begin{cases} EKUB(m; n) = 5 \\ m + n = 20 \end{cases}$ sistemani qanoatlantiradi?
 A) 4 B) 1 C) 3 D) 2
9. $y = \sin^4 x + \cos^4 x$ funksiyaning eng kichik musbat davrini toping.
 A) $\frac{\pi}{3}$ B) 2π C) π D) $\frac{\pi}{2}$
10. Har bir tashqi burchagi 60° dan bo'lgan qavariq ko'pburchakka tashqi chizilgan doiraning yuzi 12π bo'lsa, shu ko'pburchakka ichki chizilgan doira yuzi aniqlansin.
 A) 15π B) 9π C) 6π D) 12π
11. Agar $x + y + x^2y + xy^2 = 24$ va $x + y = 5$ bo'lsa, $x^3 + y^3$ ni toping.
 A) 60 B) 68 C) 30 D) 42
12. $x^2 - 4|x| - a + 3 = 0$ tenglamaning $a \geq 3$ bo'lgandagi ildizlari yig'indisini toping.
 A) 0 B) 4 C) 2 D) 1
13. Trapetsiyaning asoslari 4 sm va 3 sm. Uning asoslariga parallel kesma trapetsiyaning ikkita tengdosh trapetsiyalarga ajratadi. Shu kesmaning uzunligini toping.
 A) 3,75 B) 3,25 C) 3,5 D) $\frac{5}{\sqrt{2}}$
14. Parallelepiped uchta yog'ining yuzi mos ravishda 3 m^2 , 2 m^2 , 1 m^2 ga teng. Parallelepipedning to'la sirti nechaga teng (m^2)?
 A) 11 B) 12 C) 13 D) 14

15. $\left(1 + \frac{2}{3}\right)\left(1 + \frac{2}{4}\right)\left(1 + \frac{2}{5}\right) \dots \left(1 + \frac{2}{98}\right)$ ni hisoblang.

A) 1 B) 825 C) 625 D) 980

16. ABC uchburchakning BC tomoniga tushirilgan AD kesma ADC teng yonli uchburchak (AC asosli) hosil qiladi. Agar ABD va ABC uchburchaklarning perimetrlari mos ravishda 27 sm va 39 sm ga teng bo'lsa, AC ni (sm) toping.

A) 12 B) 15 C) 10 D) 13

17. $\int_0^1 x^4 dx$ ni hisoblang.

A) $\frac{5}{6}$ B) $\frac{3}{8}$ C) $\frac{2}{7}$ D) $\frac{1}{5}$

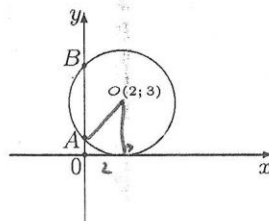
18. $\operatorname{tg} 11^\circ = a$ bo'lsa, $\frac{\sin 22^\circ \cdot \operatorname{ctg} 191^\circ}{\sin 79^\circ \cdot \cos 349^\circ}$ ni toping.

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

19. (b_n) - musbat hadli geometrik progressiyada $b_{k+m} = a$, $b_{k-m} = c$ bo'lsa, b_k ni toping ($a \cdot c > 0$).

A) $\sqrt{ac}$ B) $a + c$ C) $\frac{ac}{a + c}$ D) $a - c$

20. XOY tekisligida markazi (2;3) nuqtada bo'lgan aylana rasmdagidek chizilgan. Aylanani OY o'qi A va B nuqtalarda kesib o'tadi. Shulardan A nuqtaning ordinatasi topilsin



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

21. To'g'ri burchakli uchburchakning yuzasi 6 ga teng, katetlari esa 3:4 nisbatga bo'lsa, uchburchakning tomonlarini toping.

A) 4; 5; 6 B) 3; 4; 6 C) 3; 4; 5 D) 5; 6; 8

22. $\int_0^{2\pi} \sin^4 7x dx$ ni hisoblang.

A) $\frac{3\pi}{4}$ B) $\frac{7\pi}{4}$ C) $\frac{6\pi}{7}$ D) $\frac{7\pi}{8}$

23. Biror sonning 25% ko'pi shu sonning 25% kamidan necha foiz ko'p?

A) 67 B) $65\frac{2}{3}$ C) $66\frac{1}{3}$ D) $66\frac{2}{3}$

24. Aylana tashqarisidagi nuqtadan aylanaga ikkita urinma o'tkazilgan. Agar urinmalar orasidagi burchak 68° bo'lsa, aylananing urinish nuqtalari orasidagi katta yoini toping.

A) 248° B) 250° C) 244° D) 254°

25. Agar $\frac{a}{4} - \frac{8}{a} = -1$ bo'lsa $\frac{a^2}{64} + \frac{2^4}{a^2}$ ni toping.

A) 1,25 B) 1 C) 1,5 D) 2

26. Toq funksiyaning ko'rsating.

A) $y = \frac{x + x^3}{x^5}$ B) $y = x \cos x$ C) $y = 2x^2 - 3|x| + 2$
 D) $y = \frac{x^2}{x + 1}$

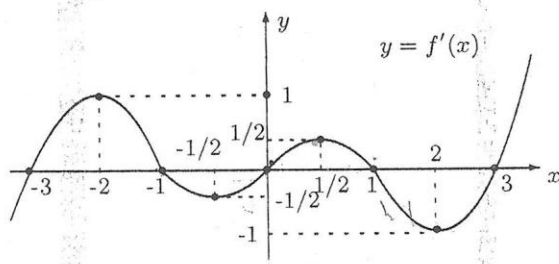
27. ABC to'g'ri burchakli uchburchakning katetlarini diametr qilib yuzlari 30π va 20π bo'lgan yarim doiralar chizilgan bo'lsa, gipotenuzaning uzunligini toping.

A) 22 B) 10 C) 15 **D) 20**

28. $f(x) = \log_3 \frac{2x}{\pi} + \sin x + |x| + \cos 2x$ ning $x = \frac{9\pi}{2}$ dagi qiymatlarini toping.

A) $2 + 4,5\pi$ B) $4,5\pi$ C) $-2 + 4,5\pi$ D) $2 - 4,5\pi$

29. Rasmda $y = f'(x)$ funksiya grafigi tasvirlangan. $y = f(x)$ funksiyaning grafigiga $(-3; 3)$ oraliqda Ox o'qiga parallel bo'lgan nechta urinmasi bor?



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

30. Ikki qo'shni yoqlarining markazlari orasidagi masofa $\sqrt{18}$ ga teng bo'lgan kubga tashqi chizilgan shar sirtining yuzini toping.

A) 144π B) 120π **C) 108π** D) 125π

31. ASCII yoyilmasi to'g'ri ko'rsatilgan qatorni ko'rsating:

A) American Standart Code for Information Interchange
 B) American Standart Computer for Information Interchange
 C) American Special Code for Information Interchange
 D) American Standart Code for Information Integer

32. $A =$ "Protessor tarkibida boshqaruv qurilmasi bor", $B =$ " $11111_2 = 31_{10}$ ", $C =$ "1 ta belgi = 1 bayt" mulohazalar qiymati asosida quyidagi mantiqiy ifoda qiymatini aniqlang:
 $A \wedge \neg(B \vee \neg C)$

A) Yolg'on
 B) Sodda mulohazalardan ba'zilarini qiymatini aniqlab bo'lmaydi
 C) Rost
 D) Mantiqiy ifoda xato yozilgan

33. Kompyuter yoqilishi bilan ekranda Windows operatsion tizim (sistema)ning ... hosil bo'ladi.

A) boshqarish paneli **B) ish stoli** C) dasturlar majmuasi
 D) ishchi papkasi

34. MS Excel 2003 dasturida A1 katakda 8, A2 katakda 4, A3 katakda 6 qiymati berilgan bo'lsa, $=CP3HA4(A1;A3)$ formula bo'yicha A4 katakda qanday natija hosil bo'ladi?

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

35. HTML-hujjatga rasm joylashtirish tegi to'g'ri ko'rsatilgan qatorni tanlang.

A) `<html href="fayl nomi">` **B) ``**
 C) `<frame src="fayl nomi">` D) `<a href="fayl nomi">`

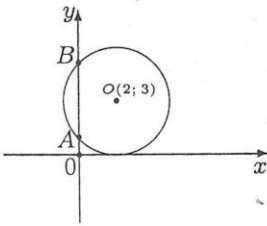
36. Paskal tilidagi quyidagi dastur ishga tushirilganda xatolik xabarini chiqardi:

```
Var a:byte; b:char;
Begin a:=5*2; b:='A';
if a>15 then a:=a*a else b:='A'; write(a);
End.
```

Xatolikka sabab bo'lgan qismni aniqlang.

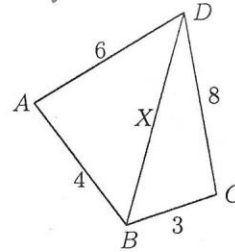
A) `a:=a*a` **B) `a>15`** C) `a:=5*2` D) `b:='A'`

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37. Bir to'g'ri chiziqli ketma-ket yotuvchi A, B, C va D nuqtalar uchun $AB = CD$ va $BC = 12$ ekanligi ma'lum. Bu to'g'ri chiziqli yotmaydigan E nuqtadan B va C nuqtalargacha bo'lgan masofa 10 ga teng. Agar AED uchburchakning perimetri BEC uchburchakning perimetridan ikki marta katta bo'lsa, AB ni toping.
A) 8,5 B) 7,5 C) 8 D) 9
38. Agar $f(x) = x + 1$ va $g(x) = x^2 - 1$ funksiyalar uchun $g(f(a)) = g(f(b))$ tenglik o'rinli bo'lsa, $(a + b)$ ni toping. ($a \neq b$).
A) 0 B) 2 C) aniqlab bo'lmaydi D) -2
39. $g(x) = x^3 \cdot f(x)$ kamayuvchi funksiya bo'lsa, quyidagilarning qaysi biri har doim to'g'ri bo'ladi?
A) $f(x) > f'(x)$ B) $x^2 \cdot f(x) > x \cdot f'(x)$
C) $x \cdot f'(x) < -3 \cdot f(x)$ D) $f'(x) > f(x)$
40. XOY tekisligida markazi $(2; 3)$ nuqtada bo'lgan aylana rasmdagidek chizilgan. Aylanani OY o'qi A va B nuqtalarda kesib o'tadi. Shulardan A nuqtaning ordinatasi topilsin
- 
- A) $3\sqrt{3}$ B) $3 + \sqrt{5}$ C) $3 - \sqrt{3}$ D) $3 - \sqrt{5}$
41. $\arccos \frac{x}{2} < \arccos x$ tengsizlikni yeching.
A) $(0; 1]$ B) $[-1; 0)$ C) $[-1; 1]$ D) $(0; 1)$
42. Silindr asosining radiusi 10 sm, balandligi 16 sm. Silindrning o'qiga parallel kesim o'tkazilgan va u o'qdan 60 mm uzoqlikda yotadi. Shu kesimning yuzini (sm^2) toping.
A) 196 B) 256 C) 208 D) 216
43. $(1 + 3x + x^2)(3 - 3x - x^2) \leq -5$ tengsizlikni yeching.
A) $(-\infty; -4] \cup [-2; -1] \cup [1; \infty)$
B) $[-2; -1]$
C) $[-4; -2] \cup [1; \infty)$
D) $[-2; -1] \cup [1; \infty)$

44. Rasmda berilganlarga ko'ra x ning o'zgarish oralig'ini toping.

8



A) $5 < x < 10$ B) $5 < x < 11$ C) $2 < x < 10$ D) $4 < x < 9$

45. $4(n - 1) \in N$ son 1, 2, 3, 4, 5, 6, 8, 10 va 20 ga qoldiqsiz bo'linisa, n ning eng kichik natural qiymatini toping.

A) 27 B) 28 C) 31 D) 25

46. $ABCD$ ($AB \parallel CD$) trapetsiyada $BC = 12$, $AB = 52$, $CD = 39$ va $DA = 5$ bo'lsa, uning yuzini toping.

A) 195 B) 210 C) 260 D) 182

47. $f(x) = 3^x - \log_3 x$, $f'(x) = ?$

A) $3^{x-1} \ln 3 - \frac{1}{x}$ B) $3^x - \frac{1}{x \ln 3}$ C) $3^x \ln 3 - \frac{1}{x \ln 3}$
D) $3^x \ln x - \frac{1}{3^x}$

48. Diagonallarining soni tomonlari sonidan 3 marta ko'p bo'lgan qavariq muntazam ko'pburchak markazidan ko'pburchak uchiga o'tkazilgan kesma va unga yopishgan tomon orasidagi burchakni toping.

A) 70° B) 60° C) 65° D) 72°

49. $f(x) = 18 \cos 3x \cdot \cos 6x$ uchun boshlang'ich funksiyani toping.

A) $-3 \cos 3x - \cos 9x + C$ B) $3 \cos 3x - \cos 9x + C$
C) $3 \sin 3x - \sin 9x + C$ D) $3 \sin 3x + \sin 9x + C$

50. $\sin^4 x + \cos^4 x = 1$ tenglamani yeching.

A) $(-1)^k \frac{\pi}{6} + \pi k, k \in Z$ B) $\frac{\pi k}{2}, k \in Z$ C) $\pi k, k \in Z$
D) $2\pi k, k \in Z$

51. 2 va 162 sonlari orasiga shunday 3 ta son qo'yildiki, ular birgalikda ishorasi almashinuvchi geometrik progressiyani tashkil qildi. Oraga qo'yilgan sonlar yig'indisini toping

A) 78 B) -42 C) 0 D) 42

52. $4 \frac{4}{21} \cdot \left(\left(27 - 22 \frac{5}{16} \right) : 1 \frac{1}{4} - 2 \frac{7}{8} \right) - 4 \frac{2}{3}$ ni hisoblang.

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

53. $\begin{cases} x^{\sqrt{y}} = y \\ y^{\sqrt{x}} = x \end{cases}$ sistema ildizlarini ifodalovchi nuqtalar orasidagi masofani toping ($x > 0$).

A) $\sqrt{10}$ B) 3 C) $\sqrt{7}$ D) $2\sqrt{2}$

54. 2013^{2015} ni 10 ga bo'lgandagi qoldiqni toping.

A) 7 B) 9 C) 1 D) 3

55. a ning qanday qiymatida $\begin{cases} x - y = 2 \\ x + 4y = a \\ 2x + 3y = 5 \end{cases}$ tenglamalar sistemasi yechimga ega?

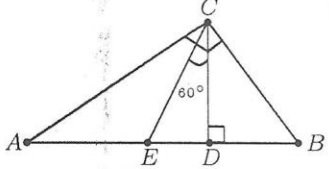
A) 0 B) 1 C) 2 D) 3

56. $\frac{58,4 \cdot 31,2 - 27,2}{31,2 + 58,4 \cdot 30,2}$ ni hisoblang.

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

57. $\frac{x^3 + 5x^2 + 3x - 9}{x^3 + x^2 - 5x + 3}$ kasrni qisqartiring.
 71) A) $\frac{x-3}{x+1}$ B) $\frac{x+3}{x+1}$ C) $\frac{x-3}{x-1}$ D) $\frac{x+3}{x-1}$
58. Uchlari $C(4; 3)$, $B(3; -1)$, $A(2; 4)$ bo'lgan uchburchakning medianalari kesishgan nuqta O bo'lsa, $\vec{OA}$ vektorning uzunligini toping.
 A) 5 B) $2\sqrt{3}$ C) $\sqrt{5}$ D) 3
59. $\left(\frac{3}{7}\right)^{\frac{x^2-2x}{x^2}} \geq 1$ tengsizlikni yeching.
 73) A) $[0; 2)$ B) $(0; 2)$ C) $[0; 2]$ D) $(0; 2]$
60. Uchburchak tomonlari 13sm, 14sm, 15sm. Bu uchburchakga tashqi va ichki chizilgan doiralarning yuzlari nisbatini toping.
 A) $\left(\frac{63}{32}\right)^2$ B) $\left(\frac{33}{17}\right)^2$ C) $\left(\frac{129}{64}\right)^2$ D) $\left(\frac{65}{32}\right)^2$
61. Sinfda jami 36 ta o'quvchi bor. Jami o'quvchilarning 0,(5) qismi matematika to'garagiga, 0,6(6) qismi ingliz tili to'garagiga, 0,(4) qismi ikkala to'garakka qatnashadi. Ikkala to'garakka ham qatnashmaydigan o'quvchilar sonini toping.
 A) 9 ta B) 7 ta C) 6 ta D) 8 ta
62. $|2-x| + 3x \leq 5$ tengsizlikni yeching.
 A) $x \leq -1$ B) $x \leq \frac{3}{2}$ C) $x \geq 3$ D) $x \geq 2$
63. $\sqrt{\frac{\sin^2 x - 1}{\cos^2 x + 1}} \leq \cos x$ tengsizlikni yeching.
 A) $\pi n, n \in \mathbb{Z}$ B) $\frac{\pi}{2} + \pi n, n \in \mathbb{Z}$ C) $\frac{\pi}{2} + 2\pi n, n \in \mathbb{Z}$ D) $\emptyset$
64. $\begin{cases} \log_3 \left(\log_{\frac{1}{9}} \frac{x}{y} \right) = 0 \\ \log_{\sqrt{x}} xy = 8 \end{cases}$ tenglamalar sistemasini yeching.
 78) A) (3; 27) B) (9; 27) C) (3; 9) D) $\left(3; \frac{1}{3}\right)$
65. $\sqrt[8]{9 - \sqrt{80}} \cdot \sqrt[4]{11 + 2\sqrt{18}} \cdot \sqrt[8]{9 + \sqrt{80}}$ ni hisoblang.
 75) A) $\sqrt{2}$ B) $\sqrt{3} + 2$ C) $\sqrt{2} + 3$ D) $\sqrt{3 + \sqrt{2}}$
66. Piramida asosining yuzi 512 ga, uning balandligi 16 ga teng. Asosiga parallel bo'lgan kesimning yuzi 50 ga teng bo'lsa, u asosdan qanday masofada joylashgan?
 35) A) 11 B) 9 C) 8 D) 10
67. Uzlukli turdagi axborot ... deyiladi.
 A) diskretli B) analogli C) foydali D) aralash
68. Quyidagi o'nlik sanoq sistemasidagi sonni ikkilik sanoq sistemasida tasvirlang:
 7069
 A) 1101110011101 B) 110110101111 C) 1100010101101 D) 1100101101101
69. Kompyuter yoqilishi bilan ekranda Windows operatsion tizim (sistema)ning ... hosil bo'ladi.
 A) ish stoli B) dasturlar majmuasi C) ishchi papkasi D) boshqarish paneli
70. MS Excel 2003 dasturida (A1:B3;A7:B4) maydon diapazonida nechta katakcha qamrab olingan?
 A) 9 B) 14 C) 4 D) 8
71. Internet orqali ikki kishining o'zaro yuzma-yuz ovoqli suhbatini amalga oshirish imkonini beruvchi xizmatlari to'g'ri ko'rsatilgan javobni aniqlang.
 A) PHP, ICQ, chat B) Mapple, Skype, ICQ C) Mail.ru Agent, Skype, ICQ D) Outlook Express, Mail.ru Agent, ICQ
72. Quyidagi Paskal dasturi lavhasi bajarilishi natijasida qora fonli ekranda qanday shakl aks etadi:
 Setcolor(15); Line(10,10,100,100); Line(120,120,10,10);
 A) burchak B) hech qanday C) kesma D) to'rtburchak

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1. $1^{2^5} + (-1)^{5^2}$ ni hisoblang.
A) 0 B) -1 C) 1 D) 2
2. $\int_0^1 x^4 dx$ ni hisoblang.
A) $\frac{5}{6}$ B) $\frac{1}{5}$ C) $\frac{3}{8}$ D) $\frac{2}{7}$
3. $2\sqrt{1-x^2} = x - 2$ tenglamani yeching.
A) 0 B) $\emptyset$ C) $0; \frac{4}{5}$ D) $\frac{4}{5}$
4. Silindr asosining radiusi 10 sm, balandligi 16 sm. Silindrning o'qiga parallel kesim o'tkazilgan va u o'qdan 60 mm uzqlikda yotadi. Shu kesimning yuzini (sm^2) toping.
A) 208 B) 216 C) 196 D) 256
5. Agar $f(4) = 5$, $f(3) = 4$, $f(2) = 3$ bo'lsa, $(f^{-1}(3) + f^{-1}(4)) \cdot f(4)$ ifodaning qiymatini hisoblang. $(f^{-1}(x))$ funksiya $f(x)$ ga teskari funksiya)
A) 20 B) 15 C) 25 D) 35
6. $f(x) = 16\sin 3x \cdot \sin 5x$ uchun boshlang'ich funksiyaning toping.
A) $4\cos 2x - \cos 8x + C$ B) $4\sin 2x + \sin 8x + C$
C) $-4\cos 2x - \cos 8x + C$ D) $4\sin 2x - \sin 8x + C$
7. $\left(\sin \alpha + \frac{1}{\sin \alpha}\right)^2 + \left(\cos \alpha + \frac{1}{\cos \alpha}\right)^2 - \left(\tan \alpha + \frac{1}{\tan \alpha}\right)^2$ ifodani soddalashtiring.
A) 5 B) 3 C) 1 D) $\sin \alpha \cos^2 \alpha$
8. Agar ABC uchburchakda BE mediana va AD bissektrisalar o'zaro perpendikulyar bo'lsa, $AB : AC$ nisbatni toping.
A) 3:1 B) 2:1 C) 1:3 D) 1:2
9. $f(x) = 1 + 2x + x^2$ funksiya hosilasi qaysi oraliqda shu funksiyaning o'zidan kichik bo'lmaydi?
A) $(-\infty; -1) \cup (1; \infty)$
B) $(-1; 1)$
C) $[-1; 1]$
D) $(-\infty; -1] \cup [1; \infty)$
10. Tenglamani yeching:
 $\cos^2 x = \sin^2 x - 1$
A) $2\pi k; k \in \mathbb{Z}$ B) $\frac{\pi}{2} + 2\pi k; k \in \mathbb{Z}$ C) $\pi k; k \in \mathbb{Z}$
D) $\frac{\pi}{2} + \pi k; k \in \mathbb{Z}$
11. 3, 1, $\frac{1}{3}, \dots$ geometrik progressiyaning oltinchi va ettinchi hadlarini toping.
A) $\frac{1}{27}, \frac{1}{81}$ B) $\frac{1}{9}, \frac{1}{27}$ C) 1, 3 D) $\frac{1}{81}, \frac{1}{243}$
12. $2^{5x-3} - 896 + 2^{5x-2} + 2^{5x-1} < 0$ tengsizlikni yeching.
A) $(-\infty; 2)$ B) $(-\infty; 0, 2)$ C) $(-\infty; -2)$ D) $(-\infty; 10)$
13. $\sqrt{3x-2} + \sqrt{5x-1} = 5$ tenglamani yeching. ($x \in \mathbb{R}$)
A) 3 B) 2; 97 C) 4 D) 2
14. Uchburchak tomonlari 13sm, 14sm, 15sm. Bu uchburchakga tashqi va ichki chizilgan doiralarning yuzlari nisbatini toping.
A) $\left(\frac{63}{32}\right)^2$ B) $\left(\frac{129}{64}\right)^2$ C) $\left(\frac{65}{32}\right)^2$ D) $\left(\frac{33}{17}\right)^2$
15. $\frac{2-4+6-8+10-12+14}{3-6+9-12+15-18+21}$ ni hisoblang.
A) $\frac{2}{3}$ B) -1 C) 1 D) $-\frac{2}{3}$
16. Bo'luvchi $\frac{4}{3}$ marta orttirilsa, bo'linuvchining esa $\frac{1}{3}$ q yo'qotilsa, bo'linma qanday o'zgaradi?
A) 25% ga oshadi B) 0,8 marta oshadi C) o'zgarmayadi D) 2 marta kamayadi
17. Rasmda berilgan ma'lumotlarga ko'ra, S_{ABC} ni toping. yerda $AC \perp BC$, $\angle ECD = 60^\circ$, $CD \perp AB$ va $CE = EB = 14$ ga teng.
- 
- A) 98 B) 88 C) 94 D) 90
18. $a + \frac{1}{a} = 2,5$ bo'lsa, $\frac{a^4 - a^2}{3a}$ ning qiymatini toping.
A) 2 va -0,125 B) 0,125 C) 1,5 D) 1,5 va 2,5
19. $\sin\left(\arcsin \frac{4}{5} + \arccos \frac{3}{5}\right)$ ni hisoblang.
A) $\frac{24}{25}$ B) $\frac{7}{25}$ C) $\frac{12}{25}$ D) $-\frac{24}{25}$
20. Diagonallarining soni tomonlari sonidan 3 marta ko'p bo'lgan qavariq muntazam ko'pburchak markazidan ko'pburchak qo'shni uchlariga o'tkazilgan kesmalar hosil qilgan burchakni toping.
A) 36° B) 40° C) 30° D) 45°
21. $3 \cdot 13 \cdot 31^2 \cdot 33 \cdot 37^2$ ko'paytmaning natural bo'luvchilari sonini toping.
A) 216 B) 108 C) 106 D) 54
22. Parallelepiped uchta yog'ining yuzi mos ravishda 3 m^2 , 2 m^2 1 m^2 ga teng. Parallelepipedning to'la sirti nechaga teng (m^2)?
A) 14 B) 11 C) 13 D) 12
23. $\frac{\sqrt{x+1}}{\log_4|x-2|} \geq 0$ tengsizlikni qanoatlantiruvchi eng kichik butun son bilan eng kichik natural sonlar yig'indisini toping.
A) 1 B) 2 C) 4 D) 3
24. Arifmetik progressiyada $a_{11} + a_7 = 6$ ga teng, $a_9^2 - 2$ ni toping.
A) 7 B) 2 C) 1 D) 3
25. XOY dekart koordinatalar tekisligida $A(3;2)$, $B(1;3)$, $M(2;1)$ va $N(z;-1)$ nuqtalar belgilangan bo'lib, ulardan tuzilgan $\vec{AB}$ va $\vec{MN}$ vektorlarning uzunliklari teng bo'lsa, z qanday qiymat qabul qiladi?
A) -1 yoki -3 B) 0 yoki 4 C) 1 yoki 4 D) 1 yoki 3
26. m ning nechta qiymatida $\frac{3x-m}{3-x} + \frac{x+m}{x+1} = 2$ tenglama bitta ildizga ega?
A) 2 B) 4 C) 1 D) 3
27. $\frac{a^3 - b^3}{a^2 + ab + b^2} \cdot \left(\frac{1}{a - \sqrt{ab}} + \frac{1}{a + \sqrt{ab}}\right)$ ni soddalashtiring.
A) 2 B) 1 C) $\frac{1}{a+b}$ D) a

28. $(-3; 4)$ nuqtaning absissa, ordinata o'qlariga va koordinata boshiga simmetrik bo'lgan nuqtalarni tutashtirishdan hosil bo'lgan uchburchakning eng katta tomonini toping.
A) 12 B) 24 C) 10 D) 14
29. Radiusi R ga teng bo'lgan aylanaga tashqi chizilgan muntazam n -burchakning tomoni b ga teng bo'lsa, shu aylanaga ichki chizilgan muntazam n -burchakning tomonini toping.
A) $\sqrt{R^2 - \frac{b^2}{4}}$ B) $\frac{2bR}{\sqrt{4R^2 + b^2}}$ C) $\sqrt{R^2 + \frac{b^2}{4}}$
D) $\frac{2bR}{\sqrt{4R^2 - b^2}}$
30. $\sqrt{9 + 2x - x^2} \cdot (x - 2) \geq 0$ tengsizlikning yechimini ko'rsating.
A) $\{-1\} \cup [3; \infty)$ B) $\{-1\} \cup [2; 3]$ C) $[3; \infty)$
D) $[2; \infty)$
31. Ssital tayoqchasi yordamida kodlash usuli qanday nomlanadi?
A) aralashtirilgan alifbo B) Morze usuli
C) alifboni surish D) o'rin almashtirish
32. $A = \text{"Printer - axborotni kiritish qurilmasi"}$, $B = \text{"1011}_2 = B_{16}"$, $C = \text{"1 Gbayt=1024 Mbayt"}$ mulohazalar qiymati asosida quyidagi mantiqiy ifoda qiymatini aniqlang:
 $\neg A \wedge \neg B \vee C$
A) Mantiqiy ifoda xato yozilgan
B) Yolg'on
C) Sodda mulohazalardan ba'zilarini qiymatini aniqlab bo'lmaydi
D) Rost
33. Windows operatsion tizim (sistema)da papka va hujjatlarni vertikal ustun shaklida tartiblash va ularni kichik ikonkalar tarzida ko'rsatish usuli qaysi javobda to'g'ri ko'rsatilgan?
A) Значок B) Плитка C) Таблица D) Список
34. MS Excel 2003 dasturida katakga sig'magan sonni eksponensial ko'rinishi to'g'ri berilgan qatorni toping
A) 1,23E+08 B) E1:23/08 C) 1,23E+0,8 D) 1,23E/0,8
35. Windows operatsion tizimi (sistemasi) tarkibida mavjud bo'lgan web-sahifani ko'rish vositasini aniqlang
A) Mozilla Firefox B) Google Chrome C) Opera
D) Internet Explorer
36. Paskal tilining quyidagi takrorlash operatoridagi takrorlanishlar sonini aniqlang:
 $I := 2014; \text{While } i \geq 1997 \text{ do } i := i - 1;$
A) 17 B) 16 C) 0 D) 18

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37. 60 km masofani bir velosipedchi ikkinchisiga qaraganda 1 soat tezroq bosib o'tdi. Agar birinchi velosipedchining tezligi ikkinchi velosipedchining tezligidan 5 km/soat kam bo'lsa, har bir velosipedchining tezligini (km/soat) toping.
A) 12; 17 B) 15; 20 C) 20; 25 D) 10; 15
38. $(-3; 4)$ nuqtaning absissa, ordinata o'qlariga va koordinata boshiga simmetrik bo'lgan nuqtalarni tutashtirishdan hosil bo'lgan uchburchakning uzun tomoniga tushirilgan mediana uzunligini toping.
A) 5 B) 3 C) 4 D) 6
39. $7^x \cdot (\sqrt{2})^{2x^2-6} - \frac{7^x}{2^{2x}} = 0$ tenglamaning katta ildizini toping.
A) 1 B) -4 C) -3 D) 3
40. $f(x) = \log_4 x + e^{2x}$, $f'(x) = ?$
A) $e^{2x} + \frac{1}{4}$ B) $2e^{2x} + \frac{1}{x \ln 4}$ C) $e^{2x} + \frac{1}{x}$
D) $e^{2x-1} + \frac{1}{x \ln 4}$
41. $f(x) = x - \sqrt{x+2}$ funksiyaning $[-2; 2]$ kesmadagi eng katta qiymatini toping.
A) 0,5 B) 0 C) $-\frac{1}{4}$ D) $\frac{1}{4}$
42. $f(x) = 16 \sin 3x \cdot \sin 5x$ uchun boshlang'ich funksiyaning toping.
A) $-4 \cos 2x - \cos 8x + C$ B) $4 \sin 2x - \sin 8x + C$
C) $4 \sin 2x + \sin 8x + C$ D) $4 \cos 2x - \cos 8x + C$
43. Uchburchakning tomonlari 6; 5 va 4 m. 5 m li tomonning 6 m li tomondagi proyeksiyasi necha metr?
A) $4\frac{3}{4}$ B) $3\frac{1}{4}$ C) $3\frac{3}{4}$ D) $4\frac{1}{4}$
44. Sharga konus ichki chizilgan. Konusning yasovchisi asosining diametriga teng. Shar hajmining konus hajmiga nisbatini toping.
A) 8 : 3 B) 32 : 9 C) 27 : 4 D) 16 : 9
45. Teng yonli uchburchakning asosi 12 sm. U yon tomonining 0,6 qismini tashkil qilsa, unga ichki chizilgan aylana radiusini (sm) toping.
A) $\frac{6\sqrt{91}}{13}$ B) 19π C) $\frac{19\sqrt{3}}{5}\pi$ D) $\frac{19\sqrt{5}}{13}$
46. $450^\circ < \alpha < 540^\circ$ va $\operatorname{tg} \alpha = -\frac{24}{7}$ bo'lsa, $\cos \frac{\alpha}{2}$ ni hisoblang.
A) $-\frac{5}{24}$ B) $\frac{4}{5}$ C) -0,6 D) 0,6
47. $4x \cdot \frac{|x-\pi|}{x-\pi} - x^2 - 2 = 0$ tenglamaning ildizlari yig'indisini toping.
A) $-2 + \sqrt{2}$ B) $-4 + \sqrt{2}$ C) $-4 - \sqrt{2}$ D) $-2 - \sqrt{2}$
48. $2 + \sqrt[3]{x+1} = 3\sqrt[6]{x+1}$ tenglama ildizlari o'rta arifmetigini toping.
A) 3 B) 31 C) $31\frac{1}{2}$ D) 1,5
49. $2(x-2)^2 + 2(1-1,5x) = 1$ tenglama ildizlari yig'indisining $\frac{2}{11}$ qismini toping.
A) 2 B) $\frac{1}{11}$ C) 1 D) 11

50. $f(x+2) = 2(2 \cdot f(x) + 1)$, $f(2) = 4$, $f(6) = ?$

- A) 66 B) 72 C) 46 D) 74

51. Oltiburchakli muntazam prizmaning balandligi 8 sm, uning katta diagonali asos tekisligi bilan 45° li burchak tashkil qiladi. Prizma asosining tomonini (sm) toping.

- A) 4 B) 12 C) 8 D) 6

52. x, y, z sonlar uchun $\frac{z}{6} = \frac{y}{5} = \frac{x}{2}$ tenglik o'rinli bo'lsa,

$\frac{x^2 + y^2 + z^2}{xy + yz + xz}$ ni hisoblang.

- A) $\frac{65}{52}$ B) $\frac{32}{25}$ C) $\frac{48}{43}$ D) $\frac{28}{13}$

53. Hisoblang: $\frac{\sin 53^\circ - \sin 37^\circ}{1 - 2\cos^2 41^\circ}$.

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

54. Doira ichida berilgan nuqtadan o'tkazilgan vatar bo'laklarining biri ikkinchisidan 2 marta katta, diametr bo'laklari esa 4 va 12,5 ga teng. Vatar bo'laklarini toping.

- A) 10; 5 B) 12; 6 C) 8; 4 D) 14; 7

55. 90 soni qaysi eng kichik natural songa ko'paytirilganda ko'paytma butun sonning kvadrati bo'ladi?

- A) 90 B) 10 C) 30 D) 40

56. $\vec{a}(3; -3; 0)$ va $\vec{b}(-6; 3; 3)$ vektorlar berilgan. $2\vec{a}$ va $\frac{1}{3}\vec{b}$ vektorlar orasidagi burchakni toping.

- A) 135° B) 150° C) 120° D) 60°

57. Arifmetik progressiyada $a_1 + a_3 + a_5 + \dots + a_9 = 50$, $a_2 + a_4 + a_6 + \dots + a_{10} = 75$ bo'lsa, d ni toping.

- A) 5 B) 3 C) 6 D) 15

58. $\left(1 + \frac{2}{3}\right) \left(1 + \frac{2}{4}\right) \left(1 + \frac{2}{5}\right) \dots \left(1 + \frac{2}{98}\right)$ ni hisoblang.

- A) 825 B) 625 C) 980 D) 1

59. $4\frac{4}{21} \cdot \left(\left(27 - 22\frac{5}{16}\right) : 1\frac{1}{4} - 2\frac{7}{8}\right) - 4\frac{2}{3}$ ni hisoblang.

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

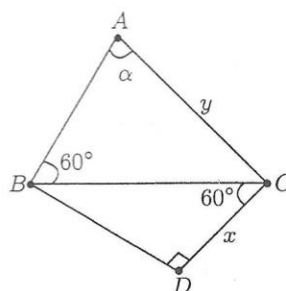
60. Xaltadagi yong'oqlarni 2 tadan, 3 tadan, 4 tadan va 5 tadan qilib sanalganda har doim bitta yong'oq ortib qolgan bo'lsa, xaltada eng kamida nechta yong'oq bor?

- A) 121 ta B) 71 ta C) 61 ta D) 131 ta

61. Uchlari $A(7; 7)$ va $B(-2; -2)$ nuqtalarda bo'lgan kesmani 1 : 2 nisbatta bo'lavchi C nuqtaning koordinatalarini toping.

- A) (4; 4) B) (-4; -4) C) (2,5; 2,5) D) (4; -4)

62. Rasmga ko'ra, $AC=y$, $DC=x$ va $\angle ABC = \angle BCD = 60^\circ$ bo'lsa, $\sin \alpha$ ni x va y orqali ifodalang.



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

63. $\frac{(\sqrt[3]{x} + \sqrt[3]{y})(x^2 - y^2)}{\sqrt[3]{x^5} + \sqrt[3]{x^2y^3} - \sqrt[3]{x^3y^2} - \sqrt[3]{y^5}} - (\sqrt[3]{xy} + \sqrt[3]{y^2})$ ifodani soddalashtiring va $x = 64$; $y = \frac{31}{78}$ da son qiymatini toping.
A) 16 B) 15 C) 12 D) 18
64. $5 + \left(x^2 + \frac{1}{x^2}\right) - 4\left(x + \frac{1}{x}\right) = 0$ tenglamaning haqiqiy yechimlari ko'paytmasi toping.
A) $\frac{3 - \sqrt{5}}{2}$ B) $\frac{3 + \sqrt{5}}{2}$ C) 0 D) 1
65. $(21^{x+5} + 21^{x \cos 3\pi})^{4 \log_3(x+1) - \log_3(5x^3 + 21x^2 + 17x + 61)} < 1$ tengsizlikning eng katta va eng kichik butun yechimlari yig'indisi topilsin.
A) 6 B) 4 C) 2 D) 0
66. $\sin^4 x + \cos^4 x = 1$ tenglamani yeching.
A) $(-1)^k \frac{\pi}{6} + \pi k, k \in \mathbb{Z}$ B) $\pi k, k \in \mathbb{Z}$ C) $\frac{\pi k}{2}, k \in \mathbb{Z}$
D) $2\pi k, k \in \mathbb{Z}$
67. Kibernetika fanining asoschisi kim?
A) N. Virt B) Klod Shennon C) Norbert Viner
D) J. fon Neyman
68. $A = \text{"Printer - axborotni kiritish qurilmasi"}; B = \text{"1011}_2 = B_{16}"; C = \text{"1 Gbayt} = 1024 \text{ Mbayt"}$ mulohazalar qiymati asosida quyidagi mantiqiy ifoda qiymatini aniqlang:
 $\neg A \wedge \neg B \vee C$
A) Mantiqiy ifoda xato yozilgan
B) Sodda mulohazalardan ba'zilarini qiymatini aniqlab bo'lmaydi
C) Rost
D) Yolg'on
69. Ilova oynasining ishga tushirilgan dasturning nomi, ishlayotgan faylning nomi aks etib turadigan satri ... deyiladi.
A) menyular satri B) holat satri C) uskunalar paneli
D) sarlavha satri
70. MS PowerPoint 2003 dasturida slaydga qo'shimcha matnli maydon kiritish ketma-ketligini ko'rsating
A) Вставка menyusidan Текст buyrug'i tanlanadi
B) Формат menyusidan Текст buyrug'i tanlanadi
C) Вставка menyusidan Надпись buyrug'i tanlanadi
D) Формат menyusidan Надпись buyrug'i tanlanadi
71. HTML-hujjatda jadval yaratish uchun qaysi teglar qo'llaniladi?
A) `<table>... </table>` B) `<html>... </html>`
C) `<body>... </body>` D) `<head>... </head>`
72. Paskal tilida qaysi javobda $A[k]=k$ formula orqali aniqlangan N ta elementli massivning elementlari qiymatini o'sish tartibida ekranga chiqaruvchi dastur lavhasi yozilgan?
A) For $x:=N$ downto 1 do writeln($A[x]$);
B) For $j:=1$ to N do writeln($A[N-j+1]$);
C) For $m:=1$ to N do writeln($A[m]$);
D) For $k:=1$ downto N do writeln($A[k]$);

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37. $x - \sqrt{x+3} - 27 = 0$ tenglamaning ildizlari yig'indisini toping.

- A) 55 B) 33 C) 48 D) 36

38. Bo'luvchi $4/3$ marta orttirilsa, bo'linuvchining esa $1/3$ qismi yo'qotilsa, bo'linma qanday o'zgaradi?

- A) o'zgarmaydi B) 2 marta kamayadi
C) 0,8 marta oshadi D) 25% ga oshadi

39. $y = 6 + \frac{x^4}{25}$, $y' = ?$

- A) $\frac{4x^{-1/5}}{25} + 6$ B) $\frac{4}{5\sqrt[5]{x}} + 6$ C) $\frac{4}{5\sqrt{x}}$ D) $\frac{4}{125 \cdot x^{0.2}}$

40. Balandligi 4 sm, asosi 16 sm bo'lgan teng yonli uchburchakka tashqi chizilgan aylana radiusini toping.

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

41. 639 sonni $\frac{1}{2} : \frac{2}{3} : \frac{3}{4}$ kabi nisbatda bo'ling.

- A) $162\frac{16}{23}$; $225\frac{6}{23}$; $251\frac{1}{23}$
B) $167\frac{17}{23}$; $220\frac{7}{23}$; $250\frac{22}{23}$
C) $163\frac{16}{23}$; $224\frac{6}{23}$; $251\frac{1}{23}$
D) $166\frac{16}{23}$; $222\frac{6}{23}$; $250\frac{1}{23}$

42. $\log_2 1 + \log_2 \frac{1}{2} + \log_2 \frac{1}{8}$ ni hisoblang.

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

43. $f(x+2) = 2(2 \cdot f(x) + 1)$, $f(2) = 4$, $f(6) = ?$

- A) 66 B) 74 C) 46 D) 72

44. $x^2 - 4|x| - a + 3 = 0$ tenglama yagona yechimga ega bo'ladigan a ning barcha butun manfiy qiymatlari yig'indisini toping.

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

45. $\sqrt{9+2x-x^2} \cdot (x-2) \geq 0$ tengsizlikning yechimini ko'rsating.

- A) $\{-1\} \cup [3; \infty)$ B) $\{-1\} \cup [2; 3]$ C) $[3; \infty)$

D) $[2; \infty)$

46. ABCD kvadratning D uchidan AB tomonining o'rtasiga DK kesma tushirildi. AC diagonal uni L nuqtada $KL=2,5$ sm uzunlikdagi kesmaga ajratdi. Kvadratning tomonini toping.

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

47. $\begin{cases} x^{\sqrt{y}} = y, \\ y^{\sqrt{x}} = x \end{cases}$ sistema ildizlarini ifodalovchi nuqtalar orasidagi masofani toping ($x > 0$).

- A) $\sqrt{7}$ B) 3 C) $2\sqrt{2}$ D) $\sqrt{10}$

48. Diagonallarining soni tomonlari sonidan 3,5 barobar ko'p bo'lgan qavariq muntazam ko'pburchakning ichki burchaklaridan biri topilsin.

- A) 120° B) 140° C) 108° D) 144°

49. $\sin^4 x + \cos^4 x = 1$ tenglamani yeching.

- A) $\frac{\pi k}{2}, k \in \mathbb{Z}$ B) $2\pi k, k \in \mathbb{Z}$ C) $(-1)^k \frac{\pi}{6} + \pi k, k \in \mathbb{Z}$
D) $\pi k, k \in \mathbb{Z}$

50. Konus o'q kesimining perimetri 72 ga, uning balandligi 24 ga teng. Uning hajmini toping.

- A) 400π B) 720π C) 960π D) 800π

51. $\left(0, 125 - \frac{\frac{1}{18} + \frac{1}{8}}{\frac{1}{18}}\right) : \left(\frac{2}{9} + \frac{\frac{7}{45}}{\frac{2}{15} - \frac{1}{18}}\right) + \frac{1}{2 + \frac{6}{13}}$

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

52. Metall quyma tarkibida 18 kg rux, 36 kg mis, 6 kg qalay bor. Qalay quyma tarkibiy qismining necha foizini tashkil qiladi?

- A) 60 B) 10 C) 20 D) 30

53. $x^3 - 3ax^2 + bx - 15$ ko'phad $(x-1) \cdot (x-3)$ ga qoldiqsiz bo'linsa, a va b ni toping.

- A) 5; 23 B) 3; 20 C) 3; 18 D) 3; 23

54. $\vec{a}$ va $\vec{b}$ vektorlar orasidagi burchakning radian o'lchovi $\pi/4$ ga teng va $\vec{a} \cdot \vec{b} = 6$ bo'lsa, shu vektorlarga qurilgan uchburchakning yuzini hisoblang.

- A) $\frac{3}{\sqrt{2}}$ B) $6\sqrt{2}$ C) 6 D) 3

55. $\begin{cases} xy = 20 \\ x^2 + y^2 = 41 \end{cases}$ tenglamalar sistemasini yeching.

- A) $(-4; -5); (-5; -4)$
B) $(4; 5); (5; 4)$
C) $(4; 5); (-5; -4)$
D) $(\pm 5; \pm 4); (\pm 4; \pm 5)$

56. Hisoblang.

$$\frac{\sqrt{0,5}}{\sqrt{2,4}} \cdot \left(\sqrt{\frac{1,2-0,7}{1,2+0,7}} + \sqrt{\frac{2,4+1,4}{2,4-1,4}} \right) \cdot \frac{\sqrt{1,5+0,4}}{\sqrt{0,9+1,5}}$$

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

57. $y = 3ctgx$ funksiyaning $F\left(\frac{\pi}{2}\right) = 9$ shartni qanoatlantiruvchi

boshlang'ichini topib, $F\left(\frac{5\pi}{2}\right)$ ning qiymatini toping.

- A) 9 B) 18 C) 12 D) 10

58. $\sin^4 x + \cos^4 x = a$ tenglama a ning qanday qiymatlarida yechimga ega?

- A) $\frac{1}{2} \leq a \leq 1$ B) $0 \leq a \leq \frac{1}{2}$ C) $a \geq \frac{1}{2}$ D) $a \leq 1$

59. Arifmetik progressiyada $a_1 + a_2 + a_3 = 0$ va $a_1^2 + a_2^2 + a_3^2 = 98$ bo'lsa, shu o'suvchi arifmetik progressiyada a_4 ni toping.

- A) -14 B) 49 C) -49 D) 14

60. Yo'ning radius o'lchovi 100° bo'lgan sektorning yuzi 10π ga teng. Sektor radiusini toping.

- A) 60 B) 36 C) 6 D) 360

61. To'g'ri burchakli uchburchakning perimetri 24 sm ga, yuzi 24 sm^2 ga teng bo'lsa, unga tashqi chizilgan doiraning yuzini (sm^2) toping.

- A) 25π B) 35π C) 20π D) 30π

62. Boshlang'ich funksiyani toping: $f(x) = \sin\left(\frac{x}{4} + 5\right)$

A) $F(x) = 4\cos\left(\frac{x}{4} + 5\right) + C$

B) $F(x) = 5\cos\left(\frac{x}{4} + 5\right) + C$

C) $F(x) = \frac{1}{4}\cos\left(\frac{x}{4} + 5\right) + C$

D) $F(x) = -4\cos\left(\frac{x}{4} + 5\right) + C$

63. Qavariq ko'pburchakning 14 ta diagonal mavjud. Uning tomonlari nechta?

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

64. Xaltadagi yong'oqlarni 2 tadan, 3 tadan, 4 tadan va 5 tadan qilib sanalganda har doim bitta yong'oq ortib qolgan bo'lsa, xaltada eng kamida nechta yong'oq bor?

- A) 61 ta B) 131 ta C) 121 ta D) 71 ta

65. $y = \sin^4 x + \cos^4 x$ funksiyaning eng kichik musbat davrini toping.

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

66. ABC to'g'ri burchakli uchburchakning C to'g'ri burchagidan CD balandlik tushirilgan. D nuqtadan AC va BC tomonlarga bo'lgan masofa mos ravishda m va n ga teng bo'lsa, uchburchakning yuzini toping.

- A) $\frac{(m+n)^2}{2mn}$ B) $\frac{m^2+n^2}{2mn}$ C) $\frac{m+n}{2mn}$ D) $\frac{(m^2+n^2)^2}{2mn}$

67. Informatika faniga qachon asos solingan?

- A) XX asrning birinchi yarmida
B) XX asrning ikkinchi yarmida
C) XIX asrning ikkinchi yarmida
D) XIX asrning birinchi yarmida

68. $122_{(4)} + 124_{(16)} - 224_{(8)}$ ifodaning natijasi 10 lik sanoq sistemada nechaga teng bo'ladi?

- A) 170 B) 169 C) 171 D) 172

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

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

70. MS Excel 2003 dasturida $A1=5$, $B3=4$ bo'lsa, $C5$ katakchadagi $"=MAKC(4*A1;B3*A1;9;14)"$ natijasi nechaga teng bo'lishini aniqlang.

- A) 9 B) 16 C) 14 D) 20

71. HTML-hujjatga rasm joylashtirish tegi to'g'ri ko'rsatilgan qatorni tanlang.

- A) $\langle \text{html href} = \text{"fayl nomi"} \rangle$ B) $\langle \text{a href} = \text{"fayl nomi"} \rangle$
C) $\langle \text{frame src} = \text{"fayl nomi"} \rangle$ D) $\langle \text{img src} = \text{"fayl nomi"} \rangle$

72. Paskal tilida haqiqiy va manfiy A, butun va juft B, mantiqiy G va belgisi M o'zgaruvchilar tavsifi to'g'ri berilgan javobni aniqlang.

A) Var

- A: shortint;
B: integer;
G: char;
M: real;

B) Var

- A: real;
B: integer;
G: boolean;
M: char;

C) Var

- A: longint;
B: boolean;
G: word;
M: char;

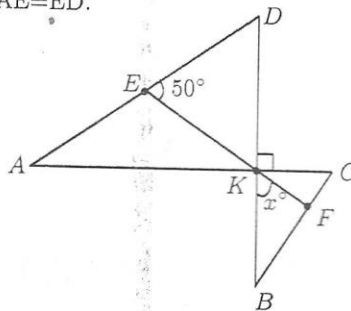
D) Var

- A: real;
B: string;
G: boolean;
M: byte;

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1. a va b lar natural son bo'lsa, $b = \frac{a+3}{5} + \frac{a+3}{4}$ tenglama o'rinli bo'ladigan a ning eng kichik qiymatini toping.
A) 17 B) 3 C) 18 D) 5
2. XOY dekart koordinatalar tekisligida $A(3;2)$, $B(1;3)$, $M(2;1)$ va $N(z;-1)$ nuqtalar belgilangan bo'lib, ulardan tuzilgan $\vec{AB}$ va $\vec{MN}$ vektorlarning uzunliklari teng bo'lsa, z qanday qiymat qabul qiladi?
A) 1 yoki 3 B) 1 yoki 4 C) 0 yoki 4 D) -1 yoki -3
3. Arifmetik progressiyada $a_{11} + a_7 = 6$ ga teng, $a_5^2 - 2$ ni toping.
A) 7 B) 2 C) 1 D) 3
4. Silindr asosining radiusi 10 sm, balandligi 16 sm. Silindrning o'qiga parallel kesim o'tkazilgan va u o'qdan 60 mm uzoqlikda yotadi. Shu kesimning yuzini (sm^2) toping.
A) 208 B) 256 C) 216 D) 196
5. $\left(\frac{1}{8}\right)^{\sqrt{x}} \geq \frac{x^2}{2^{3\sqrt{x}}}$ tengsizlikning butun yechimlari nechta?
A) 2 ta B) 1 ta C) 0 D) 3 ta
6. $f(x) = 18\cos 3x \cdot \cos 6x$ uchun boshlang'ich funksiyani toping.
A) $3\sin 3x + \sin 9x + C$ B) $3\sin 3x - \sin 9x + C$
C) $-3\cos 3x - \cos 9x + C$ D) $3\cos 3x - \cos 9x + C$
7. $(x^2 + 19x + 19)(x^2 + x + 19) = 19x^2$ tenglama haqiqiy ildizlari yig'indisini toping.
A) -18 B) -21 C) -20 D) -19
8. $g(x) = x^3 \cdot f(x)$ kamayuvchi funksiya bo'lsa, quyidagilarning qaysi biri har doim to'g'ri bo'ladi?
A) $x^2 \cdot f(x) > x \cdot f'(x)$ B) $x \cdot f'(x) < -3 \cdot f(x)$
C) $f(x) > f'(x)$ D) $f'(x) > f(x)$
9. $1 - 2x + \sqrt{16 - 6x + 3x^2} = 0$ tenglamaning ildizlari yig'indisini toping.
A) -2 B) 3 C) 5 D) 8
10. $\left(\frac{2\log_2 2 + \log_6 27}{\log_6 \sqrt[3]{0,25} + \log_6 \frac{1}{3}}\right)^2$ ni hisoblang.
A) 9 B) $9\log_6 27$ C) 27 D) 18
11. $y = \frac{x^2 + 6x + 21}{11 + 6x + x^2}$ funksiyaning eng katta va eng kichik butun qiymatlari yig'indisini toping.
A) 21 B) 20 C) 8 D) 7
12. $y = \sin 2013x + \cos 2013x$ funksiya hosilasining $x = \frac{1}{4}\pi$ nuqtadagi qiymatini toping.
A) 0 B) $2013\sqrt{2}$ C) $\frac{\sqrt{2}}{2}$ D) $\frac{\sqrt{3}}{2}$
13. $\cos 75^\circ \cos 45^\circ \cos 15^\circ$ ni hisoblang.
A) $\frac{\sqrt{2}}{16}$ B) $\frac{\sqrt{2}}{8}$ C) $\frac{1}{2}$ D) $\frac{\sqrt{3}}{16}$
14. ABC uchburchakning AC tomonida D nuqta olindi. Agar $\angle ABC = \angle BDC$ bo'lib, $3AB = 4BD$ va $BC = 6$ sm bo'lsa, AC kesma uzunligini(sm) toping.
A) 8 B) 12 C) 10 D) 4,5

15. Rasmda berilganlarga ko'ra $x^\circ = \angle BKF$ ni toping, Bunda, $AE = ED$.



- A) 50° B) 60° C) 65° D) 55°

16. $\left|\frac{4-5x+x^2}{x^2-4}\right| \leq 1$ tengsizlikni yeching.
A) $[0; 1,6]$ B) $[0; 1,6] \cup [2,5]$ C) $(0; 1,6)$
D) $[0; 1,6] \cup [2,5; \infty)$

17. $\frac{1}{\sqrt{2}+\sqrt{3}} + \frac{1}{\sqrt{3}+\sqrt{4}} + \frac{1}{\sqrt{4}+\sqrt{5}} + \dots + \frac{1}{\sqrt{30}+\sqrt{29}}$ ni hisoblang.
A) 32 B) $\frac{\sqrt{30}-\sqrt{2}}{2}$ C) $\sqrt{30}-\sqrt{2}$ D) $\sqrt{29}-\sqrt{3}$

18. x va y sonlar ayirmasining uchlanganini yozing va shu ifodaning $x = -0,37$, $y = -0,42$ bo'lgandagi son qiymatini toping.
A) 0,15 B) 0,12 C) -0,15 D) -0,79

19. Radiusi r ga teng aylananing ikkita parallel vatari uning radiusiga teng. Vatarlar orasidagi masofani toping.
A) $\sqrt{3}r$ B) $\frac{\sqrt{3}}{2}r$ C) $\sqrt{2}r$ D) $\frac{5}{6}r$

20. To'g'ri burchakli uchburchakning gipotenuzasi 25 ga, o'tkir burchagining sinusi 0,6 ga teng bo'lsa, gipotenuzaga tushirilgan balandlikni toping.
A) 12 B) 10 C) 14 D) 15

21. $\frac{58,4 \cdot 31,2 - 27,2}{31,2 + 58,4 \cdot 30,2}$ ni hisoblang.
A) 2 B) $\frac{1}{2}$ C) $\frac{1}{4}$ D) 1

22. $(m-2)y - (m^2-9)x - 3 = 0$, $m \in R$ tenglama bilan berilgan to'g'ri chiziqlar m ning qanday qiymatlarida Ox o'qiga parallel bo'ladi?
A) 2 B) 3 C) ± 3 D) ± 2

23. Amallarni bajaring:
 $\left(0, (6) + \frac{1}{3}\right) : 0,25$
 $\frac{(0,12(3) : 0,0925)}{(0,12(3) : 0,0925)} + 12,5 \cdot 0,64$
A) 11 B) 8 C) 7 D) 3

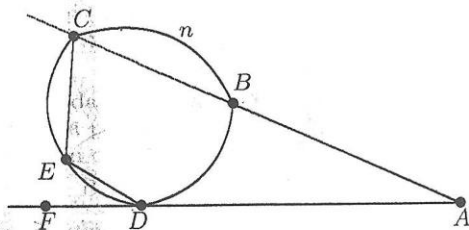
24. Muntazam uchburchak ichidan olingan nuqtadan uchburchak tomonlarigacha bo'lgan masofalar mos holda $\vec{c}(2; 3; 1)$, $\vec{b}(1; 2; 1)$ va $\vec{a}(1; 2; 3)$ vektorlarning absolyut qiymatlariga teng bo'lsa, uchburchak balandligini toping.
A) 16 B) 18 C) $2\sqrt{14} + \sqrt{6}$ D) $\sqrt{6} + \sqrt{14}$

25. $\sin^4 x + \cos^4 x = 1$ tenglamani yeching.
A) $\frac{\pi k}{2}, k \in Z$ B) $\pi k, k \in Z$ C) $2\pi k, k \in Z$
D) $(-1)^k \frac{\pi}{6} + \pi k, k \in Z$

26. Soddashtiring: $\sqrt{a - 2a^{\frac{1}{2}}b^{\frac{1}{2}} + b} + \frac{a-b}{a^{\frac{1}{2}} + b^{\frac{1}{2}}}$;
 $(a \geq b \geq 0; a^2 + b^2 \neq 0)$.
 A) 0 B) $2\sqrt{a} - 2\sqrt{b}$ C) $2\sqrt{b}$ D) $2\sqrt{b} - 2\sqrt{a}$
27. Ifoda qiymatining oxirgi raqamini toping.
 $5 \cdot |2015^{2013} - 2014^{2014}| + 7$
 A) 8 B) 4 C) 2 D) 6
28. $\frac{28 - 16x}{x^2 - 5x + 6} \geq x + 5$ tengsizlikni yeching.
 A) $(-\infty; -2] \cup [1; 2) \cup (2; 3)$
 B) $(-\infty; 1] \cup (2; 3) \cup \{5\}$
 C) $(-\infty; -2) \cup [2; 3)$
 D) $(-\infty; -2] \cup \{1\} \cup (2; 3)$
29. To'g'ri burchakli trapetsiyaga ichki chizilgan aylananing radiusi 2 sm, uning katta asosi 12 sm bo'lsa, trapetsiyaning yuzini (sm^2) toping.
 A) 32,04 B) 20,24 C) 28,8 D) 24
30. Tenglamani yeching:
 $\cos^2 x = \sin^2 x - 1$
 A) $2\pi k; k \in Z$ B) $\frac{\pi}{2} + 2\pi k; k \in Z$ C) $\pi k; k \in Z$
 D) $\frac{\pi}{2} + \pi k; k \in Z$
31. "Texnologiya" so'zi qanday so'zlardan tashkil topgan?
 A) "techho" va "logos" B) "techne" va "science"
 C) "techne" va "logos" D) "compyuter" va "science"
32. Quyidagi mantiqiy ifodaga teng kuchli ifodani aniqlang:
 $A \wedge \neg A$
 A) $\neg(\neg A \vee A)$ B) $\neg(\neg A \wedge A)$ C) $\neg A \vee A$ D) $\neg(A \wedge A)$
33. Boshqarish panelidagi "Дата/время" yorlig'ining vazifasi to'g'ri ko'rsatilgan qatorni belgilang.
 A) hujjatning yaratilgan vaqti va sanasini o'zgartirish
 B) papka yaratish vaqti va sanasini o'zgartirish
 C) faylning vaqti va sanasini o'zgartirish
 D) tizim vaqti va sanasini o'zgartirish
34. MS Excel 2003 dasturida A1 katakda 8, A2 katakda 7, A3 katakda 6 qiymati berilgan bo'lsa, $=МИН(A1:A3)$ formula bo'yicha A4 katakda qanday natija hosil bo'ladi?
 A) 7 B) 8 C) 6 D) 5
35. HTML-hujjatda jadval yaratish uchun qaysi teglar qo'llaniladi?
 A) $\langle head \rangle \dots \langle /head \rangle$ B) $\langle html \rangle \dots \langle /html \rangle$
 C) $\langle body \rangle \dots \langle /body \rangle$ D) $\langle table \rangle \dots \langle /table \rangle$
36. Paskal tilida quyidagi dastur bajarilishi natijasida ekranga chiqariladigan axborotlarni aniqlang:
 Label a;
 Var k;b:word;
 Begin K:=21; B:= 7; a: B:=B+7; Write(k); IF B<K Then goto a Else write(B); end.
 A) 2121217 B) 21212121 C) 2121721 D) 212121

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1. Agar $\angle ACE = 70^\circ$, $\angle EDF = 30^\circ$ va CnB yoyi 110° bo'lsa, $\angle CAF$ ning qiymati topilsin.



- A) 45° B) 55° C) 60° D) 50°
2. Arifmetik progressiyada $a_1 + a_3 + a_5 + \dots + a_9 = 50$, $a_2 + a_4 + a_6 + \dots + a_{10} = 75$ bo'lsa, d ni toping.
A) 3 B) 5 C) 15 D) 6
3. Tengsizliklar sistemasini yeching.

$$\begin{cases} 4x^2 - 28x + 33 \leq 0 \\ \arcsin(x-3) > \frac{\pi}{6} \end{cases}$$
A) [3; 5; 4] B) (3; 5; 4] C) (3; 5; 4) D) [3; 5; 4]
4. 3, 1, $\frac{1}{3}, \dots$ geometrik progressiyaning oltinchi va ettinchi hadlarini toping.
A) $\frac{1}{81}, \frac{1}{243}$ B) $\frac{1}{9}, \frac{1}{27}$ C) 1, 3 D) $\frac{1}{27}, \frac{1}{81}$
5. Piramida asosining yuzi 512 ga, uning balandligi 16 ga teng. Asosiga parallel bo'lgan kesimning yuzi 50 ga teng bo'lsa, u asosdan qanday masofada joylashgan?
A) 8 B) 10 C) 11 D) 9
6. $\operatorname{ctg} 2\alpha - \operatorname{ctg} \alpha$ ni hisoblang.
A) $\frac{1}{\sin 2\alpha}$ B) $-\frac{1}{\cos 2\alpha}$ C) $\frac{1}{\cos 2\alpha}$ D) $-\frac{1}{\sin 2\alpha}$
7. $3 \cdot 13 \cdot 31^2 \cdot 33 \cdot 37^2$ ko'paytmaning natural bo'luvchilari sonini toping.
A) 54 B) 106 C) 108 D) 216
8. $8 \int_0^{\frac{\pi}{2}} \sin x \cdot \cos x \cdot \cos 2x dx$ ni hisoblang
A) $-\frac{1}{2}$ B) 1 C) $\frac{1}{2}$ D) $\frac{1}{4}$
9. To'g'ri burchakli uchburchakning katetlari o'zaro 3:4 nisbatda, gipotenuzasi 15 sm teng. Shu uchburchakning kichik katetini (sm) toping.
A) 10 B) 20 C) 15 D) 9
10. $x - 1 + 2|x - 3| + 2 \sin \frac{\pi x}{2} = 0$ tenglama nechta ildizga ega?
A) 2 B) 1 C) 0 D) 4
11. Tengsizliklar sistemasini yeching.

$$\begin{cases} 11x - x^2 - 24 \geq 0 \\ |x - 3| < 2 \end{cases}$$
A) [3; 5] B) [3; 5) C) (3; 5) D) (3; 5]
12. Doira ichida berilgan nuqtadan o'tkazilgan vatar bo'laklarining biri ikkinchisidan 2 marta katta, diametr bo'laklari esa 4 va 12,5 ga teng. Vatar bo'laklarini toping.
A) 10; 5 B) 8; 4 C) 12; 6 D) 14; 7

13. Amallarni bajaring:

$$\left(\left(\frac{14}{15} - \frac{14}{21} \right) : 1 \frac{7}{21} + \frac{2}{5} : \frac{3}{7} \right) : 8 \frac{1}{2}$$

- A) $\frac{2}{15}$ B) $\frac{3}{15}$ C) $\frac{4}{15}$ D) $\frac{5}{15}$

14. $y = \frac{x^2 + 6x + 21}{11 + 6x + x^2}$ funksiyaning eng kichik va eng katta butun qiymatlari nisbatini toping.

- A) $\frac{1}{6}$ B) 6 C) $\frac{2}{5}$ D) $\frac{1}{3}$

15. $f(x) = 18 \sin 3x \cdot \cos 6x$ uchun boshlang'ich funksiyani toping

- A) $3 \sin 3x - \sin 9x + C$ B) $-3 \cos 3x - \cos 9x + C$
C) $3 \sin 3x + \sin 9x + C$ D) $3 \cos 3x - \cos 9x + C$

16. To'rtburchakli muntazam piramidaning balandligi 12 m, asosining tomoni 10 m bo'lsa, piramida to'la sirtining yuzi (m^2) toping.

- A) 480 B) 540 C) 345 D) 360

17. $\frac{\sqrt{24}}{\sqrt{5} + \sqrt{2} - \sqrt{3}}$ kasrning maxrajini irratsionallikdan qutqaring.

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

18. $P(x) = x^3 - 7x^2 + 8x + 12$ ko'phad quyidagilardan qaysi biriga qoldiqsiz bo'linadi?

- A) $x - 3$ B) $x + 2$ C) $x + 3$ D) $x - 1$

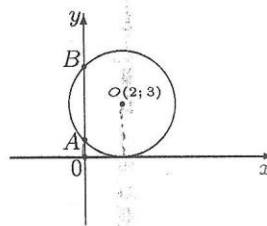
19. $\frac{58,4 \cdot 31,2 - 27,2}{31,2 + 58,4 \cdot 30,2}$ ni hisoblang.

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

20. Tomonlari 10, 8, 6 ga teng bo'lgan uchburchakning eng ka tomoniga tushirilgan balandligini toping.

- A) 3,8 B) 4,2 C) 4,8 D) 5,2

21. XOY tekisligida markazi (2;3) nuqtada bo'lgan aylana rasmdagidek chizilgan. Aylanani OY o'qi A va B nuqtalar kesib o'tadi. Shulardan A nuqtaning ordinatasi topilsin



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

22. $\frac{1}{3} \cdot 9^{x+2} + 3 \cdot 4^x = 6 \cdot 4^{x+1} - \frac{1}{2} \cdot 9^{x+1}$ tenglama nechta yechimga ega?

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

23. $x^2 \cdot 5^x + 2x \cdot 5^x = x^2 \cdot 5^{\sqrt{x+6}} + 2x \cdot 5^{\sqrt{x+6}}$ tenglama nechta ildizga ega?

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

24. $(2^{10} + 2^8) \cdot (2^5 - 2^3)$ ifoda qiymatining natural bo'luvchilari sonini toping.

- A) 13 B) 48 C) 36 D) 38

25. $y = 3 + (a-1)x + ax^2$ parabolaning uchi y o'qi ustida bo'lsa, a ni toping.

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

26. $\sqrt{x^4 - 16x^2 + 64} = 1$ tenglama ildizlarining ko'paytmasini toping.
A) 21 B) -21 C) 63 D) -63
27. $\left(\frac{2\log_6 2 + \log_6 27}{\log_6 \sqrt[3]{0,25} + \log_6 \frac{1}{3}} \right)^2$ ni hisoblang.
A) 18 B) 27 C) $9\log_6 27$ D) 9
28. Radiusi r ga teng aylananing ikkita parallel vatari uning radiusiga teng. Vatarlar orasidagi masofani toping.
A) $\sqrt{2}r$ B) $\frac{\sqrt{3}}{2}r$ C) $\frac{5}{6}r$ D) $\sqrt{3}r$
29. Balandligi 4 sm, asosi 16 sm bo'lgan teng yonli uchburchakka tashqi chizilgan aylana radiusini toping.
A) 9 B) 8 C) 10 D) 11
30. $f(x) = \log_4 x + e^{2x}$, $f'(x) = ?$
A) $e^{2x} + \frac{1}{x}$ B) $2e^{2x} + \frac{1}{x \ln 4}$ C) $e^{2x-1} + \frac{1}{x \ln 4}$
D) $e^{2x} + \frac{1}{4}$
31. To'g'ri tenglikni ko'rsating:
A) 1 Kbayt=1000 bayt B) 2^{13} Kbayt=16 Mbayt
C) 2^{13} Kbit=1 Mbayt D) 1 bit=8 bayt
32. Quyidagi o'nlik sanoq sistemasidagi sonni ikkilik sanoq sistemasida tasvirlang:
7069
A) 1101110011101 B) 1100010101101 C) 110110101111
D) 1100101101101
33. Boshqarish panelidagi "Дата/время" yorlig'ining vazifasi to'g'ri ko'rsatilgan qatorni belgilang.
A) papka yaratish vaqti va sanasini o'zgartirish
B) hujjatning yaratilgan vaqti va sanasini o'zgartirish
C) tizim vaqti va sanasini o'zgartirish
D) faylning vaqti va sanasini o'zgartirish
34. MS Excel 2003 dasturida berilgan
 $=3HAK(0)+МИН(15;16;17)$ formulaning natijasini aniqlang.
A) 17 B) 14 C) 16 D) 15
35. HTML-hujjatda jadval yaratish uchun qaysi teglar qo'llaniladi?
A) `<body>... </body>` B) `<head>... </head>`
C) `<table>... </table>` D) `<html>... </html>`
36. Quyidagi to'plamni Paskal tilida yozilishini aniqlang:
 $1 \leq x$ yoki $x > 5$ va $x < 35$
A) $((1 \leq x) \text{ OR } (x > 5)) \text{ and } \text{Not}(x > 35)$
B) $(1 < x) \text{ or } (x < 5) \text{ or } (x < 35)$
C) $(1 \leq x) \text{ OR } (x < 5) \text{ AND } (x < 35)$
D) $(1 \leq x) \text{ OR } \text{Not}(x < 5) \text{ and } (x < 35)$

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37. $1 - 2x + \sqrt{16 - 6x + 3x^2} = 0$ tenglamaning ildizlari ko'paytmasini toping.
A) -15 B) 5 C) 8 D) 3
38. $1 - 2x - x^2 = 2^{x+1} + 2^{1-x}$ tenglamani yeching.
A) 0 B) 1 C) $\sqrt{2} - 1$ D) 3
39. $\left(\frac{\sqrt{x-a}}{\sqrt{x+a} + \sqrt{x-a}} + \frac{x-a}{\sqrt{x^2-a^2} - x+a} \right) : \sqrt{\frac{x^2}{a^2} - 1}$ ifodani soddalashtiring. ($x > |a| \neq 0$)
A) ± 1 B) 1 C) a D) $\sqrt{x^2 - a^2}$
40. $x \cos 50^\circ + \sin 50^\circ + x = 0$ bo'lsa, x ni toping.
A) $\operatorname{ctg} 25^\circ$ B) $\sin 25^\circ$ C) $-\cos 25^\circ$ D) $-\operatorname{tg} 25^\circ$
41. 3 soni bilan noma'lum son orasiga shunday son qo'yilganki, bu uchta son arifmetik progressiya tashkil etadi. Agar ikkinchi son 6 ga kamaytirilsa, musbat hadli geometrik progressiya hosil bo'ladi. Arifmetik progressiyaning ikkinchi hadini toping.
A) 14 B) 12 C) 15 D) 27
42. $\left(1 - \frac{1}{x}\right)(x+1)\left(1 + \frac{1}{x^2}\right)(x^4+1)\left(1 + \frac{1}{x^8}\right) = x^5 + 1$ tenglamaning haqiqiy ildizlari yig'indisini toping.
A) 0 B) 2 C) -1 D) 1
43. 4,6(6) soni $2\frac{5}{14}$ marta orttirilgan bo'lsa, u qanchaga ortgan?
A) 5, (3) B) 6,3 C) 6, (3) D) 5,3
44. Tomonlari 10, 8, 6 ga teng bo'lgan uchburchakning eng katta tomoniga tushirilgan balandligini toping.
A) 5,2 B) 3,8 C) 4,2 D) 4,8
45. Bo'luvchi $4/3$ marta orttirilsa, bo'lunuvchining esa $1/3$ qismi yo'qotilsa, bo'linma qanday o'zgaradi?
A) 2 marta kamayadi B) 0, (8) marta oshadi
C) o'zgarmaydi D) 25% ga oshadi
46. Agar $a + b + c + d + 5 = a + 1 = b + 2 = c + 3 = d + 4$ bo'lsa, $a + b + c + d$ ni toping.
A) $-10/3$ B) -5 C) $5/3$ D) $-7/3$
47. $\frac{\sqrt{2+\sqrt{3}}}{\sqrt{2-\sqrt{3}}} + \sqrt{\frac{2-\sqrt{3}}{2+\sqrt{3}}} - 2$ ni hisoblang.
A) 3 B) 1 C) 0 D) 2
48. AB kesmaning uchlari va uning o'rtasidagi M nuqtadan chiqarilgan parallel to'g'ri chiziqlar biror tekislikni A_1, B_1, M_1 nuqtalarda kesib o'tadi. Agar $BB_1 = 7$ m, $AA_1 = 5$ m va AB kesma tekislikni kesib o'tmagan bo'lsa, MM_1 kesma uzunligini (m) toping.
A) 5 B) 6,4 C) 6 D) 6,2
49. Tenglamani yeching: $\sqrt{3}\cos\frac{x}{2} + \sin\frac{x}{2} = 1$
A) $\pi + 2\pi k; -\frac{\pi}{3} + 2\pi k, k \in \mathbb{Z}$
B) $\pi + 4\pi k; k \in \mathbb{Z}$
C) $\pi + 4\pi k; \frac{\pi}{3} + 4\pi k, k \in \mathbb{Z}$
D) $\pi + 4\pi k; -\frac{\pi}{3} + 4\pi k, k \in \mathbb{Z}$

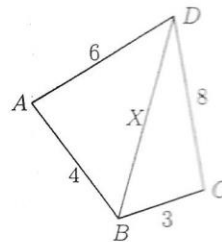
50. $1 - \log_{2x-1} \frac{x^4+2}{2x+1} = 0$ tenglamaning barcha ildizlari yig'indisini toping.
A) 1 B) $\sqrt{3}$ C) 0 D) $2\sqrt{3}$

51. Ikki qo'shni yoqlarining markazlari orasidagi masofa $\sqrt{18}$ ga teng bo'lgan kubga tashqi chizilgan shar sirtining yuzini toping.
A) 125π B) 108π C) 144π D) 120π

52. To'g'ri burchakli uchburchakning perimetri 24 sm ga, yuzi 24 sm^2 ga teng bo'lsa, unga tashqi chizilgan doiraning yuzini (sm^2) toping.
A) 30π B) 35π C) 25π D) 20π

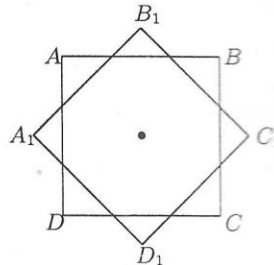
53. $f(x) = 56\sin 5x \cdot \cos 9x$ uchun boshlang'ich funksiyani toping.
A) $7\sin 4x + 2\sin 14x + C$ B) $7\sin 4x - 2\sin 14x + C$
C) $-7\cos 4x - 2\cos 14x + C$ D) $7\cos 4x - 2\cos 14x + C$

54. Rasmda berilganlarga ko'ra x ning o'zgarish oralig'ini toping.



- A) $5 < x < 11$ B) $2 < x < 10$ C) $5 < x < 10$ D) $4 < x < 9$

55. Tomoni a ga teng bo'lgan $ABCD$ kvadrat simmetriya markazi O orqali 45° ga burilib, rasmdagidek shaklga keltirildi. Hosil bo'lgan bo'tiq ko'pburchakning perimetri aniqlansin.



- A) $(16 - 4\sqrt{2})a$ B) $8(\sqrt{2} - 1)a$ C) $8\sqrt{2}(\sqrt{2} - 1)a$
D) $8\sqrt{2}a$

56. $B(-4; 2)$ nuqtadan Ox o'qiga perpendikulyar tushirilgan. Shu perpendikulyar asosining koordinatalari topilsin
A) $(-4; 2)$ B) $(-4; 0)$ C) $(0; 2)$ D) $(4; 0)$

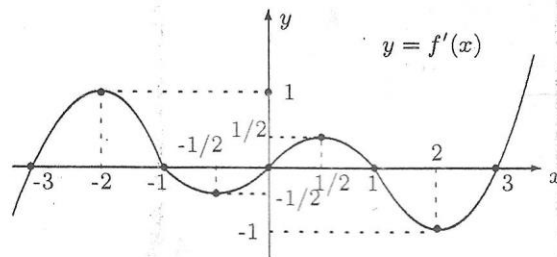
57. $1 + 2 - 3 + 4 + 5 - 6 + 7 + 8 - 9 + \dots + 208 + 209 - 210$ ni hisoblang.
A) 7445 B) 7245 C) 7275 D) 7425

58. $f(x) = x^8 - \cos 3x$ hosilani hisoblang.
A) $8x^7 + 3\sin 3x$ B) $8x^7 - 3\sin 3x$ C) $8x^7 - \frac{1}{3}\sin 3x$
D) $\frac{x^9}{9} - 3\sin 3x - C$

59. $y = \frac{\sqrt{x+1} - \sqrt{x}}{x^2 + 2x - 3}$ funksiyani aniqlanish sohasini toping.
 A) $[0; 1) \cup (1; +\infty)$ B) $[0; +\infty)$ C) $[-1; 0]$
 D) $(-\infty; -1) \cup (-1; 0) \cup (0; 1)$
60. $\sigma(n) = 28$ bo'ladigan eng katta n natural sonni toping. Bu yerda $\sigma(n)$ - n sonining natural bo'luvchilari yig'indisi.
 A) 10 B) 16 C) 27 D) 12
61. $\vec{a}$ va $\vec{b}$ vektorlar berilgan. $\vec{a}$ va $\vec{b}$ vektorlarning absolut qiymatlari 1 ga, ular orasidagi burchak esa 60° ga tengligi ma'lum bo'lsa, $\vec{a} + \vec{b}$ vektorning uzunligini toping.
 A) 1 B) $\sqrt{2}$ C) $\sqrt{3}$ D) 2
62. $y = 5\sin 6x + 3\sin 10x$ funksiyani hosilasini toping.
 A) $60\sin 2x \cdot \sin 8x$ B) $60\cos 2x \cdot \cos 8x$
 C) $-60\cos 2x \cdot \sin 8x$ D) $60\sin 2x \cdot \cos 8x$
63. x ning qanday qiymatlarida $|44 + 2x^2 - 26x| = -(26x - 44 - 2x^2)$ tenglik o'rinli bo'ladi?
 A) $(-\infty; 2] \cup [11; \infty)$
 B) $(-2; 0) \cup (0; 11)$
 C) $(2; 11)$
 D) $(-\infty; -2) \cup (11; \infty)$
64. $\cos 2x > \cos 6x$ tengsizlikni yeching.
 A) $\left(\frac{\pi}{4} + \frac{k\pi}{2}; \frac{\pi}{2} + \frac{k\pi}{2}\right); k \in Z$
 B) $\left(\frac{\pi}{4} + k\pi; \frac{3\pi}{4} + k\pi\right); k \in Z$
 C) $\left(-\frac{\pi}{4} + k\pi; k\pi\right) \cup \left(k\pi; \frac{\pi}{4} + k\pi\right); k \in Z$
 D) $\left(\frac{k\pi}{2}; \frac{\pi}{4} + \frac{k\pi}{2}\right); k \in Z$
65. 9 ga bo'lganda qoldiq 7 ga, 8 ga bo'lganda esa qoldiq 3 ga teng bo'ladigan hamda ikkinchi bo'linma birinchi bo'linmadan 1 ga ortiq bo'ladigan natural sonni toping.
 A) 75 B) 91 C) 43 D) 61
66. Teng yonli trapetsiyaning asoslari 4 va 12 bo'lsa, unga ichki chizilgan doira yuzini toping.
 A) 16π B) 12π C) 18π D) 8π
67. Ikkilikda aks etgan quyidagi axborot necha bayt?
 1011101000111010
 A) 16 B) 4 C) 2 D) 8
68. $A = \text{"Klaviatura - axborotni kiritish qurilmasi"}; B = \text{"1010}_2 = 10_{10}"; C = \text{"128 bayt} = 16 \text{ bit"}$ mulohazalar qiymati asosida quyidagi mantiqiy ifoda qiymatini aniqlang:
 $A \vee \neg(B \wedge \neg C)$
 A) Rost
 B) Sodda mulohazalardan ba'zilarini qiymatini aniqlab bo'lmaydi
 C) Mantiqiy ifoda xato yozilgan
 D) Yolg'on
69. ... - fayl sistemasi tomonidan hosil qilingan diskdagi maxsus joy bo'lib, unda fayl nomi, uning hajmi, atributlari, yaratilgan vaqti saqlanadi.
 A) Kontroller B) Klaster C) Katalog D) Fayl
70. MS Excel 2003 dasturida absolyut murojaat qo'llanilgan formulani ko'rsating.
 A) $=D16\$+B6\$$ B) $=D16+\$B\6 C) $D16+\$B\6
 D) $=D16+B6$
71. Web - sahifaning biror qismiga yoki boshqa Web - sahifaga bog'liqligini ko'rsatuvchi so'z yoki rasm shakli ... deyiladi.
 A) gipermatn B) uzatish protokoli C) Internet manzili
 D) giperilova
72. Paskal tilida quyidagi dastur qismining bajarilishi natijasida ekranga chiqariladigan axborotlarni aniqlang:
 $a:=4; b:=1; \text{If } (a \leq 4*b) \text{ and } (a > b+3) \text{ then write('A')} \text{ else write('B'); write('G');}$
 A) G B) AG C) AB D) BG

MATEMATIKA (INFORMATIKA BILAN)

- Ishchi har kuni kunlik rejada ko'rsatilganidan 25 ta detal ortiq yasab, uch kunda rejadagi 7 kunga mo'ljallanganidan 15 ta ortiq detal yasadi. Ishchi har kuni nechtdan detal yasagan?
A) 40 B) 44 C) 47 D) 15
- Rombning diagonallari 6 va 4 ga teng bo'lsa, uning yuzini toping.
A) 12 B) 16 C) 10 D) 24
- $|7 - 6x| = |8x - 7|$ tenglamani yeching.
A) $\{0; 1\}$ B) $\{2; 1\}$ C) $\{0; 2\}$ D) $\{2; 3\}$
- $(m - 2)y - (m^2 - 9)x - 3 = 0$, $m \in R$ tenglama bilan berilgan to'g'ri chiziqlar m ning qanday qiymatlarida Ox o'qiga parallel bo'ladi?
A) 2 B) 3 C) ± 2 D) ± 3
- $\operatorname{tg} x = \frac{5a + 12}{a^2 + 5a - 24}$ tenglama a ning qanday qiymatlarida yechimga ega?
A) $(-\infty; -8) \cup (-8; 3) \cup (3; \infty)$
B) $(-\infty; -8) \cup (3; \infty)$
C) $(-\infty; -8) \cup (-8; 3)$
D) $(-8; 3) \cup (3; \infty)$
- $y = \frac{\sqrt{x+1} - \sqrt{x}}{x^2 + 2x - 3}$ funksiyaning aniqlanish sohasini toping.
A) $[-1; 0]$ B) $[0; 1) \cup (1; +\infty)$
C) $(-\infty; -1) \cup (-1; 0) \cup (0; 1)$ D) $[0; +\infty)$
- Sharga konus ichki chizilgan. Konusning yasovchisi asosining diametriga teng. Shar hajmining konus hajmiga nisbatini toping.
A) 32 : 9 B) 8 : 3 C) 27 : 4 D) 16 : 9
- Tomonlari 10, 8, 6 ga teng bo'lgan uchburchakning eng katta tomoniga tushirilgan balandligini toping.
A) 3,8 B) 5,2 C) 4,8 D) 4,2
- $3^{2x} \cdot x^2 + 5x - 6 \leq x^2 + 5x \cdot 3^{2x} - 2 \cdot 3^{2x+1}$ tengsizlikning eng katta manfiy butun yechimining moduli bilan eng katta musbat butun yechimi yig'indisini toping.
A) 3 B) 1 C) 5 D) 4
- Radiusi r ga teng aylananing ikkita parallel vatari uning radiusiga teng. Vatarlar orasidagi masofani toping.
A) $\frac{\sqrt{3}}{2}r$ B) $\sqrt{3}r$ C) $\frac{5}{6}r$ D) $\sqrt{2}r$
- x soni $9\sqrt[3]{16} - 12\sqrt[3]{36} + 4\sqrt[3]{81} = 0$ tenglamaning ildizi bo'lsa, $3x$ soni nechga teng?
A) 3 B) 4 C) 6 D) 2
- $\log_{x^2-1}(x^4 + 3x^2) = \log_{x^2-1}(2x^3 + 6x)$ tenglamani yeching.
A) -2 B) 2 C) $\pm\sqrt{3}; 2$ D) $0; \pm\sqrt{3}; 2$
- Agar $1 + \frac{1}{2} + \frac{1}{3} + \dots + \frac{1}{10} = S$ bo'lsa, S qaysi oraliqqa tegishli?
A) $(\frac{35}{6}; \frac{47}{6})$ B) $(\frac{23}{10}; \frac{25}{6})$ C) $(6; 7)$ D) $(\frac{15}{11}; \frac{23}{11})$
- x ning qanday eng kichik qiymatida $(3x^5 + 354)$ yig'indi 3 ga qoldiqsiz bo'linadi?
A) 1 B) 4 C) 6 D) 5
- Agar $\frac{\sin(\alpha - \beta)}{\cos\alpha\cos\beta} = \frac{2}{\sqrt{3}}$ bo'lsa, $\operatorname{tg}\alpha - \operatorname{tg}\beta$ ni toping.
A) $\sqrt{3}$ B) $\frac{2\sqrt{3}}{3}$ C) $\frac{\sqrt{3}}{3}$ D) $\frac{4\sqrt{3}}{3}$
- $\sin^3 x + \sin^4\left(\frac{\pi}{2} - x\right) = 1$ tenglamaning $[-1; 5; 2\pi]$ kesmada nechta ildizi bor?
A) 8 B) 4 C) 6 D) 7
- $\left(\frac{\sqrt{x-a}}{\sqrt{x+a} + \sqrt{x-a}} + \frac{x-a}{\sqrt{x^2-a^2} - x+a}\right) : \sqrt{\frac{x^2}{a^2} - 1}$ ifodani soddalashtiring. ($x > |a| \neq 0$)
A) 1 B) ± 1 C) a D) $\sqrt{x^2 - a^2}$
- $0,5(3x - 9) + 0,2(x - 1) = 0$, $(3)x - 2$ tenglamani yeching.
A) $\frac{80}{41}$ B) $\frac{85}{41}$ C) $\frac{81}{41}$ D) $\frac{1}{3}$
- $\int_0^{\frac{\pi}{2}} (\cos^2(\sin 3x) + \sin^2(\sin 3x)) dx$ ni hisoblang.
A) $\frac{\pi}{2}$ B) $\frac{\pi}{4}$ C) π D) $\frac{3\pi}{2}$
- Rasmda $y = f'(x)$ funksiya grafigi tasvirlangan. $y = f'(x)$ funksiya ekstremum nuqtalari koordinatalari ko'paytmasini toping.



- A) $\frac{1}{4}$ B) -9 C) 0 D) $-\frac{1}{4}$
- $\frac{0,25 \cdot 4,5^2 - 2,75^2}{\sqrt{1,5^2 - 3 \cdot 0,25 + 0,25^2}}$ ni hisoblang.
A) 5 B) -2 C) 4 D) 2
- $\vec{a}(n; 24)$ vektorning absolyut qiymati 25 ga, $\vec{b}(5; m)$ vektorning absolyut qiymati esa 13 ga teng. m va n ni toping.
A) $m = \pm 12; n = \pm 7$ B) $m = 10; n = -7$ C) $m = 12; n = 8$
D) $m = 10; n = 7$
- $\frac{a}{x} + \frac{b}{x+1} + \frac{c}{x+2} = \frac{1}{x(x+1)(x+2)}$ ayniyatni qanoatlantiradigan a, b, c larni toping.
A) $a = 1; b = 2; c = \frac{1}{2}$
B) $a = \frac{1}{2}; b = 1; c = \frac{1}{2}$
C) $a = \frac{1}{2}; b = -1; c = \frac{1}{2}$
D) $a = -\frac{1}{2}; b = -1; c = \frac{1}{2}$
- $ABCD$ kvadrat tekisligiga A uchidan AK perpendikulyar o'tkazilgan. Agar $BK = 4$, $AB = 3$ bo'lsa, K nuqtadan kvadratning C uchigacha bo'lgan masofani toping.
A) 4 B) 5 C) 6 D) $3\sqrt{2}$

25. Quyidagilardan qaysi biri $n (n \in N)$ ning istalgan qiymatida natural son bo'ladi?

A) $\frac{4^n + 4^{n+1} + 4^{n+2}}{22}$
 B) $\frac{n^3}{6} + \frac{n^2}{2} + \frac{n}{3}$
 C) $\frac{2^n + 2^{n+1} + 2^{n+2}}{21}$
 D) $\frac{3^n + 3^{n+1} + 3^{n+2}}{12}$

26. To'g'ri burchakli uchburchakning yuzasi 6 ga teng, katetlari esa 3:4 nisbatga bo'lsa, uchburchakning tomonlarini toping.

A) 3; 4; 5 B) 3; 4; 6 C) 5; 6; 8 D) 4; 5; 6

27. Agar $\frac{a}{2} + \frac{6}{a} = 4$ bo'lsa $(4^{-1}a)^2 + (3a^{-1})^2$ ni toping.

A) 2 B) 3 C) 3,5 D) 2,5

28. Boshlang'ich funksiyani toping: $f(x) = \sin\left(\frac{x}{4} + 5\right)$

A) $F(x) = -4\cos\left(\frac{x}{4} + 5\right) + C$
 B) $F(x) = 5\cos\left(\frac{x}{4} + 5\right) + C$
 C) $F(x) = \frac{1}{4}\cos\left(\frac{x}{4} + 5\right) + C$
 D) $F(x) = 4\cos\left(\frac{x}{4} + 5\right) + C$

29. $1, 2y - 3x + 0,5 = 0$ to'g'ri chiziq Ox o'qi bilan hosil qilgan burchakning sinusini toping.

A) $\frac{\sqrt{2}}{2}$ B) $\frac{5}{\sqrt{29}}$ C) $-\frac{420}{421}$ D) $\pm \frac{5}{\sqrt{29}}$

30. Umumiy hadi $b_n = \frac{6n-2}{3n+1}$ ($n \in N$) bo'lgan

ketma-ketlikning nechta hadi $(1, 7; 2\frac{2}{10})$ oraliqqa kirmaydi?

A) 4 B) 8 C) 5 D) 6

31. Nuqtalar o'rniga joylashtirish mumkin bo'lgan javobni aniqlang.

Morze kodlash usulida ... ishtirok etgan.

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

32. Quyidagi o'nlik sanoq sistemasidagi sonni ikkilik sanoq sistemasida tasvirlang:

7069

A) 1100010101101 B) 110110101111 C) 1101110011101
 D) 1100101101101

33. Kompyuter yoqilishi bilan ekranda Windows operatsion tizim (sistema)ning ... hosil bo'ladi.

A) boshqarish paneli B) ish stoli C) ishchi papkasi
 D) dasturlar majmuasi

34. MS Word 2003 dasturida "Номера страницы" buyrug'ining muloqot oynasi qanday parametrlardan iborat?

A) положения, выравнивание, номер на первой странице, вид
 B) расположение, выравнивание, номер на первой странице, формат
 C) положения, выравнивание, номер на первой странице, формат
 D) положения, интервал, номер на первой странице, вид

35. Quyida keltirilgan URL manzilda bayonnoma (protokol) nomini ko'rsating. <http://www.tps.uz>

A) uz B) http C) www D) tps

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

$K:=12; B:=5; C:=\text{INT}(\text{sqrt}(K-B));$

If $C>4$ then write ('B = ', B) else write ('K = ', K);

A) 12 B) B = 5 C) K = 12 D) 5000

