2017 YIL ORIGINAL BAZA
Variant–101

1. $\frac{0,(1)}{0,(5)}+\frac{0,(13)}{0,(65)}+\frac{0,(19)}{0,(95)}-0,(9)$ ni hisoblang.
A) $-0,2$ B) $-0,4$ C) $-0,3$ D) $-0,1$

2. Sinfda 40 ta o`quvchi bor edi. Ulardan 32 tasi "Matematika" to`garagida, 21 tasi "Yosh rassomlar" To`garagida shug`ullanadi. 15 ta o`quvchi ikkalasida ham shug`ullanadi. Qancha o`quvchi ikkalasida ham shug`ullanmaydi?
A) 2 B) 28 C) 3 D) 38

3. $a_1, a_2, \ldots$ va $b_1, b_2, \ldots$ arifmetik progressiyalar uchun $a_1 = 2,5, b_1 = 7,5,\ a_{100} + b_{100} = 10$ bo`lsin. $a_1 + b_1,\ a_2 + b_2, \ldots$ ketma–ketlikning dastlabki 100 ta hadlat yig`indisini toping.
A) 100 B) 10 C) 0 D) 1000

4. Agar $tg4\alpha = -\frac{2}{5}$ bo`lsa, $ctg\alpha - tg\alpha - 2tg2\alpha$ ning qiymatini toping.
A) -10 B) -5 C) -8 D) 12

5. Markazi $M(4;-5)$ nuqtada bo`lib, koordinata boshidan o`tuvchi aylana tenglamasi ko`rinishini toping.
A) $x^2+y^2-8x+10y=0$
B) $x^2+y^2-8x-10y=0$
C) $x^2+y^2-8x+10y=14$
D) $x^2+y^2-8x+10y=25$

6. $log_{\sqrt{3}-\sqrt{2}}(49+20\sqrt{6})$ ni hisoblang.
A) 4 B) -4 C) -5 D) 6

7. $P(x)=(3x-1)^{2017}\cdot(2x-1)^{2016}+(4x-3)^2\cdot(6x-5)^2+2$ ko`phad koeffitsiyentlarining yig`insini toping.
A) $2^{2017}+3$ B) $2^{2017}+1$ C) 9 D) 16

8. $f(x)=a^2\frac{(x-b)(x-c)}{(a-b)(a-c)}+b^2\frac{(x-a)(x-c)}{(b-a)(b-c)}+c^2\frac{(x-a)(x-b)}{(c-a)(c-b)}$ funksiyaning $x=3$ da hosilasini toping.
(Bu yerda $(a-b)(a-c)(b-c)\neq 0$)
A) 0 B) a,b,c ga bog`liq C) 6 D) 4

9. $(x;y)$ juftlik $\begin{cases} EKUB(x;y)=12 \\ \frac{x}{y}=\frac{3}{4} \end{cases}$ tenglamalar sistemasining yechimi bo`lsa, $x+y$ ni hisoblang $(x,y\epsilon N)$
A) 216 B) 168 C) 108 D) 84

10. $x^2-(m+3)x-5=0$ tenglamaning x_1 va x_2 ildizlari orasida $x_1+\frac{1}{x_2}=2$ munosabat o`rinli. m ning qiymatini toping.

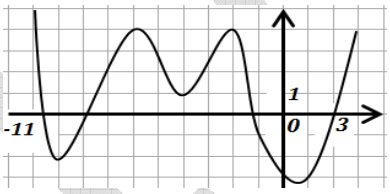
11. $(x^2+2x)^2-(x+1)^2=55$ tenglamaning haqiqiy ildizlari nechta?
A) 3 ta B) 2 ta C) 0 D) 1 ta

12. $a^2<422$ tengsizlikni qanoatlantiruvchi eng katta natural sonning natural bo`luvchilari yig`indisini toping.
A) 45 B) 48 C) 42 D) 40

13. $\overline{ab}$ va $\overline{ba}$ ikki xonali sonlar. Agar $\overline{ab}-\overline{ba}=54$ bo`lsa, a^2+b^2-2ab ning qiymatini toping.
A) 36 B) 64 C) 16 D) 49

14. $y=\frac{\sqrt{2x-1}+\sqrt{x-1}}{x^2-5x+8}$ funksiyaning aniqlanish sohasini toping.
A) $\left[\frac{1}{2};+\infty\right]$ B) $\left(-\infty;\frac{1}{2}\right]$ C) $[1;\infty)$ D) $\left[\frac{1}{2};1\right]$

15. Chizmada $(-11;3)$ oraliqda aniqlangan $f(x)$ funksiya hosilasining grafigini tasvirlang. Nechta nuqtada $f(x)$ funksiya grafigiga urinma $y=3x-11$ to`g`ri chiziqqa parallel bo`ladi yoki U bilan ustma–usttushadi?



A) 0 B) 4 C) 6 D) 1

16. $y=x^2+7x-6$ funksiya grafigiga o`tkazilgan urinma $y=6x+9$ to`g`ri chiziqqa parallel. Urinish nuqtasining absissasini toping.
A) 0,5 B) $-1,5$ C) $-3,5$ D) $-0,5$

17. Agar $f(x)=lne^x-log_x x^2$ bo`lsa, $f'(1)+f(e)$ ning qiymatini toping.
A) e B) -2 C) $e-1$ D) $e-2$

18. Uchlari $A(4;\ -2)$ va $B(-1;3)$ nuqtalarda bo`lgan AB kesmaning uzunligi kvadratini toping.
A) 50 B) 40 C) 62 D) 48

19. Agar $f'(x)=-\frac{2}{e^x}, f(ln2)=0$ bo`lsa, $f(x)$ ni toping.
A) $-2e^{-x}-1$ B) $-2e^{-x}+2$
C) $2e^{-x}-1$ D) $2e^{-x}+2$

20. Dioganallari 90° burchak ostida kesishuvchi $ABCD$ trapetsiyaning asoslari mos ravishda 7 va 2 ga teng. Dioganallarning kesishish nuqtasidan asoslariga parallel to`g`ri chiziq o`tkazilgan. Ushbu to`g`ri chiziqning yon tomonlar bilan chegaralangan kesma uzunligini toping.
A) $3\frac{1}{2}$ B) $1\frac{1}{2}$ C) $3\frac{2}{3}$ D) $3\frac{1}{3}$

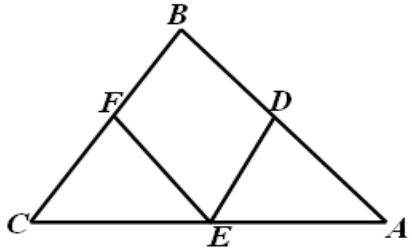
21. $\int e^{2sinx} \cdot cosxdx$ integralni hisoblang.
A) $cosx + e^{2sinx} + C$ B) $\frac{1}{2}e^{2sinx} + C$
C) $-\frac{1}{2}e^{2sinx} + C$ D) $\frac{e^{2sinx}}{2cosx+2cosx} + C$

22. 8 nafar o`quvchidan iborat guruhda 4 nafar a`zodan tashkil topgan qo`mitani tanlab olish kerak.Bu ishni nechta usulda amalga oshirsa bo`ladi?
A) 70 B) 120 C) 84 D) 32

23. Uchlari $A(-4;0), B(5;3)$ va $C(0;-2)$ nuqtalarda bo`lgan $ABC$ uchburchakning $BC$ tomonining $Ox$ o`qi bilan kesishish nuqtasi koordinatasini toping.
A) $(3;0)$ B) $(2{,}2;0)$ C) $(2;0)$ D) $(1{,}8;0)$

24. $x^3 - 0{,}1x = 0{,}3x^2$ tenglamaning haqiqiy ildizlari ko`paytmasini toping.
A) 0 B) 3 C) $-0{,}1$ D) 1

25. Rasmda ABC uchburchak berilgan. Agar $DE||BC$ va $EF||AB$ bo`lib, $S_{ADE} = 18, S_{EFC} = 12$ bo`lsa, $BDEF$ to`rtburchakning yuzini toping.



A) $12\sqrt{6}$ B) $15\sqrt{2}$ C) 15 D) $4\sqrt{2}$

26. Muntazam to`rtburchakli piramidaga kub ichki chizilgan. Agar Piramida balandligi $18\sqrt{2}$ga va piramida asosining tomoni $12\sqrt{2}$ teng bo`lsa, kub qirrasini toping.
A) $6\sqrt{2}$ B) $3{,}6\sqrt{2}$ C) $7{,}2\sqrt{2}$ D) $4\sqrt{2}$

27. $A(0{,}5;0{,}5), B(2{,}5;6{,}5), C(5{,}5;0{,}5)$ nuqtalarni tutashtirishdan hosil bo`lgan uchburchakning yuzini toping.
A) 16 B) 15 C) 14 D) 17

28. Koordinatalari $A(-2;0), B(-8;0), C(-6;3)$ nuqtalarda bo`lgan uchburchakning $Ox$ o`qi atrofida aylantirishdan hosil bo`lgan jismning hajmini toping.
A) 16π B) 18π C) 12π D) 15π

29. $\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} (sin2x - 3sinx)dx$ aniq integralni hisoblang.
A) $\frac{3}{4}$ B) $\frac{\sqrt{3}}{3}$ C) $\frac{\sqrt{3}}{3} - \frac{1}{2}$ D) 0

30. a va b natural sonlarning umumiy bo`luvchilari soni 6 ga teng bo`lsa, $2a + b$ va a sonlarining umumiy bo`luvchilari nechta?

31. Faqat rost mulohazalarni aniqlang va ularga tenglashtirilgansonlar yig`indisini rim sanoq sistemasida hisoblang.
XCIX–"Informatikani odatda, Hardware va Software kabi ikki qismning birligi sifatida qaraladi"
XIX–"XX asrning 50–yillarida informatika faniga asos solingan"
IV–"Informatika, odatda, Hardware sifatida qaraladi"
A) CXVIII B) CXVII C) CXIX D) XXIII

32. Ali sakkizlik sanoq sistemasida $(54;67)$ oraliqdagi barcha butun sonlarni yozib chiqdi. Vali esa shu sonlardan 6 raqami qatnashgan barcha sonlarni o`chirib tashladi. Qolgan sonlar yig`indisini sakkizlik sanoq sistemasida aniqlang va ikkilik sanoq sistemasiga o`tkazing.
A) 1011100 B) 1101101 C) 1011101 D) 11110010

33. Microsoft Excel 2003 dasturida $A1 = 6, A2 = A1*(-1), A3 = A2$*СТЕПЕНЬ (A1;2)
A4=СЧЕТЕСЛИ(A1:A3;">0) bo`lsa, A4 katakchadagi formula natijasini toping.
A) 36 B) 1 C) 6 D) 0

34. Quyidagi html–hujjat kodi yozilishi bo`yicha kataklar ketma–ket sanalganda nechanchi katakda og`ma shriftli marketlangan ro`yxat qo`llanilgan?
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A) Birinchi katakda B) Ikkinchi katakda
C) Uchinchi katakda D) To`rtinchi katakda

35. A="BIOS dasturi kompyuterning doimiy xotirasida joylashgan "B=Software–sinovdan o`tkazish muddatiga ega bo`lgan dasturlardir. "C=" Windows yo`lboshlovchisining ishlashiga Explorer exe dasturi javob beradi" Shu mulohazalar asosida quyidagi mantiqiy ifodaning natijasini toping.

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

A) rost
B) Yolg`on
C) Ifodada xatolik bor
D) Ba`zi mulohazalarning qiymatini aniqlab bo`lmaydi

36. MSExcel = ОСТАТ(–30; 10)–ЗНАЧЕН(ЗАМЕНИТЬ(СЦЕПИТ(–23; 6);4;4,6)) buyrug`i berilganda qanday natija hosil bo`ladi?
A) 222 B) 236 C) 622 D) 212

Variant 102

1. Dioganallari 90° burchak ostida kesishuvchi $ABCD$ trapetsiyaning asoslari mos ravishda 9 va 1 ga teng

parallel to`g`ri chiziq o`tkazilgan. Ushbu to`g`ri chiziqning yon tomonlar bilan chegaralangan kesma uzunligini toping.
A) 1,8 B) 1,2 C) 1,6 D) 0,9

2. $y = g(x)$ funksiya D to`plamda yuqoridan chegaralangan bo`lsin. U holda qaysi munosabat ixtiyoriy $x \epsilon D$ uchun o`rinli?
A) biror K musbat haqiqiy son uchun $|g(x)| > K$
B) biror K musbat haqiqiy son uchun $|g(x)| < K$
C) biror K haqiqiy son uchun $|g(x)| > K$
D) biror K haqiqiy son uchun $|g(x)| < K$

3. Quyida keltirilgan jumlalardan noto`g`risini toping.
A) Uchburchakning kichik burchagi qarshisida kichik tomoni yotadi.
B) teng yonli uchburchakda teng tomonlar qarshisida teng burchaklar yotadi.
C) To`g`ri burchakli uchburchakning balandligi gipotenuzasining yarmiga teng.
D) Burchak bissektrisasining ixtiyoriy nuqtasidan burchak tomonlarigacha bo`lgan masofalar o`zaro teng.

4. $\overline{ab}$ va $\overline{ba}$ ikki xonali sonlar. Agar $\overline{ab} - \overline{ba} = 27$ bo`lsa, $a^2 + b^2 - 2ab$ ning qiymatini toping.
A) 9 B) 27 C) 16 D) 25

5. Bir guruh bolalarning o`rtacha og`irligi 40 kg ga teng. Qiz bolalarning o`rtacha og`irligi 35 kg, o`g`il bolalarning o`rtacha og`irligi esa 50 kg ligi ma`lum. Agar guruh a`zolarining 26 nafari qiz bolalar bo`lsa, o`g`il bolalar sonini toping.
A) 12 B) 13 C) 18 D) 11

6. Musbat sonlardan tashkil topigan $a_1, a_2, a_3, \ldots$ ketm–ketlik uchun $a_1 = a_2 = 1$ va barcha natural n larda $a_{n+2} = a_n a_{n+1}$ shartlar bajarilsin. Ketma–ketlikning 70– hadini toping.
A) 10 B) 1 C) 1050 D) 0

7. Koordinatalari $A(x; 1)$ va $B(-1; -2)$ nuqtalarda bo`lgan kesmaning uzuligi 5 ga teng. x –ni toping.
A) 3 B) 5 C) 1 D) 6

8. Hisoblang.$cos20° + 2 \cdot \sin^2 55° - \sqrt{2} \cdot sin65°$
A) $\sqrt{2}$ B) $sin5°$ C) 0 D) 1

9. Agar $log_9 5 = a, log_{25} 8 = b$ bo`lsa, $log_2 3$ ni a va b orqali ifodalang.
A) $\frac{4}{3ab}$ B) $\frac{3ab}{4}$ C) $\frac{3}{4ab}$ D) $\frac{4ab}{3}$

10. a, b manfiy butun sonlar uchun $a = b + 4$ va $a + b - c = 13$ bo`lsa, c ning qiymatini toping.
A) 17 B) 11 C) -15 D) -19

11. $a + b + c = 5$ va $\frac{1}{a+b} + \frac{1}{b+c} + \frac{1}{c+a} = 1$ bo`lsa, $a + b + c - \left(\frac{a}{b+c} + \frac{b}{c+a} + \frac{c}{a+b}\right)$ ifodaning qiymatini toping.
A) 8 B) 3 C) a, b, c ga bog`liq D) 6

12. $xlg10^{x+3} + lg100 = 0$ tenglamaning ildizlari yig`indisini toping.
A) -1 B) -3 C) -2 D) -4

13. $\begin{cases} y = x^3 \\ y = cosx \end{cases}$ tenglamalar sistemasi nechta yechimga ega?
A) 3 B) 1 C) 2 D) 0

14. $x^2 - (k+1)x + k^2 + k - 32 = 0$ tenglama ildizlaridan biri 2 dan katta, ikkinchisi esa 2 dan kichik bo`lsa, $k$ ning butun qiymatlari yig`indisini toping.
A) 6 B) 5 C) 4 D) 0

15. $\frac{2}{x} + 3 \leq \sqrt{41 - \frac{16}{x}}$ tengsizlikni yeching.
A) $x \geq 1$ B) $x < 0$ yoki $x \geq 1$
C) $x < 0$ D) $x \leq 0$ yoki $x \geq 2$

16. Tomonlari 6 va 8 ga teng bo`lgan to`g`ri to`rtburchak birlik kvadratchalarga bo`lingan. Uning dioganali birlik kvadratchalarning uchlari bo`lmish nuqtalarning nechtasidan o`tadi?
A) 0 B) 3 C) 2 D) 4

17. $f(x) = 3cosx - 4sinx + 3$ funksiyaning qiymatlar sohasini toping.
A) $[-4; 6]$ B) $[-3; 7]$ C) $[-2; 8]$ D) $[-5; 5]$

18. Perimetri 64 ga teng bo`lgan to`g`ri burchakli uchburchak radiusi 5 ga teng bo`lgan aylanaga tashqi chizilgan. Gipotenuza uzunligini toping.
A) 16 B) 23 C) 27 D) 29

19. $f(x) = 3^{cosx}$ bo`lsa, $f'\left(\frac{\pi}{2}\right)$ ni hisoblang.
A) 0 B) $3ln3$ C) $-ln3$ D) $ln3$

20. Agar $f(x) = ax^3 + 4x^2 + b$ va $f'(2) = 28$ bo`lsa, a ni toping.
A) 1 B) 2 C) 4 D) 3

21. $\int_{-1}^{1}(5x^5 - 3x^3 + x + 1)dx$ aniq integralni hisoblang.
A) $\frac{3}{4}$ B) $\frac{7}{3}$ C) $\frac{5}{54}$ D) 2

22. $ABCD$ parallelogramm berilgan. M nuqta BD dioganalda yotadi, bunda $MD : BM = 2 : 1$. Agar $ADCM$ to`rtburchak yuzi 30 ga teng bo`lsa, $ABCD$ parallelogramm yuzini toping.
A) 50 B) 45 C) 35 D) 60

23. $y=-3\sqrt{x}$ va $y=-3x^3$ egri chiziqlar bilan chegaralangan soha yuzini toping.
A) $\frac{5}{3}$ B) $\frac{5}{4}$ C) $\frac{5}{6}$ D) $\frac{5}{12}$

24. $y=\sqrt[4]{\frac{7-x}{\sqrt[6]{4x^2-19x+12}}}$ funksiyaning aniqlanish sohasiga tegishli eng katta va eng kichik natural sonlar yig`indisini toping.
A) 15 B) 12 C) 13 D) 18

25. Uchburchakning ikkita tomoni mos ravishda 1 va $\sqrt{10}$, uchunchi tomonining medianasi 2 ga teng. Uchburchak yuzini toping.
A) $\frac{\sqrt{15}}{2}$ B) 1,5 C) 5 D) $\frac{\sqrt{15}}{4}$

26. $\begin{cases}|x+7|\le 13\\|2x+9|\ge 21\end{cases}$ tengsizliklar sistemasi nechta butun yechimga ega?
A) 4 B) 7 C) 6 D) 8

27. Piramidaning asosi tomoni $2\sqrt{3}$ va o`tkir burchagi 30° ga teng bo`lgan rombdan iborat. Ushbu piramidaga ichki chizilgan konusning yasovchisi asos tekisligi bilan 60° li burchak tashkil etadi. Konus hajmining piramida hajmiga nisbatini toping.
A) $\frac{\pi}{4}$ B) $\frac{\pi}{8}$ C) $\frac{\sqrt{3}\pi}{4}$ D) $\frac{\sqrt{3}\pi}{8}$

28. Konusning yasovchisi $\sqrt{3}$ ga teng. Konusning uchidan unga ichki chizilgan shar markazigacha bo`lgan masofa 1 ga teng. Konus asosi radiusining shar radiusiga nisbatini toping.
A) 1 B) $\frac{1}{\sqrt{3}}$ C) $\sqrt{3}$ D) 3

29. $ABCD$ parallelogramm uchta uchining koordinatalari ma`lum: $A(0;1), B(1;3), C(13;3)$. D uchining absissasini toping.
A) 7 B) 12 C) 11 D) 5

30. $\{x|x\epsilon N, -4{,}5<x<4{,}5\}$ to`plamning nechta qism–to`plamlari mavjud?
A) 16 B) 10 C) 32 D) 4

31. Paskal. Dastur natijasini aniqlang.
Var a,k: byte; s,N:stiring; A:array[1..11] of byfe;
Begin Randomire; S:=’INFORMATIKA’
A[1]:=Random(1)+1; A[2]:=trune(random)+I;
N:”;For k:3 To 6 Do A[k]:=A[k+1]+[k+2];
For k:=1 To 6 Do N+copya, A[k], 1;
Write(N):readin:End.
A) IFMTK B) natijani aniqlab bo`lmaydi
C) NIFOAA D) IINFRT

32. Alisher sakkizlik sanoq sistemasida (177; 217) oraliqdagi barcha butun sonlarni yozib chiqdi. G`anisheresa shu sonlardan 1 raqami qatnashgan barcha sonlarni o`chirib tashladi. Qolgan sonlar yig`indisini sakkizlik sanoq sistemasida aniqlang.
A) 1633 B) 723 C) 1132 D) 2157

33. Quyidagihtml–hujjatkodiyozilishi. A=””Mening kompyuterim” maxsus qobiq dasturdir”
B=”Fayl nomida*, \, /belgilarini ishlatish mumkin emas”
C=” Kompyuter ishiga zarar keltiruvchi dasturlar antivirus dasturlar deb ataladi,”Shu mulohazalar asosida quyidagi mantiqiy ifodaning natijasini toping:
(not A or B) and (C or not B) or not C
A) Ifodada xatolik bor
B) Yolg`on
C) Rost
D) Ba`zi mulohazalarning qiymatini aniqlab bo`lmaydi

34. MS Excel. A1=3, B1=4 bo`lsa,
=?(A1; B1)+ЗНАЧЕН(??(B1; A1)) formulaning natijasi 71 bo`lishi uchun? va ?? belgilarning o`rniga qo`yish mumkin bo`lgan funksiyalar to`g`ri berilgan javobni aniqlang.
A) Степень, Сцепить B) Степень, Степень
C) Макс, СтепеньD) Сумм, Степень

35. Quyidagihtml–hujjatkodiyozilishibo`yichakataklarketma–ketsanalgandanechanchikatakdaog`mashriftlimarketlanganro`yxatqo`llanilgan?
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<td><tr><tr><td><img src=test jpg test </td></td></dl><sub><dt>test<sub></dl> </td></tr></table>
A) Ikkinchi katakda B) to`rtinchi katakda
C) Uchinchi katakda D) Birinchi katakda

36. A1=–3, A2=11, B1=–17, B2=30 bo`lsin.
=MAKC(ABS(A1)+B2; A2+B1) komandasi kiritilsa natija nimaga teng bo`ladi?
A) 36 B) 40 C) 33 D) 24

Variant 103.

1. To`g`ri tenglikni aniqlang.
A) $\left(\left(\frac{1}{4}\sin^2\frac{7\pi}{4}+\frac{1}{4}\sin^2\frac{5\pi}{18}\right)-2^{-2}\right)^0=1$
B) $\left(log_3\frac{1}{6561}\right)^{\frac{1}{3}}=2$
C) $(-5)^{\frac{5}{7}}=5^{\frac{5}{7}}$
D) $\frac{3n}{4n}=\frac{3}{4}, n\neq 0$

2. $y=\sin^2 x$ funksiya grafigi berilgan bo`lib, uni parallel ko`chirish yordamida $y=\sin^2(x+a)+b$

funksiya grafigi hosil qilingan. Bunday parallel ko`chirishda koordinata boshi qanday nuqtaga ko`chadi?
A) N(a;b) B) N(–a;b) C) N(a;–b) D) N(b;a)

3. Quyida keltirilgan jumlalardan noto`g`risini toping.
A) Kesma o`rta perpendikulyarining ixtiyoriy nuqtasi kesma uchlaridan teng uzoqlikda joylashgan
B) Agar ikki uchburchakning bir tomoni va ikki burchagi mos ravishda teng bo`lsa, bu uchburchaklar teng bo`ladi.
C) Teng tomonli uchburchak teng yonli uchburchak ham bo`ladi
D) Uchburchakning bir uchi va shu uchining qarshisidagi tomon o`rtasini tutashtiruvchi kesma uning medianasi deyiladi.

4. $\left[\frac{2}{96}\right]\cdot 12+\left[5\frac{2}{37}\right]\cdot 7{,}4-[5{,}222\ldots]\cdot[2,(7)]$ ni hisoblang.
A) 0 B) 27 C) $16\frac{2}{3}$ D) $25\frac{5}{8}$

5. Quti sirtining 75% ini bo`yash uchun 450 gramm bo`yoq sarflandi. Qutining qolgan qismini bo`yash uchun necha gramm bo`yoq kerak bo`ladi?
A) 150 B) 200 C) 175 D) 125

6. Agar $f(x)=lne^x-log_x x^2$ bo`lsa, $f'(1)+f(e)$ ning qiymatini toping.
A) e B) -2 C) $e-1$ D) $e-2$

7. $2\sin^2\alpha-1$ ifodaningko`paytma ko`rinishiga keltiring.
A) $2\sin(\alpha-30°)\cdot\cos(\alpha+30°)$
B) $2\cos(\alpha-30)\cdot\sin(\alpha+30°)$
C) $-4\sin(45°-\alpha)\cdot\sin(\alpha+45°)$
D) $-2\sin(45°-\alpha)\cdot\sin(\alpha+45°)$

8. Qandaydir a,b,c uchun
$cos4x=\text{a}\cos^4 x+bcos^2x+c$ ayniyat bajarilsa, $a+2b+c$ ni toping.
A) 3 B) –7 C) 0 D) –4

9. Agar $-6<x<4$ bo`lsa, $|x-4|+|x+6|$ ifodani soddalashtiring.
A) $-2x-2$ B) 10 C) $2x+2$ D) 2

10. Agar $x=-2$ bo`lsa,
$a^2\frac{(x-b)(x-c)}{(a-b)(a-c)}+b^2\frac{(x-a)(x-c)}{(b-a)(b-c)}+c^2\frac{(x-a)(x-b)}{(c-a)(c-b)}$ ning qiymatini toping..
(Bu yerda $(a-b)(a-c)(b-c)\neq 0$)
A) a,b,c ga bog`liq B) 4 C) 0 D) 2

11. $13\frac{1}{3}:1\frac{1}{3}=0{,}2x:26$ tenglamani yeching.

12. Ta`lim muassasasida barcha o`quvchilar kamida bitta –ingliz yoki nemistilida so`zlasha oladilar, ayrimlari esa ikkala tilni ham biladilar.
O`quvchilarning 85% i ingliz tilini, 65% i nemis tilini biladilar. Ikkala tilni ham biladigan o`quvchilar barcha o`quvchilarning necha foizini tashkil etadilar?
A) 45 B) 50 C) 75 D) 60

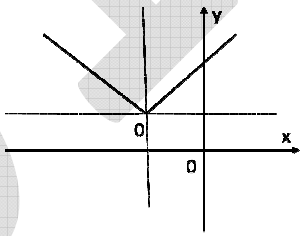
13. $(a^2+b^2+1)x^2+2(a+b+1)x+3=0$ tenglama haqiqiy yechimlarga ega bo`lsa, $3a-b$ ni toping.
A) -4 B) 2 C) -3 D) 3

14. $x<0$ da $|x-|x-11|-11|$ ifodani modul belgisiz yozing.
A) 0 B) $2x-22$ C) $22-2x$ D) $2x$

15. $\sqrt{x+1}+|x-4|\leq 6$ tenglamaning butun sonlardan iborat yechimlari yig`indisini toping.
A) 27 B) 8 C) 7 D) 25

16. Agar $f(x)=mx^2-(m-9)x-2$ parabolaning simmetriya o`qi tenglamasi $x=-2$ bo`lsa, m ning qiymatini toping.
A) 4 B) 1,8 C) 3 D) 2,4

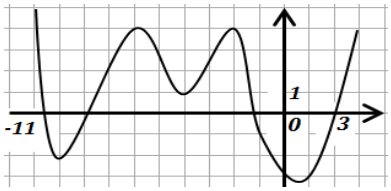
17. Rasmda $y=a\cdot\sqrt{(x-b)^2+c}+d$ funksiya grafigi tasvirlangan. Quyidagi javoblardan qaysi biri doim noto`g`ri?



A) $a-bc\leq 0$ B) $2ad+bc>0$
C) $a^2bc\leq 0$ D) $a\sqrt{c}+d>0$

18. Arifmetik progressiyada 10–hadi 7 ga, 7–hadi esa 10 ga teng. Progressiyaning 6 –hadini toping.
A) 14 B) 15 C) 11 D) 13

19. Chizmada $(-11;3)$ oraliqda aniqlangan $f(x)$ funksiya hosilasining grafigini tasvirlang. Nechta nuqtada $f(x)$ funksiya grafigiga urinma $y=2x-5$ to`g`ri chiziqqa parallel bo`ladi yoki U bilan ustma–usttushadi?



A) 0 B) 6 C) 1 D) 4

20. $\int_{-1}^{1}(3x^5 - 2x^3 + x)dx$ aniq integralni hisoblang.
A) $\frac{3}{4}$ B) 0 C) $\frac{7}{3}$ D) $\frac{5}{24}$

21. $y = -2\sqrt{x}$ va $y = -2x^3$ egri chiziqlar bilan chegaralangan soha yuzini toping.
A) $\frac{5}{4}$ B) $\frac{5}{6}$ C) $\frac{5}{3}$ D) $\frac{5}{12}$

22. Dioganallari 90° burchak ostida kesishuvchi $ABCD$ trapetsiyaning asoslari mos ravishda 9 va 3 ga teng. Dioganallarning kesishish nuqtasidan asoslariga parallel to`g`ri chiziq o`tkazilgan. Ushbu to`g`ri chiziqning yon tomonlar bilan chegaralangan kesma uzunligini toping.
A) 3,6 B) 3,75 C) 4,25 D) 4,5

23. To`g`ri burchakli uchburchakning bitta kateti 13 ga teng, qolgan ttomonlari butun sonlardan iborat. Ularni toping.
A) 80, 81 B) 81, 82 C) 83, 84 D) 84, 85

24. O`tkir burchagi 45° ga, balandligi va katta asosining yig`indisi a ga teng bo`lgan teng yonli trapetsiyalar ichida eng katta yuzaga ega bo`lganining kichik asosini toping.
A) $\frac{3}{4}a$ B) $\frac{1}{4}a$ C) $\frac{7}{4}a$ D) $\frac{5}{4}a$

25. Dastlabki 10 ta tub son ketma–ket bir qatorga yozilib 6 ta raqam shunday o`chirildiki natijada eng katta son hosil bo`ldi. Shu sonning ikkinchi raqamini toping.
A) 9 B) 2 C) 1 D) 3

26. Bir necha matematiklar va 8 hafar fiziklardan tashkil topgan bir guruh olimlarning o`rtacha yoshi 40 ga teng. Matematiklarning o`rtacha yoshi 35 ga, fiziklarning o`rtacha yoshi esa 50 ga tengligi ma`lum bo`lsa, matematiklar sonini toping.
A) 14 B) 16 C) 18 D) 20

27. $\frac{1}{3}; -\frac{1}{4}; \frac{1}{5}; -\frac{1}{6}$; ... ketma–ketlikning umumiy hadi formulasini ko`rsating.
A) $a_n = \frac{(-1)^{n+1}}{n+1}$ B) $a_n = \frac{(-1)^{n+1}}{n+2}$
C) $a_n = \frac{(-1)^{n-1}}{n+1}$ D) $a_n = \frac{(-1n)^{n+1}}{n-2}$

28. Agar $log_3 25 = a, log_{25} 16 = b$ bo`lsa, $log_2 3$ ni a va b orqali ifodalang.
A) $\frac{4ab}{3}$ B) $\frac{1}{4ab}$ C) $\frac{4}{ab}$ D) $\frac{ab}{4}$

29. $P(x) = (3x-1)^{2017} \cdot (x-1)^{2016} + (5x-1)^2 \cdot (6x-5)^2$ ko`phad koeffitsiyentlarining yig`indisini toping.
A) 16 B) 9 C) $2^{2017} + 1$ D) $2^{2017} + 3$

30. Agar $x = \frac{\sqrt{15}+1}{2}$ bo`lsa, $\frac{x^3-2x^2+6,5x-1}{x^2-x+21}$ kasrning qiymatini hisoblang.
A) $\sqrt{15} - 1$ B) $\sqrt{15} + 2$ C) $\sqrt{15}$ D) $\sqrt{15} + 1$

31. Rost mulohazalarni mos sonlar yig`indisini rim sanoq sistemasida hisoblang.
CXXIX–"Vaqt uzluksiz axborotdir"
XCVII–"Insonga uzluksiz ta`sir etuvchi axborotlar diskert axborotlar deb ataladi"
XLIX–"Axborot xususiyatlariga quyidagilar kiradi: qimmatlilik, ishonchlilik, to`liqlik"
A) CCXXVI B) CXLVI C) CCXXVIII D) CCLXXV

32. Ketma–ketlikdagi qonuniyatni aniqlab nuqtalar o`rniga mos keladigan sonni qo`ying.
3, 7, 15, 31, …
A) 45 B) 63 C) 54 D) 42

33. A=" kompyuter qurilmalarini boshqaruvchi dasturlar drayverlar deyilar deb ataladi."B="Fayl nomida<, >, ? belgilarini ishlatish mumkin. "C="Total Commander qobiq dasturdir. Shu mulohazalar asosida quyidagi mantiqiy ifodaning natijasini toping.

$$A \wedge \neg(C \vee \neg B)$$

A) Ifodada xatolik bor
B) Yolg`on
C) Rost
D) Ba`zi mulohazalarning qiymatini aniqlab bo`lmaydi

34.MS Excel.=?(ОСТАТ(23,9)+??(сумм(23,9));2 formulaning natijasi 4 bo`lishi uchun ? va ?? belgilarining o`rniga qo`yish mumkin bo`lgan funksiyalar to`g`ri berilgan javobni aniqlang.
A) Левсимв, Длстр B) Степень, Длстр
C) Срзнач, Знак D) Левсимв, Сумм

35. Quyidagihtml–hujjatkodiyoilishibo`yichakataklarketma–ketsanalgandanechanchikatakdaog`mashriftlimarketlanganro`yxatqo`llaniladi?
<table><tr><tdcolspan=2><u>
test
</u></td><tdrowspan=2>
test
<td><tr><tr><td><i></dt></dd>test</dt></mb><td><tr></table>
A) ikkinchikatakdaB) birinchikatakda
C) uchinchikatakdaD) To`rtinchikatakda

36. Paskal dsturi natijasini aniqlang.
Var N,k: byte, S String;
Begin Randomire; S="DTM–2017" n random (1)+2; delete (a, n, 1)
S:=a[n]+s[7] K:2+Random(1)

Write(S/k):readin:End.

A) 7 B) natijani aniqlab bo`lmaydi C) T D) 1

Variant 104

1. $\begin{cases} EKUB(x;y)=12 \\ \frac{x}{y}=\frac{3}{4} \end{cases}$ tenglamalar sistemasini yeching.

$(x,y\epsilon N)$

A) $(60;72)$ B) $(48;60)$ C) $(24;36)$ D) $(36;48)$

2. $[2x-1]=x$ tenglama yechimlari yig`indisini (agar yechimlari bitta bo`lsa, o`zini) toping. Bu yerda [a]–a sonning butun qismi

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

3. $\frac{x^2+x-5}{x}+\frac{3x}{x^2+x-5}=-4$ tenglama nechta butun ildizga ega?

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

4. $x<6$ bo`lsa, $3x+4y-6=0$ tenglamadan y ning qiymatlarini toping.

A) $y>-3$ B) $y>-6$ C) $y<-6$ D) $-1<y<1$

5. $y=4x-13$ va $y=-5-6x$ funksiyalarning grafiklari qaysi koordinatalar choragida kesishadi?

A) II B) III C) IV D) I

6. $y=\frac{x^2+2}{x}$ funksiyaning qiymatlar sohasiga tegishli bo`lmagan butun sonlar yig`indisini toping.

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

7. Moddiy nuqta to`g`ri chiziq bo`ylab $x(t)=\frac{1}{2}t^3-3t^2+2t+3$ qonun bo`yicha harakatlanmoqda, bu yerda x –koordinatalar boshidan nuqtagacha bo`lgan masofa (metrlarda o`lchanadi), t –vaqt(sekundlarda o`lchanadi). $t=6$ sekund bo`lganda nuqtaning tezligini (m/s) toping.

A) 12 B) 23 C) 20 D) 0

8. a,b mabfiy butun sonlar uchun $a=b+3$ va $a+b-c=13$ bo`lsa, c ning qiymatini toping.

A) -18 B) -16 C) -17 D) -15

9. $\int_{-1}^{1}(x^5-3x^3+3x)dx$aniq integralni hisoblang.

A) 0 B) $\frac{5}{24}$ C) $\frac{3}{4}$ D) $\frac{7}{3}$

10. $\int_{-\frac{\pi}{3}}^{\frac{\pi}{3}}\left(sin2x-2sinx+\frac{3}{2\pi}\right)dx$ aniq integralni hisoblang.

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

11.Radiusi 5 ga teng bo`lgan aylanaga ichki chizilgan uchburchakning $60°$ li burchagi qarshisidagi tomon uzunligini toping.

A) $5\sqrt{3}$ B) 5 C) 10 D) $5\sqrt{2}$

12. To`g`ri burchakli trapetsiya o`tkir burchagining kosinusi $\frac{2}{3}$ bo`lsa, katta burchagining tangensini toping.

A) $-\frac{13}{12}$ B) $\pm\frac{\sqrt{5}}{2}$ C) $\frac{3}{2}$ D) $-\frac{\sqrt{5}}{2}$

13. Qandaydir a,b,c uchun $cos4x=$acos$^4x+bcos^2x+c$ ayniyat bajarilsa, $a+b$ ni toping.

A) 3 B) 1 C) –4 D) 0

14. $3-4+5-6+..+2017-2018+2019$ ni hisoblang.

A) –1011 B) 1011 C) –1008 D) 1010

15. Quti sirtini 75% bo`yash uchun 450 gramm bo`yoq sarflangan bo`lsa, quti sirtini to`la bo`yash uchun necha gramm bo`yoq kerak bo`ladi?

A) 650 B) 500 C) 600 D) 625

16. Agar $\begin{cases} x_2+x_3+\cdots+x_{10}+x_{11}=1 \\ x_1+x_3+\cdots+x_{10}+x_{11}=2 \\ \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \\ x_1+x_2+x_3+\cdots+x_{10}=11 \end{cases}$ bo`lsa, x_{11} nechaga teng?

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

17. $f(x)=\cos^4x+\sin^4x$ funksiya berilgan. Agar $sin2\alpha=\frac{2}{3}$ ekanligi ma`lum bo`lsa, $f(\alpha)$ ni toping.

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

18. $\frac{\lg(2cos15°)}{\lg(2sin15°)}$ ni hisoblang.

A) 3 B) –1 C) 2 D) 1

19. x,y butun sonlar uchun $-2\le x<4$ va $-5\le y<4$ bo`lsa, x^2-y^2 ning eng kichik qiymatini toping.

A) 21 B) 8 C) 10 D) 32

20. $f(x)=a^2\frac{(x-b)(x-c)}{(a-b)(a-c)}+b^2\frac{(x-a)(x-c)}{(b-a)(b-c)}+c^2\frac{(x-a)(x-b)}{(c-a)(c-b)}$ funksiyaning $x=-1$ da hosilasini toping.

(Bu yerda $(a-b)(a-c)(b-c)\neq 0$)

A) a,b,c ga bog`liq B) –1 C) 0 D) –2

21.Agar $(x^2+2x+3)(y^2-4y+8)=8$ bo`lsa, $\frac{x+y}{y-x}$ ni toping.

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

22. $\frac{3^{x-1}-1}{3^{x+1}+1}<3$ tengsizlikni yeching.

A) $(-\infty;\infty)$ B) $\emptyset$ C) $(0;\infty)$ D) $(-\infty;0)$

23. Agar $f(x) = mx^2 - (m-9)x - 2$ parabolaning simmetriya o`qi tenglamasi $x = -1$ bo`lsa, m ning qiymatini toping.
A) 9 B) 5 C) 3 D) 2

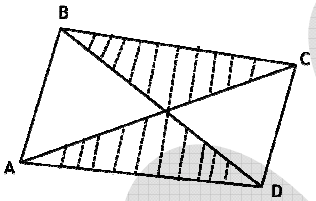
24. Agar $f(x) = \frac{1}{2}\ln^2 x$ bo`lsa, $f'(e)$ ni hisoblang.
A) $\frac{1}{e}$ B) e^2 C) e D) $e+1$

25. Agar $f(x) = x^3 + 2ax^2 + 3bx + 11$ va $f''(-2)=4$ bo`lsa, a ni toping.
A) 3 B) 1 C) 2 D) 4

26. $\int_{-1}^{1}(2x^5 - 3x^3 + x + 1)dx$ aniq integralni hisoblang.
A) $\frac{7}{3}$ B) $\frac{3}{4}$ C) 2 D) $\frac{5}{54}$

27. AB kesmaning bir tomonida $AA_1 = 4$ va $BB_1 = 2$ perpendikulyar o`tkazilgan. $A_1B$ va $AB_1$ to`g`ri chiziqlarning kesishish nuqtasidan AB kesmagacha bo`lgan masofani toping.
A) $1\frac{2}{3}$ B) 2,4 C) $1\frac{1}{3}$ D) 1,5

28. Agar rasmda shtrixlangan soha yuzasi 12 sm^2 bo`lsa, ABCD parallelogrammning yuzini(sm^2)toping.



A) 18 B) 26 C) 30 D) 24

29. $\frac{71^2-23^2+94\cdot42}{62^2-32^2}$ ni hisoblang.
A) 3 B) $\frac{1}{3}$ C) 4 D) $\frac{5}{6}$

30. Mahsulotning bozordagi narxi uning tannarxidan 20% ga qimmat. Bozorda mahsulot yaxshi sotilmagani uchun uning sotuvdagi narxi 5% ga kamaytirilganda narxi 285 bo`lsa, uning tannarxini toping.
A) 210 B) 230 C) 270 D) 250

31. Qobil sakkizlik sanoq sistemasida (73;100) oraliqdagi barcha butun sonlarni yozib chiqdi. Qodir esa shu sonlardan 6 raqam qatnashgan barcha sonlarni o`chirib tashladi. Qolgan sonlarni yig`indisini sakkizlik sanoq sistemasida aniqlang va bechlik sanoq sistemasiga o`tkazing.
A) 430 B) 341 C) 343 D) 143

32. Rost mulohazalarni mos sonlar yig`indisini rim sanoq sistemasida hisoblang.
CIX–"Soat millarining harakati uzluksiz axborotga misol bo`ladi"
axborotlar diskert axborotlar deb ataladi"
XLIX–"Axborot xususiyatlariga quyidagilar kiradi: qimmatlilik, ishonchlilik, to`liqlik"
A) CLVIII B) CXLVI C) CLVI D) CCVL

33. Ali sakkizlik sanoq sistemasida (120; 140) oraliqdagi barcha butun sonlarni yozib chiqdi. Vali esa shu sonlardan 1 raqami qatnashgan barcha sonlarni o`chirib tashladi. Qolgan sonlar yig`indisini sakkizlik sanoq sistemasida aniqlang.
A) 771 B) 505 C) 1165 D) 631

34. A ="Command com–buyruq protsessoridir"
B="To`liq nomi C:\Test\DTM\test dtm.doc bo`lgan faylning joriy katalogi DTM katalogidir."
C="Doppix dasturi bilan ma`lumotlar omborini boshqarish sistemasidir". Shu mulohaalar asosida quyidagi mantiqiy ifodaning natijasini toping.

$$A \wedge (B \vee C) \wedge (A \vee B)$$

A) Rost B) Yolg`on
C) Ifodada xatolik bor
D) Ba`zi mulohazalarning qiymatini aniqlab bo`lmaydi

35. Paskal dasturi natijasini aniqlang.
Var N,k: word, S String;
Begin Randmire: S='DTM–2017'
n: random Post('DT', s)+pos('21', s));+1;
S:=a[n]+s[n+1];
K:=2+Random(1)+1
Write(S/k+1):readin:End
A) D B) natijani aniqlab bo`lmaydi C) T D) M

36. MS Excel =?(3;4)+Значен(??(4:3)) formulaning natijasi 71 bo`lishi uchun ? va ?? belgilarning o`rniga qo`yish mumkin bo`lgan funksiyalar to`g`ri berilgan javobni aniqlang.
A) Сумм, СтепеньB) Степень, Сцепить
C) Макс, СтепеньD) Степень, Степень

Variant 105.

1. Arifmetik progressiyaning ikkinchi va o`n yettinchi hadlari yig`indisi 32 ga , o`n to`qqizinchi va o`n yettinchi hadlari ayirmasi 6 ga teng. Progressiyaning dastlabki yigirmata hadi yig`indisini toping.
A) 400 B) 380 C) 250 D) 370

2. Ifodani soddalashtiring: $\frac{tg(\alpha+\beta)-tg\alpha-tg\beta}{tg\beta\cdot tg(\alpha+\beta)}$

$$\alpha, \beta \in (\frac{3\pi}{2}; 2\pi)$$

A) $tg\beta$ B) 1 C) $tg\alpha$ D) $-tg\alpha$

3. Agar $x = \frac{\sqrt{17+1}}{2}$ bo`lsa, $\frac{x^3-3x^2+8x-2}{x^2-x+1}$ kasrning qiymatini hisoblang.

4. $x^3 - 2x - 1 = 0$ tenglamaning haqiqiy ildizlari ko`paytmasini toping.
A) –2 B) 1 C) –1 D) 0

5. $log_2(x^2 - 4x)^2 = 2log_2(18 - 5x)$ tenglamaning katta ildizini toping.
A) 6 B) $\frac{\sqrt{73}-1}{2}$ C) 3 D) $\frac{1+\sqrt{73}}{2}$

6. $\frac{2^{x-1}-1}{2^{x+1}+1} < 2$ tengsizlikni yeching.
A) $\emptyset$ B) $(-\infty;\infty)$ C) $(0;\infty)$ D) $(-\infty;0)$

7. $f(x) = -3x^2 + 9x + t - 3$ funksiyaning maksimumi 5 ga teng. t ning qiymatini toping.
A) 1,75 B) 1 C) 2 D) 1,25

8. To`g`ri burchakli uchburchakning gipotenuzasi 25 ga, unga ichki chizilga aylana radiusi 4 ga teng. Uchburchakning perimetrini toping.
A) 51 B) 48 C) 45 D) 58

9. $5 - 6 + 7 - 8 + 9 - 10 + \cdots + 2015 - 2016 + 2017$ ni hisoblang.
A) –1006 B) 1011 C) –1011 D) 1010

10. To`p 2 m 43 sm balandlikdan tashlandi va yerga urilib, har gal balandligining 2/3 qismiga teng balandlikka ko`tarildi. To`p necha marta urilishidan keyin 32 sm balandlikka ko`tariladi? (32 sm dan yuqoriga o`tib ketadigan hollarni qaramang)
A) 4 B) 5 C) 7 D) 8

11. $\{x|x\epsilon N, x^2 < 29{,}9\}$ to`plamning nechta qism–to`plamlari mavjud?
A) 5 B) 29 C) 32 D) 16

12. Qandaydir a, b, c uchun $cos4x = a\cos^4 x + bcos^2 x + c$ ayniyat bajarilsa, b ni toping.
A) 8 B) 4 C) –8 D) –4

13. $y = \frac{x^2+4}{x}$ funksiyaning qiymatlar sohasini toping.
A) $(-\infty;-4)\cup(4;\infty)$ B) $(-\infty;-4]\cup[4;\infty)$
C) $(-\infty;0)\cup[4;\infty)$ D) $[4;\infty)$

14. ABCD parallelogramm berilgan. m nuqta BD dioganalda yotadi, bunda MD:BM=2:1. Agar ADCM to`rtburchak yuzi 32 ga teng bo`lsa, ABCD parallelogramm yuzini toping.
A) 36 B) 52 C) 60 D) 48

15. $\left(\frac{x-2y}{x^3+y^3} + \frac{y}{x^3-x^2y+xy^2}\right) \cdot \frac{x^3-xy^2}{x^2+y^2} + \frac{2y^2}{x^3+x^2y+xy^2+y^3}$ ifodani soddalashtiring.
A) 0 B) $\frac{1}{x} + \frac{1}{y}$ C) $\frac{1}{x+y}$ D) 1

16. $\frac{1}{a(a-b)(a-c)} + \frac{1}{b(b-a)(b-c)} + \frac{1}{c(c-a)(c-b)}$ ifodani soddalashtiring.
A) $\frac{1}{abc}$ B) $\frac{abc}{2}$ C) $-\frac{1}{abc}$ D) $\frac{1}{bc}$

17. Agar $\frac{3^x+6^x+9^x}{5^x+10^x+15^x} = \frac{50}{18}$ bo`lsa, x ni toping.
A) –2 B) –3 C) –4 D) –5

18. $x^2 - \sqrt{x^2 - 10x + 25} = -5$ tenglamaning haqiqiy ildizlari yig`indisini toping.
A) –2 B) 0 C) –1 D) 1

19. ABCD to`rtburchak aylanaga ichki chizilgan ABC burchak 114° ga, CAD burchak 54° ga teng bo`lsa, ABD burchakning gradus o`lchovini toping.
A) 56° B) 72° C) 50° D) 60°

20. $x^{\lg^2 x - 4lgx + 1} > 10000$ tengsizlikning eng kichik natural yechimini toping.
A) 10000 B) 10001 C) 100 D) 1001

21. $\frac{|x+2|+x}{x+1} > 1$ tengsizlikning manfiy butun yechimlarini toping.
A) cheksiz ko`p B) 3 C) 1 D) 2

22. $y = 6x + 3$ va $y = -8 - 2x$ funksiyaning grafiklari qaysi koordinatalar choragida kesishadi?
A) III B) I C) IV D) II

23. $y = \sqrt{x^2 + 2x + 1} + \sqrt{x^2 - 6x + 9}$ funksiyaning eng kichik toq qiymatini toping.
A) 7 B) 3 C) 1 D) 5

24. Agar $f(x) = lne^{2x} + log_e x^2$ bo`lsa, $f'(2) + f(e)$ ning qiymatini toping.
A) $2e + 1$ B) $4 + e$ C) $2 + e$ D) $1 - 2e$

25. $\int \frac{dx}{3+x^2}$ ni hisoblang.
A) $\frac{1}{\sqrt{3}} arctgx + C$ B) $\frac{1}{\sqrt{3}} arctg\frac{x}{3} + C$
C) $\frac{1}{\sqrt{3}} arctg\frac{x}{\sqrt{3}} + C$ D) $\frac{1}{3} arctg\frac{x}{3} + C$

26. $\int_{-1}^{1}(2x^2 - x^3 + 2x)dx$ aniq integralni hisoblang.
A) $\frac{3}{4}$ B) $\frac{4}{3}$ C) 0 D) $\frac{5}{24}$

27. Agar $f(x) = x^{3x}$ bo`lsa, $f'(x)$ ni toping.
A) $x^{3x}(1 + lnx)$ B) $3x^{3x}(1 + 3lnx)$
C) $3x^{3x}(1 + lnx)$ D) $3x^{3x}(3 + lnx)$

28. Uchburchakning asosi 20% ga orttirilib, unga tushurilgan balandlik 20% ga kamaytirilsa, uning yui qanday o`garadi?
A) O`garmaydi B) 2% ga kamayadi
C) 4% ga kamayadi D) 4% ga ortadi

29. $(x^2+x-2)^2+(x^2+x-2)-2=x$ tenglamaning irratsional ildizlari ko`paytmasini toping.
A) 2 B) -2 C) $-\sqrt{6}$ D) $\sqrt{6}$

30. Tomonlari 55 va 60 ga teng bo`lgan to`g`ri to`rtburchak birlik kvadratlarga bo`lingan. Uning dioganali birlik kvadratchalarning uchlari bo`lmish nuqtalarning nechtasidan o`tadi?
A) 2 B) 6 C) 1 D) 5

31. Rost mulohaalardan mos sonlar yig`indisini rim sanoq sistemasida hisoblang.
CXLV–"Axborot ikki turga bo`linadi"
XCVII–"Insonga uzluksiz ta`sir etib turuvchi axborotlar analog axborotlar deb ataladi"
IV–"Insonga uzluksiz ta`sir etib turuvchi axborotlar raqamli axborotlar deb ataladi"
A) CXLIX B) CI C) CCXXLII D) CCXLVI

32. Boburxon sakkizlik sanoq sistemasida $(65;101)$ oraliqdagi barcha butun sonlarni yozib chiqdi. Sobirxon esa shu sonlardan 1 raqami qatnashgan barcha sonlarni o`chirib tashladi. Qolgan sonlar yig`indisini sakkizlik sanoq sistemasida aniqlang.
A) 1110110 B) 10000101 C) 1110111 D) 10000111

33. A=""Mening kompyuterim" maxsus qobiq dasturdir"
B="Fayl nomida*, \, /belgilarini ishlatish mumkin emas"
C=" Kompyuter ishiga zarar keltiruvchi dasturlar antivirus dasturlar deb ataladi,"Shu mulohazalar asosida quyidagi mantiqiy ifodaning natijasini toping:
(not A or B) and (C or not B) or not C
A) Ifodada xatolik bor
B) Yolg`on
C) Rost
D) Ba`zi mulohazalarning qiymatini aniqlab bo`lmaydi

34. MS Excel. =?(–23; 6)+ЗНАЧЕН(ЗАМЕНИТЬ(??(–23;6);2;2;6)) formulaning natijasi 67 bo`lishi uchun? va ?? belgilarning o`rniga qo`yish mumkin bo`lgan funksiyalar to`g`ri berilgan javobni aniqlang.
A) Остат, Заменить B) Остат, Степить
C) Мин, Мин D) Мин, Макс

35. Paskal. Dastur natijasini aniqlang.
Var a,k: byte; s,N:stiring; A:array[1..11] of byfe;
Begin Randomire; S:='INFORMATIKA';N:='
M[1]:=1; M[2]:=truns(1+random+random(1));
For k:3 To 5 Do M[k]:=M[k–1]+[k–2];
For k:=1 To 5 Do N:=N+s, M[k];
Write(N):readin:End.
A) IINFR B) dastur ishga tushganda xatolik xabari chiqadi
C) IFOAA D) INFRT

36.Quyidagihtml–hujjatkodiyozilishibo`yichakataklarketma–ketsanalgandanechanchikatakdaog`mashriftlimarketlanganro`yxatqo`llanilgan?
<table><tr><td colspan=2><a href><test> test</td><td rowspan=2><sup>
test <sup>
<td><tr><tr><td><img src=test jpg test </td></td></dl><sub><dt>test<sub></dl> </td></tr></table>
A) Birinchi katakda B) ikkinchi katakda
C) Uchinchi katakda D) to`rtinchi katakda

Variant 106.

1. Agar $f(x)=x^{-3x}$ bo`lsa, $f'(x)$ ni toping.
A) $x^{-3x}(1-lnx)$ B) $-3x^{-3x}(1+3lnx)$
C) $-x^{-3x}(1+lnx)$ D) $-3x^{-3x}(1+lnx)$

2. Markazi M(3;4) nuqtada bo`lib, koordinata boshidan o`tuvchi aylana tenglamasi ko`rinishini toping.
A) $x^2+y^2-6x-8y=0$
B) $x^2+y^2-6x+8y=0$
C) $x^2+y^2-6x-8y=9$
D) $x^2+y^2-6x-8y=16$

3. $\int_2^0 \frac{\sin(lnx)}{x}dx$ integralni hisoblang.

A) $sin1$ B) $1-cos1$ C) 1 D) xatolik mavjud

4. Piramidaning asosi tomoni $4\sqrt{3}$ va o`tkir burchagi $30°$ ga teng bo`lgan rombdan iborat. Ushbu piramidaga ichki chizilgan konusning yasovchisi asos tekisligi bilan $45°$ li burchak tashkil etuvchi konusichki chiilgan.Konusning hajmini toping.
A) $\frac{3\pi}{2}$ B) $\sqrt{3}\pi$ C) 3π D) $\frac{\sqrt{3}\pi}{4}$

5. Konusning yasovchisi $\sqrt{3}$ ga teng. Konusning uchidan unga ichki chiilgan shar markaigacha bo`lgan masofa 1 ga teng. Konus yasovchisi va asos tekisligi orasidagi burchakni toping.
A) $2arctg\frac{1}{3}$ B) $\frac{\pi}{3}$ C) $2arctg3$ D) $\frac{\pi}{4}$

6. ABCD parallelogramm uchta uhining koordinatalari ma`lum: A(0;1), B(1;3), C(12; 3). D uchining absissasi va ordinatasining yig`indisini toping.
A) 4 B) 12 C) 13 D) 5
7. ABCD parallelogramm uchta uchining koordinatalari ma`lum: A(–2;–1), B(1;3), C(8;3) ABCD parallelogramm yuzini toping.
A) 14 B) 12 C) 21 D) 25

8. Axborot resurs markazlarida 24 ta kompyuter o`rnatilmoqda, bunda ularning ayrimlari kabel bilan ulanmoqda. Har bir kompyuterdan 5 tadan kabel chiqarish lozim bo`lsa, jami bo`lib nechta kabel kerak?
A) 120 B) 56 C) 40 D) 60

9. Qaysi javobda berilgan xossa 1 soni uchun o`rinli?
A) U tub son
B) u murakkab son
C) u na tub na murakkab son
D) u eng kichik butun son

10. $y = f(x)$ funksiya D to`plamda no`qatiy kamayuvchi bo`lsin. D to`plamdan olingan ixtiyoriy a, b elementlari uchun $(a > b)$ quyidagi munosabatlardan qaysi biri o`rinli?
A) $f(a) \le f(b)$ B) $f(b) < f(a)$
C) $f(a) = f(b)$ D) $f(b) \le f(a)$

11. $\left[\frac{1000}{8^2}\right] \cdot 8$ ni hisoblang. Bu yerda [a]–a sonning butun qismi.
A) 100 B) 125 C) 140 D) 120

12. Bir guruh bolalarning o`rtacha og`irligi 40 kg ga teng. Qiz bolalarning o`rtacha og`irligi 35 kg, o`g`il bolalarning o`rtacha og`irligi esa 50 kg ligi ma`lum. Agar guruh a`zolarining 12 nafari o`g`il bolalar bo`lsa, qiz bolalar sonini toping.
A) 26 B) 24 C) 28 D) 22

13. $\frac{tg(\alpha+\beta)-tg\alpha-tg\beta}{tg\beta \cdot tg(\alpha+\beta)}$ ifodaning son qiymatini toping.
bu yerda $\alpha = \frac{2\pi}{3}, \beta = \frac{3\pi}{5}$
A) –1 B) $-\sqrt{3}$ C) $\sqrt{3}$ D) 1

14. Qandaydir a, b, c uchun $cos4x = a\cos^4 x + bcos^2 x + c$ ayniyat bajarilsa, $a + 2b$ ni toping.
A) 3 B) 0 C) –8 D) –4

15. Agar $log_9 5 = a, log_{25} 8 = b$ bo`lsa, $log_2 3$ ni a va b orqali ifodalang.
A) $\frac{3}{4ab}$ B) $\frac{2}{3ab}$ C) $\frac{3}{2ab}$ D) $\frac{2ab}{3}$

16. Qandaydir a, b uchun $(x+2)(x+a) = x^2 + bx + 6$ ayniyat bajarilsa, $4a - 3b$ ni toping.
A) 0 B) –3 C) 1 D) 9

17. Barcha musbat a, b, c sonlar uchun $\frac{a}{b} + \frac{b}{c} + \frac{c}{a}$ ifodaning eng kichik qiymatini toping.
A) 2,5 B) 1 C) 1,5 D) 3

18. $2x - 3\sqrt{2x-1} + 1 = 0$ tenglamaning eng kichik ildizining katta ildizga nisbatini toping.

19. x_1 va x_2 sonlar $x^2 - 3x - 4 = 0$ tenglamaning ildizlari bo`lsa, $(x_1^2 x_2 + x_1 x_2^2)^2$ ni hisoblang.
A) 144 B) 196 C) 121 D) 169

20. $(x^2 - 8x + 18)^2 - 8(x^2 - 8x + 18) + 18 = 0$ tenglamaning butun yechimlari yig`indisini toping.
A) 0 B) 1 C) 9 D) 18

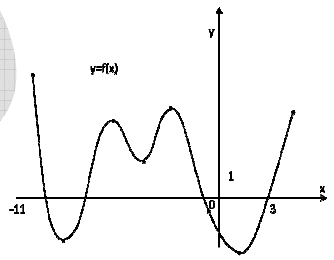
21. Natural n sonni kvadrati 10 ga bo`linganda qanday qoldiqlarga ega bo`lishi mumkin?
A) 0; 2; 3; 7; 6 B) 0; 1; 4; 5; 6; 9
C) 0; 2; 3; 5; 8 D) 0; 2; 3; 5; 9

22. Agar $f(x) = mx^2 - (m-10)x - 2$ parabolaning simmetriya o`qi tenglamasi $x = -2$ bo`lsa, m ning qiymatini toping.
A) 1,2 B) 1,8 C) 2 D) 3

23. Agar $x \epsilon [-4; 4]$ bo`lsa, $\sqrt{x^2 + 8x + 16} + \sqrt{x^2 - 8x + 16}$ ifodaning qiymatini hisoblang.
A) 8 B) –4 C) 6 D) $2x$

24. ABCD teng yonli trapetsiyaning AC dioganali 6 ga teng va u AD katta asos bulan 30° li burchak tashkil etadi. Trapetsiya yuzini toping.
A) 9 B) 3 C) $3\sqrt{3}$ D) $9\sqrt{3}$

25. Chizmada $(-11; 3)$ oraliqda aniqlangan $f(x)$ funksiya hosilasining grafigini tasvirlang. Nechta nuqtada $f(x)$ funksiya grafigiga urinma $y = -2x - 4$ to`g`ri chiziqqa parallel bo`ladi yoki U bilan ustma–usttushadi?



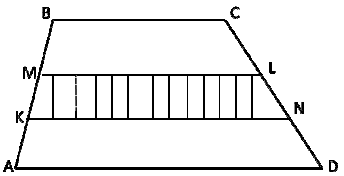
A) 6 B) 4 C) 0 D) 1

26. Agar $f(x) = ax^3 + 2x^2 + b$ va $f'(2) = 32$ bo`lsa, a ni toping.
A) 4 B) 1 C) 3 D) 2

27. $\int_1^8 \frac{4}{x} dx$ integralni hisoblang.
A) 12ln2 B) 6 ln2 C) 18ln2 D) 12ln4

28. Agar $f(2x) = 6x^3 + 4x^2 + 2x + 1$ bo`lsa, $f'(2) - f(2)$ ni toping.
A) 2 B) 3 C) 1 D) 4

29. ABCD trapetsiya berilgan bo`lib, AD||BC. Agar AK=KM=MB, DN=NL=LC va $S_{ABCD} = 30\ sm^2$



A) 7,5 B) 15 C) 10 D) 20

30.ABCD (AD||BC) trapetsiyada AD=10, BC=6. Trapetsiya balandligi 6 ga teng. AD asosi, dioganallar va o`rta chiziq bilan chegaralangan to`rtburchakning yuzini toping.
A) 12 B) 20 C) 16 D) 18

31. Nurxon sakkizlik sanoq sistemasida (43; 67) oraliqdagi barcha butun sonlarni yozib chiqdi. Burxon esa shu sonlardan 5 raqami qatnashgan barcha sonlarni o`chirib tashladi. Qolgan sonlar yig`indisini sakkizlik sanoq sistemasida aniqlang va oltilik sanoq sistemasiga o`tkazing.
A) 214 B) 245 C) 150 D) 203

32. Rost mulohazalarni mos sonlar yig`indisini rim sanoq sistemasida hisoblang.
CXLIX–"Axborot jarayonlari axborot ustida bajareiladigan amallar bilan bog`liq"
XCVII–"Insonga uzluksiz ta`sir etib turuvchi axborotlar diskret axborotlar deyiladi"
XLIX–"Axborot ni uzlukli turi analog axborot deb ataladi"
A) CXLVV B) CCXLI C) CVXXLI D) CCCXXVI

33. MS Excel.A1=23 B1=9
(ОСТАТ(A1,B1)+??(Степить(A1,B1));2 formulaning natijasi 24 bo`lishi uchun ? va ?? belgilarining o`rniga qo`yish mumkin bo`lgan funksiyalar to`g`ri berilgan javobni aniqlang.
A) ЛевСимв, ДлстрB) Степень, Длстр
C) Срзнач, ЗнакD) ЛевСимв, Значен

34. A="IO SYS –ma`lumotlarni kiritish chiqarish sistemalarini kengaytirish moduli:B="Free and Open Source Software–mutloqa bepul, birlamchi kodi ochiq dastiriy ta`minot. C="Fox Pro operatsion sistemadir" Shu mulohaalar asosida quyidagi mantiqiy ifodaning natijasini toping. (A or B) and (not(B or C)
A) Yolg`on B) Ba`zi mulohazalarning qiymatini aniqlab bo`lmaydi
C) Rost D) Ifodada xatolik bor

35. $A1 = -9, B1 = 9, B2 = 3$ bo`lsin quyidagi formula natijasi 85 ga teng bo`lishi uchun A2 katakka kiritilishi kerak bo`lgan qiymatni aniqlang.
=ЕСЛИ(И(A1+B2<A2*B1;A1*A2<>0); A1*B2–B1–A2;A1*B1–B2+A2)

36. HTML–hujjatda matnni qalin shrift ko`rinishida yozish uchun uni qaysi HTML teglar orasiga olish zarur?
A) <Em>…</Em> B) <u>…</u>
C) … D) …

Variant 107.

1. $\overline{ab}$ va $\overline{ba}$ ikki xonali sonlar.$\overline{ab} - \overline{ba} = 45$ bo`lsa, $a^2 + b^2 - 2ab$ ning qiymatini toping.
A) 25 B) 36 C) 16 D) 49

2. To`g`ri burchakli teng yonli uchburchakning $4\sqrt{3}$ ga teng gipotenuzasi orqali uchburchak tekisligi bilan $60°$ li burchak tashkil etuvchi P tekislik o`tkazilgan. Uchburchakning P tekislikdagi proyeksiyasi yuzini toping.
A) 6 B) 8 C) 3 D) 4

3. Agar $\vec{a}(3; -2; 4)$ va $\vec{b}(-1; 5; -2)$ bo`lib, $\vec{c} = 2\vec{a} - \vec{b}$ bo`lsa, $\vec{a}$ va $\vec{c}$ vektorlarning skalyer ko`paytmasini yozing.
A) 69 B) 67 C) 79 D) 63

4. Koordinatalari A(–2;0) B(4;0) va C(2;3) nuqtalarda bo`lgan uchburchakning $Ox$ o`qi atrofida aylanishidan hosil bo`lgan jismning hajmini toping.
A) 16π B) 18π C) 15π D) 12π

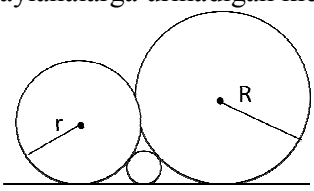
5. $\{x|x\epsilon N, -6{,}9 < x < 5{,}9\}$ to`plamni nechta usul bilan ikkita kesishmaydigan qism–to`plamlarga ajratish mumkin
A) 16 B) 8 C) 32 D) 11

6. $y = arcsin\frac{x-3}{2}$ funksiyaning aniqlanish sohasini toping.
A) [1; 5] B) [1;3] C) [1; 4] D) [1; 2]

7. Agar $f(x) = x^3 - 5x^2 + x + a$ va $f''(2) = f(2)$ bo`lsa, a ni toping.
A) 12 B) 10 C) 5 D) 6

8. $\int e^{3sinx} \cdot cosxdx$ integralni hisoblang.
A) $\frac{1}{3}e^{3sinx} + C$ B) $cosx + e^{3sinx} + C$
C) $-\frac{1}{3}e^{3sinx} + C$ D) $\frac{e^{3sinx}}{3cosx} + C$

9. $R = 9$ va $r = 1$ radiusli ikkita aylana bir–biriga va to`g`ri chiziqqa urinadi. Shu to`g`ri chiziqqa va aylanalarga urinadigan kichik aylana radiusini toping.



10. ABCD teng yonli trapetsiyaning AC dioganali 8 ga teng va u AD katta asos bilan 22,5° li burchak tashkil etadi. Trapetsiya yuzini toping.
A) 16 B) 8 C) $16\sqrt{2}$ D) $8\sqrt{2}$

11. Uchburchakning balandligi $\sqrt{6}$ ga teng va u asosni 2:6 nisbatda bo`ladi. Balandlikka parallel bo`lib, uchburchakni tengdosh bo`laklarga bo`luvchi kesma uzunligini toping.
A) 2,2 B) 1,8 C) 1 D) 2

12. Muntazam to`rtburchakli piramidaga kub ichki chizilgan. Agar piramida balandligi $16\sqrt{2}$ ga va piramida asosining tomoni $12\sqrt{2}$ ga teng bo`lsa, kub qirrasini toping.
A) $7\sqrt{2}$ B) $\frac{48\sqrt{2}}{7}$ C) $\frac{36\sqrt{2}}{7}$ D) $6\sqrt{2}$

13.Agar $x = 2$ bo`lsa,
$\frac{(x-b)(x-c)}{(a-b)(a-c)} + \frac{(x-a)(x-c)}{(b-a)(b-c)} + \frac{(x-a)(x-b)}{(c-a)(c-b)}$ ning qiymatini toping..
(Bu yerda $(a-b)(a-c)(b-c) \neq 0$)
A) 2 B) a, b, c ga bog`liq C) 1 D) 0

14.$\vec{a}(1;1)$ va $\vec{b}\left(2;\frac{1}{2}\right)$ vektorlar orasidagi burchak kosinusini toping.
A) $\frac{10}{\sqrt{17}}$ B) $\frac{5}{\sqrt{34}}$ C) $\frac{10}{\sqrt{34}}$ D) $\frac{5}{\sqrt{17}}$

15. To`g`ri tenglikni aniqlang. $\left(a\epsilon R, \frac{m}{n}\epsilon Q\right)$
A) $a^{\frac{m}{n}} = \sqrt[n]{m}$ B) $\sqrt[3]{(-a)^{\frac{1}{3}}} = -a$
C) $a^{-1} = \frac{1}{a}, a \neq 0$ D) $\sqrt{(-a)^2} = a$

16. Har qanday (x_1, x_2) oraliq uchun $y = f(x)$ funksiya hosilasi musbat bo`lsin. $(x_1; x_2)$ oraliqqa tegishli ixtiyoriy $a$ va $b(a > b)$ uchun qanday tengsizlik o`rinli?
A) $f(a) \leq f(b)$ B) $f(b) < f(a)$
C) $f(a) < f(b)$ D) $0 < f(a) < f(b)$

17. Asosi a ga, yon tomoni b ga teng bo`lgan teng yonli uchburchakning yon tomoniga tushurilgan balandlik uzunligini toping.
A) $h_b = \frac{a}{b}\sqrt{4b^2 - 2a^2}$ B) $h_b = \frac{b}{2a}\sqrt{4b^2 - 2a^2}$
C) $h_b = \frac{a}{2b}\sqrt{4b^2 - 2a^2}$ D) $h_b = \frac{b}{a}\sqrt{4b^2 - 2a^2}$

18. Agar $f(x) = \int_4^{x^2}(t^2 - 4)dt$ bo`lsa, $F'(2)$ni toping.
A) 54 B) 16 C) 24 D) 48

19. ABCD to`g`ri to`rtburchak AC dioganali orqali ikkita ABC va ACD uchburchaklarga ajratilgan. Agar AB=9, AD=12 bo`lsa, ABC va ACD uchburchaklarga ichki chizilgan aylanalar markazlari orasidagi masofani toping.
A) 4 B) $3\sqrt{5}$ C) $2\sqrt{5}$ D) 6

20. Agar $f(x) = x^3 + 2ax^2 + 3bx + 4$ va $f''(2) = 20$ bo`lsa, a ni toping.
A) 4 B) 3 C) 1 D) 2

21. $\int_{-1}^{1}(x^5 - x^3 + 5x + 5)dx$ aniq integralni hisoblang.
A) 2 B) $\frac{7}{3}$ C) $\frac{5}{54}$ D) 10

22. Kubning dioganali ushbu dioganal bilan kesishmaydigan qirrasigacha bo`lgan masofa 2 ga teng. Kubning hajmini toping.
A) $12\sqrt{2}$ B) $18\sqrt{2}$ C) $16\sqrt{2}$ D) $24\sqrt{2}$

23. A(–3;–1),B(–1;–8),C(1;–1) nuqtalarni tutashtirishdan hosil bo`lgan uchburchak yuzini toping.
A) 15 B) 14 C) 17 D) 12

24. Agar $\vec{a}(4;-3,5)$ va $\vec{b}(\frac{1}{2};\frac{1}{3};-\frac{1}{5})$ bo`lsa, $\vec{a}$ va $\vec{b}$ vektorlar orasidagi burchak kosinusini toping.
A) 1 B) $\frac{\sqrt{3}}{2}$ C) $\frac{\sqrt{2}}{2}$ D) 0

25. Nomanfiy x, y sonlar uchun $a = 5x + \frac{1}{5}y$ va $b = 2\sqrt{xy}$ bo`lsin. Qaysi tengsiliklar har doim o`rinli?
A) $a > b$ B) $a < b$ C) $a \geq b$ D) $a \leq b$

26. $y = \cos^2 x$ funksiya grafigi berilgan bo`lib, uni parallel ko`chirish yordamida $y = \cos^2(x + a) + b$ funksiya grafigi hosil qilingan. Bunday parallel ko`chirishda koordinata boshi qanday nuqtada ko`chadi?
A) N(a;–b) B) N(a;b) C) N(–a;b) D) N(b;a)

27. Quyidagi keltirilgan jumlalardan noto`g`risini toping.
A) Uchburchak tomonlari uunliklarining yig`indisi uning perimetri deyiladi
B) Agar ikki uchburchakning burchaklari mos ravishda teng bo`lsa, bu uchburchaklar teng bo`ladi
C) O`z –o`zini kesmaydigan yopiq siniq chiziq ko`pburchak deyiladi
D) Kesma o`rta perpendikulyarining ixtiyoriy nuqtasikesma uchlaridan teng uzoqlikda joylashgan.

28. $1 - 2 + 3 - 4 + 5 - 6 + \cdots + 2015 - 2016 + 2017$ ni hisoblang
A) –1009 B) –1008 C) 1009 D) 1010

29.Bir necha matematiklar va 15 hafar fiziklardan tashkil topgan bir guruh olimlarning o`rtacha yoshi 40 ga teng. Matematiklarning o`rtacha yoshi 35 ga,

fiziklarning o`rtacha yoshi esa 50 ga tengligi ma`lum bo`lsa, matematiklar sonini toping.
A) 32 B) 30 C) 34 D) 38

30. Arifmetik progressiyada
$a_2 + a_8 + a_{10} + a_{12} + a_{14} + a_{20} = 105$ bo`lsa,
$a_4 + a_{18}$ ni toping.
A) 15 B) 42 C) 35 D) 45

31. Faqat rost mulohazalarni aniqlang va ularga tenglashtirilgan sonlar yig`indisini rim sanoq sistemasida hisoblang.
CVCIV=”Axborot”so`zi ingliz tilidagi “information” so`zidan kelib chiqqan”
IV=”XX asrning 40–yillarida informatika faniga asos solingan”
XIX=”Informatika uchuno`rganish obekti–bu axborot”
A) CCXVII B) CCXVIII C) XIX D) CCXIX

32. Ma`murxon sakkizlik sanoq sistemasida (55;100) oraliqdagi barcha butun sonlarni yozib chiqdi. Ma`rufxon esa shu sonlardan avval 5 raqami, so`ng 6 raqami qatnashgan barcha sonlarni o`chirib tashladi. Qolgan sonlar yig`indisini sakkizlik sanoq sistemasida aniqlang.
A) 353 B) 423 C) 541 D) 644

33.Paskal tilida quyidagi dastur natijasini aniqlang.
Var a, k: integer;
Begin a:=–2; For k:=–5 to 1 do a:=(–2)*a;
write(a); end
A) 256 B) -2 C) 512 D) –512

34. MS Excel 2003 dasturida yozilgan quyidagi funksiyaning qiymatini toping.
=СРЗНАЧ (31;10; 12; 7)
A) 16 B) 15 C) 12 D) 14

35. 5074, 7672 butun sonlarni barchasini yozish mumkin eng kichik asosli sanoq sistemasida shu sonlar yig`indisini hisoblang va natijani o`nlik sanoq sistemasida tavsiflang.
A) 4684 B) 6646 C) 8266 D) 2446

36. A1=–6, A2=1, B1=7, B2=2 bo`lsin. Natijani 3 ga teng bo`ladigan formulani aniql;ang.
A) =СЧТЕСЛИ(A1:B2;”<7”)
B) =СТЕПЕНЬ (B2; A1+1)
C) =МИН(–A1–B1; A2–B1)
D) =МАКС(ABS(A1)+B2;A2+B1)

Variant 108.

1.$\{x|x\epsilon N, -3{,}7 < x \le 5{,}7\}$ to`plamni nechta usul bilan ikkita kesishmaydigan qism–to`plamlarga ajratish mumkin?
A) 10 B) 32 C) 16 D) 8

2. Hisoblang: $\frac{1}{sin10^\circ} - 4sin70^\circ$
A) 2 B) $sin5^\circ$ C) $sin10^\circ$ D) 1

3. Juft sondagi hadlardan tashkil topgan arifmetik progressiyaning ayirmasi 3 ga teng. Toq nomerli hadlar yig`indisi va juft nomerli hadlar yig`indisi mos ravishda 12 va 24 ga teng bo`lsa, uning barcha hadlari nechta?
A) 8 B) 6 C) 12 D) 10

4. $\frac{8ab-20b+2a-5}{a-8b^2+4ab-2b}$ kasrni qisqartiring.
A) $\frac{2a-5}{a-2b}$ B) $\frac{2a+5}{4b+1}$ C) $\frac{2a+5}{4b-1}$ D) $\frac{2a-5}{4b-1}$

5. To`g`ri prizma asosi teng yonli to`g`ri burchakli uchburchakdan iborat bo`lib, uning kateti 4 ga teng. Prizmaning bitta uchidan chiqqan katta yon yog`i dioganali va boshqa yon yog`i dioganali orasidagi burchak 30° ga teng. Prizmaning hajmini toping.
A) $32\sqrt{2}$ B) $30\sqrt{2}$ C) $26\sqrt{2}$ D) $28\sqrt{2}$

6. $\frac{5}{3-\frac{5+4x}{2+\frac{x-3}{8}}} = 9$ tenglamani yeching.
A) $\frac{37}{133}$ B) $-\frac{34}{133}$ C) $\frac{34}{133}$ D) $-\frac{37}{133}$

7. $5 \cdot x^{log_5 4} - 7 \cdot 2^{log_5 x} - 6 = 0$ tengalama ildizlari ko`paytmasini (agar ildizi bitta bo`lsa ildizini) toping.
A) 10 B) 5 C) 1 D) 25

8. $x \cdot 6^{log_x 7} \le 42$ tengsizlikning butun sonlardan iborat yechimlari nechta?
A) 2 B) 1 C) 0 D) 4

9. $x < 4$ bo`lsa, $3x + 2y - 6 = 0$ tenglamadan y ning qiymatlarini toping.
A) $-1 < y < 1$ B) $y > -6$ C) $y < -6$ D) $y > -3$

10. $\begin{cases} |4+x| \le 7 \\ |2x+3| \ge 9 \end{cases}$ tengsizliklar sistemasi nechta butun yechimga ega?
A) 7 B) 4 C) 6 D) 5

11. Taqqoslang: $a = 40^{15}$ va $b = 25^{15} + 15^{15}$
A) $a + 20 < b$ B) $a = b$ C) $a < b$ D) $a > b$

12. Agar $f'(x) = \frac{3}{e^x}, f(ln3) = 0$ bo`lsa, $f(x)$ ni toping.
A) $-3e^{-x} - 1$ B) $-3e^{-x} + 1$
C) $3e^{-x} + 1$ D) $3e^{-x} + 2$

13.ABC uchburchakning BC tomoniga Ab ga teng AD kesma o`tkazilgan. Agar $AC = 10, DC = 2$ va $BD = 12$ bo`lsa, AB ning uzunligini toping.
A) $3\sqrt{2}$ B) $6\sqrt{2}$ C) $2\sqrt{3}$D) $6\sqrt{3}$

14. $x^2-2x-3=0$ tenglamaning haqiqiy ildizlari yig`indisini toping.
A) –2 B) 3 C) –3 D) 2

15. Piramidaning asosi tomoni $2\sqrt{3}$ va o`tkir burchagi 30° ga teng bo`lgan rombdan iborat. Ushbu piramidaga ichki chizilgan konusning yasovchisi asos tekisligi bilan 45° li burchak tashkil etuvchi konus ichki chizilgan. Konusning hajmini toping.
A) $\frac{\sqrt{3}\pi}{4}$ B) $\sqrt{3}$C) $\frac{\sqrt{3}\pi}{8}$ D) 2π

16. Konusning yasovchisi $2\sqrt{3}$ ga teng. Konusning uchidan unga ichki chizilgan shar markazigacha bo`lgan masofa 3 ga teng. Konus yasovchisi va asos tekisligi orasidagi burchakni toping.
A) $2arctg3$ B) $\frac{\pi}{4}$C) $2arctg\frac{1}{3}$D) $\frac{\pi}{3}$

17. A(–5;–9), B(–3;0), C(–1;–9) nuqtalarni tutashtirishdan hosil bo`lgan uchburchak yuzini toping.
A) 18 B) 19 C) 20 D) 17

18. ABCD parallelogramm uchta uchining koordinatalari ma`lum: A(0;1), B(1;2), C(7;2) ABCD parallelogramm yuzini toping.
A) 3 B) 4 C) 12 D) 6

19. Ixtiyoriy x,y haqiqiy sonlar uchun $a=7x^2+\frac{1}{7}y^2$ va $b=2|xy|$ bo`lsin. Qaysi tengsizlik har doim o`rinli?
A) $a\geq b$ B) $a<b$ C) $a>b$ D) $a\leq b$

20. Agar $D(f)-y=f(x)$ funksiyaning aniqlanish sohasi bo`lsa, $E(f)$ –qiymatlar sohasi uchun to`g`ri tenglikni ko`rsating.
A) $E(f)=\{f(x)|x\epsilon D(f)\}$
B) $D(f)=\{f(x)|x\epsilon E(f)\}$
C) $D(f)=\{x|f(x)\epsilon E(f)\}$
D) $E(f)=\{x|x\epsilon D(f)\}$

21. Qanday uchburchakning balandliklari uning bir uchida kesishadi?
A) to`g`ri burchakli B) teng yonli
C) o`tkir burchakli D) o`tmas burchakli

22. $log_{\sqrt{6}+\sqrt{5}}(241-44\sqrt{30})$ ni hisoblang.
A) 6 B) -5 C) -4 D) 4

23.ABCD parallelogrammda E nuqta AD tomonning o`rtasi, F nuqta CE to`g`ri chiziqqa B nuqtadan tushurilgan perpendikulyarning asosi. Agar AB= $2\sqrt{3}$ va $\angle BAF=62°$ bo`lsa, ABF uchburchakning yuzini toping.
A) $6sin62°$ B) $6sin124°$ C) $5sin124°$ D) $5sin62°$

24. $\begin{cases}|1+x|\leq 5\\|x+2|\geq 3\end{cases}$ tengsizliklar sistemasi nechta butun yechimga ega?
A) 0 B) ∅ C) 5 D) 6

25.M nuqta ABC$A_1B_1C_1$ muntazam prizma ABC asosidagi BC tomonning o`rtasi bo`lsin. Prizmaning yon qirrasi $4\sqrt{2}$ ga, asosining tomonlari 8 ga teng bo`lsa, $B_1M$ to`g`ri chiziq va ABB_1A_1 yon yoqi orasidagi burchakning sinusini toping.
A) $\frac{1}{2}$ B) 0,6 C) $\frac{2}{3}$ D) 0,8

26. $\vec{a}(1;4)va\ \vec{b}(-3;2)$ vektorlar berilgan. $\vec{a}+\lambda\vec{b}$ vektori $\vec{a}$ vektoriga perpendikulyar bo`ladigan λ sonini toping.
A) $\frac{17}{5}$ B) $-\frac{5}{17}$ C) $\frac{5}{17}$ D) $-\frac{17}{5}$

27. Ratsional sonlar to`plami qanday ko`rinishda yoziladi?
A) $Q=\{r|r=\frac{P}{q},p\epsilon N,q\epsilon N\}$
B) $Q=\{r|r=\frac{P}{q},p\epsilon Z,q\epsilon Q\}$
C) $Q=\{r|r=\frac{P}{q},p\epsilon Z,q\epsilon Z\}$
D) $Q=\{r|r=\frac{P}{q},p\epsilon Z,q\epsilon N\}$

28.$y=f(x)$ funksiyaning grafigi berilgan bo`lib, uni parallel ko`chirish yordamida $y=f(x-m)-n$ funksiya grafigi hosil qilingan. Bunday parallel ko`chirishda koordinata boshi qanday nuqtaga ko`chadi?
A) N(m,n) B) N(–m;n) C) N(–m;–n) D) N(m;–n)

29. $\left[15\frac{5}{8}-2\frac{2}{8}\right]^2-\left[23\frac{7}{9}-12\frac{7}{8}\right]^2$ ni hisoblang. Bu yerda [a]–a sonning butun qismi.
A) 44 B) 69 C) 23 D) 48

30. Bir guruh bolalarning o`rtacha og`irligi 37 kg ga teng. Qiz bolalarning o`rtacha og`irligi 35 kg, o`g`il bolalarning o`rtacha og`irligi esa 40 kg ligi ma`lum bo`lsa, o`g`il bolalar sonini toping
A) 10 B) 13 C) 12 D) 11

31. Microsoft Excel 2003 dasturida A1=14, A2=6, A3=4, A4=СТЕПЕНЬ(СРЗНАЧ(A1; A3); СЧЕТЕСЛИ(A2; A3;:>2)) bo`lsa, A4 katakchadagi formula natijasini toping.
A) 0 B) 24 C) 36 D) 64

32. Quyidagi html–hujjat kodi yozilishi bo`yicha kataklar ketma–ket sanalganda birinchi katakda qanday shriftdagi ro`yxat qo`llanilgan?
<table><tr><td><cite>
<u>
test</u>
<cite></td><td colspan=3>
test</td></tr><tr><td>

colspan=2>
test</td>
<td><u>
test</u></td><td>
<storong>
<il>test
</storong></td>
</tr></table>
A) Tagchiziqli va og`ma shriftli tartiblangan ro`yxat
B) Qalin va og`ma shriftli tartiblangan ro`yxat
C) O`g`ma shriftli marketlangan ro`yxat
D) Tagchiziqli shriftli marketlangan ro`yxat

33. Microsoft Excel 2003 dasturida A1=13, A2=16, A3=4 A4=ЕСЛИ(КОРЕНЬ(A3)>A2–A1; СРЗНАЧ(A1;A2);СРЗНАЧ(A1;A3) bo`lsa, A4 katakchadagi formula natijasini toping.
A) 10 B) 12 C) 9 D) 11

34.Laylo sakkizlik sanoq sistemasida (55; 100) oraliqdagi barcha butun sonlarni yozib chiqdi. Shahlo esa shu sonlardan 5 raqami, so`ng 6 raqami, keyin 7 raqami qatnashgan barcha sonlarni o`chirib tashladi. Qolgan sonlar yig`indisini sakkizlik sanoq sistemasida aniqlang.
A) 141 B) 15 C) 0 D) 74

35. MS Excel dasturida. =ОСТАТ(–10; 8)–ЗНАЧЕН(ЗАМЕНИТЬ(СЦЕПИТЬ(–23;6)) qanday natija hosil bo`ladi?
A) 88 B) 72 C) 102 D) 68

36. Paskal dasturi natijasini aniqlang.
Var a,k: longint; ss:array[1…11] of integer;
Begin Randomize; a:=0; k:=0;
Repeat k:=k+1:ss[k]:=round((k+random)/(k+0.5));
a:=a+ss[k]; until k>=6;
Write(a); readln; End.
A) 12 B) natijani aniqlab bo`lmaydi C) 0 D) 6

Variant 109.

1. $\{x|x\epsilon N, 2{,}7 \le x^2 \le 45{,}7\}$ to`plamning nechta qism–to`plamlari mavjud?
A) 16 B) 5 C) 32 D) 45

2. Arifmetik progressiyada
$a_2 + a_8 + a_{10} + a_{12} + a_{14} + a_{20} = 27$ bo`lsa,
$a_4 + a_{18}$ ni toping.
A) 6 B) 12 C) 13 D) 9

3. Agar $tg4\alpha = -\frac{1}{2}$ bo`lsa, $ctg\alpha - tg\alpha - 2tg2\alpha$ ning qiymatini toping.
A) –12 B) –2 C) –8 D) –6

4. Qandaydir a, b uchun
$cos4x = a\cos^4 x + 8\cos^2 x + 8$ ayniyat bajarilsa, a ni toping.
A) 4 B) 8 C) –8 D) –4

5. $\frac{(a-3)^2}{a}$ ifoda natural qiymatlar qabul qiladigan a ning eng katta va eng kichik natural qiymatlari nisbatini toping.
A) 9 B) 2 C) 10 D) 3

6. $2x - 3\sqrt{2x-1} + 1 = 0$ tenglamaning katta ildizini kichik ildiziga nisbatini toping.
A) 2,5 B) 2 C) 3,5 D) 3

7. ABC to`g`ri burchakli uchburchakning katta AC katetini diametr qilib yarim aylana chizilgan. AB katet 30 ga teng. Yarim aylananing gipotenuzani kesgan nuqtasi bilan A to`g`ri burchakni tutashtiruvchi kesma 24 ga teng. Yarim aylana uzunligini toping.
A) 20π B) 15π C) 25π D) 40π

8. $x^2 - \sqrt{x^2 - 8x + 16} = -4$ tenglamaning haqiqiy ildizlari ko`paytmasini toping.
A) –2 B) 0 C) –1 D) 1

9. $\sqrt{3-x} < x - 1$ tengsizlikni yeching.
A) $(0; 3]$ B) $(1; 3]$ C) $(2;3]$ D) $[2;3)$

10. Piramida asosi teng yonli to`g`ri burchakli uchburchakdan iborat. Barcha yon yoqlari asos tekisligi bilan bir xil burchak tashkil etadi. Piramida hajmining unga ichki chizilgan konus hajmiga nisbatini toping.
A) $\frac{1}{\pi}$ B) $\frac{3+2\sqrt{2}}{\pi}$ C) $\frac{1+\sqrt{2}}{\pi}$ D) $\frac{\sqrt{2}}{\pi}$

11. $y = \frac{\sqrt{x+1}+\sqrt{7x-6-x^2}}{|5x-x^2|}$ funksiyaning aniqlanish sohasini toping.
A) [1;5) B) (1;6) C) (5;6) D) [1;5)U(5;6)

12. $y = \frac{4}{x^2+4}$ funksiyaning qiymatlar sohasiga kirmaydigan eng katta manfiy butun sonni toping.
A) –1 B) –3 C) –2 D) –4

13. $y = x^3 \cdot (x^3 + 2)$ funksiya ekstrimumini toping.
A) –1 B) –2 C) –2; 0 D) –1; 0

14. Agar $a = 7^{200}$ va $b = 2^{700}$ bo`lsa, quyidagi munosabatlardan qaysi biri o`rinli bo`ladi?
A) $a < b$ B) $a > b$ C) $a = b + 1$ D) $a = b$

15. Dastlabki to`qqista natural sonlar yig`indisining kvadrati 2025 ga teng bo`lsa, shu sonlar kublarining yig`indisini toping.
A) 3025 B) 166375 C) 91125 D) 2025

16. Ifodani soddalashtiring:

$$\sqrt{\frac{1}{2}+\frac{1}{2}\cdot\sqrt{\frac{1}{2}+\frac{1}{2}cos\alpha}}(\pi<\alpha<2\pi)$$

A) $cos2\alpha$ B) $\cos\frac{\alpha}{2}$ C) $cos\alpha$ D) $\cos\frac{\alpha}{4}$

17. $\frac{5}{4-\frac{3-2x}{3x-\frac{3+2x}{2}}}=1$ tenglamani yeching.

A) $\emptyset$ B) $\frac{137}{176}$ C) $\frac{139}{176}$ D) $\frac{3}{16}$

18. $x^2-\sqrt{x^2-4x+4}=-4$ tenglamaning haqiqiy ildizlari sonini toping.
A) 1 B) 3 C) 4 D) 2

19. Agar $\frac{mn}{n^2+12m^2}=\frac{1}{7}$ ekanligi ma`lum bo`lsa, $\frac{3mn}{2n^2+5m^2}$ ni toping.
A) $\frac{4}{9}$ yoki $\frac{9}{13}$ B) $1\frac{5}{12}$ C) $\frac{12}{17}$ yoki $\frac{4}{9}$ D) $\frac{9}{13}$

20. Agar $a<0$ bo`lsa, $\frac{3}{x}<\frac{1}{a}$ tengsizlikni yeching.
A) $0<x<3a$ B) $x<3a$
C) $x>3a$ D) $2a<x<0$

21. $\begin{cases}|5x+4|\le 25\\ |x+6|\ge 11\end{cases}$ tengsizliklar sistemasi nechta butun musbat yechimga ega?
A) 3 B) 5 C) 4 D) $\emptyset$

22. $f(x)=-3x^2+9x+t-3$ funksiyaning maksimumi 3 ga teng. t ning qiymatini toping.
A) –0,75 B) –1,75 C) –2 D) –1

23. Uchlari A(2;3) va B(–1;–1) nuqtalarda bo`lgan AB kesmaning uzunligini toping.
A) 5 B) 10 C) 12 D) 6

24. Moddiy nuqta to`g`ri chiziq bo`ylab $x(t)=\frac{1}{2}t^3-3t^2+2t+3$ qonun bo`yicha harakatlanmoqda, bu yerda $x-$koordinatalar boshidan nuqtagacha bo`lgan masofa (metrlarda o`lchanadi), $t-$vaqt(sekundlarda o`lchanadi). $t=4$ sekund bo`lganda nuqtaning tezligini (m/s) toping.
A) 6 B) 8 C) 10 D) 2

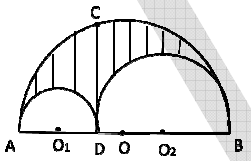
25. Uchburchakning ikki tomoni 10 va 16 ga, ular orasidagi burchak 60° ga teng. Shu uchburchakka ichki chizilgan aylana radiusini toping.
A) $\sqrt{3}$ B) $2\sqrt{3}$ C) $4\sqrt{3}$ D) $3\sqrt{3}$

26. O`tkir burchakli uchburchakning ikkita uchidan tushurilgan balandliklar kesishish nuqtasida uning uchlaridan boshlab hisoblaganda 3:1 va 2:3 nisbatda bo`linadi. Ushbu balandliklar orasidagi o`tkir burchakni toping.
A) 60° B) 30° C) 75° D) 45°

27. $\int\frac{dx}{\sqrt{9-x^2}}$ ni hisoblang.
A) $\arcsin\frac{x}{3}+C$ B) $arcsinx+C$
C) $\frac{1}{3}arcsinx+C$ D) $\frac{1}{3}\arcsin\frac{x}{3}+C$

28. ABCD to`g`ri to`rtburchak AC dioganali orqali ikkita ABC va ACD uchburchaklarga ajratilgan. Agar AB=6, AD=8 bo`lsa, ABC va ACD uchburchaklarga ichki chizilgan aylanalar markazlari orasidagi masofani toping.
A) 5 B) $\sqrt{5}$ C) $2\sqrt{5}$ D) 4

29. “Arximed pichog`i” deb ataluvchi shakl (shtrixlangan soha) ning yuzini toping. Bu yerda $CD\perp AB, CD=2$ ga teng. O, O_1 va O_2 aylanalar markazlari.



A) π B) 3π C) 2π D) $\frac{\pi}{2}$

30. $2x^2-3x+10$, $15+1{,}5x$ va $16-x^2$ ifodalari arifmetik progessiyaning ketma–ket hadlari bo`ladigan $x$ ning barcha qiymatlari yig`indisini toping.
A) 4 B) 3 C) 6 D) 2

31. MS Excel. A1=3, B1=4 bo`lsa, =?(A1; B1)+ЗНАЧЕН(??(B1; A1)) formulaning natijasi 68 bo`lishi uchun? va ?? belgilarning o`rniga qo`yish mumkin bo`lgan funksiyalar to`g`ri berilgan javobni aniqlang.
A) Степень, Сцепить B) Степень, Степень
C) Макс, СтепеньD) Сумм, Степень

32. Olim sakkizlik sanoq sistemasida (66; 77) oraliqdagi barcha butun sonlarni yozib chiqdi. Odil esa shu sonlardan 6 raqami qatnashgan barcha sonlarni o`chirib tashladi. Qolgan sonlar yig`indisini sakkizlik sanoq sistemasida aniqlang.
A) 214 B) 520 C) 424 D) 203

33. MSExcel. =ОСТАТ(30;10)–ЗНАЧЕН(ЗАМЕНИТЬ(СЦЕПИТЬ(–23; 6);3; 3;10)) funksiyaningnatijasinitoping.
A) 220 B) 364 C) 210 D) 226

34. Qanday teg yordamida HTML hujjatlarida hujjatning bir joydan boshqa joyiga o`tish yoki boshqa hujjatga o`tish mumkin?
A) < B > B) < A > C) < U > D) < L >

35. Paskal dasturlash tilida berilgan uchbu ifodaning qiymatini toping.
trund(sqrt(abs(trunk(5.5)+sqrt(100)*round(1.5)))
A) 4 B) 7 C) 5 D) 6

36. 102, 350, 162, 22 butun sonlarini barchasini yozish mumkin bo`lgan eng kichik asosli sanoq sistemasida shu sonlar yig`indisini aniqlang.
A) 2210 B) 1406 C) 1024 D) 1156

Variant 110.

1. $(2x-1)^4-28x^2+28x-7=18$ tenglamaning haqiqiy ildizlari ko`paytmasini toping.
A) 4 B) –2 C) –1 D) 1

2. Kubning dioganalidan ushbu dioganal bilan kesishmaydigan qirralargacha bo`lgan masofa 2 ga teng. Kubning hajmini toping.
A) $18\sqrt{2}$ B) $16\sqrt{2}$ C) $24\sqrt{2}$ D) $12\sqrt{2}$

3. Muntazam o`nsakkizburchakli piramidaning yon qirrasi sakkizga teng. Piramidaning balandligi 6 ga teng. Piramidaga tashqi chizilgan sferaning radiusini toping.
A) $5\frac{1}{3}$ B) $3\frac{1}{3}$ C) $6\frac{2}{3}$ D) $5\frac{2}{3}$

4. $13\frac{1}{3}:1\frac{1}{3}=0{,}2x:26$ tenglamani yeching.
A) 1200 B) 1500 C) 1300 D) 1250

5. $2x-3\sqrt{2x-1}+1=0$ tenglamaning ildizlari yig`indisini toping.
A) 3,5 B) 2 C) 1,5 D) 3

6. ABCD parallelogramm uchta uchining koordinatalari ma`lum: A(–3;1), B(3;–6), C(5;–4). D uchining absissasini toping.
A) 12 B) 14 C) 11 D) 8

7. $\vec{a}(1;4) va\ \vec{b}(-3;2)$ vektorlar berilgan. $\vec{a}+\lambda\vec{b}$ vektori $\vec{a}$ vektoriga perpendikulyar bo`ladigan λ sonini toping.
A) $\frac{17}{5}$ B) $-\frac{5}{17}$ C) $\frac{5}{17}$ D) $-\frac{17}{5}$

8. $\{x|x\epsilon N, 2{,}5\le x^2\le 30\}$ to`plamni nechta usul bilan ikkita kesishmaydigan qism–to`plamlarga ajratish mumkin?
A) 30 B) 12 C) 16 D) 8

9. $y=\ln^3 x$ funksiya grafigi berilgan bo`lib, uni parallel ko`chirish yordamida $y=\ln^3(x-a)+b$ funksiya grafigi hosil qilingan. Bunday parallel ko`chirishda koordinata boshi qanday nuqtaga ko`chadi? Bunda $x>a, x>0$
A) $N(a;b)$ B) $N(b;a)$ C) $N(a;-b)$ D) $N(-a;b)$

10. Qaysi jism(lar)ning simmetriya o`qlari chekli sonda?
1) shar; 2) prizma; 3) konus; 4) kub
A) 2, 3 B) 3, 4 C) 2, 3, 4 D) 1

11. $1-2+3-4+5-6+\cdots+2015-2016+2017$ ni hisoblang.
A) 1010 B) -1009 C) 1009 D) –1008

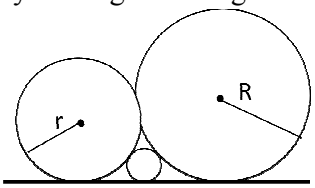
12. Bir nechta matematiklar va 10 nafar fiziklardan tashkil topgan bir guruh olimlarning o`rtacha yoshi 40 ga teng. Matematiklarning o`rtacha yoshi 35 ga, fiziklarning o`rtacha yoshi esa 50 ga tengligi ma`lum bo`lsa, matematiklar sonini toping.
A) 22 B) 24 C) 10 D) 20

13. $3-4\sin^2\alpha$ ifodani ko`paytma ko`rinishiga keltiring.
A) $4\cos(\alpha-60°)\cdot\sin(\alpha+60°)$
B) $-4\sin(60°-\alpha)\cdot\sin(\alpha+60°)$
C) $4\sin(\alpha-60°)\cdot\cos(\alpha+60°)$
D) $4\sin(60°-\alpha)\cdot\sin(\alpha+60°)$

14. Qandaydir a,b,c uchun
$cos4x=a\cos^4 x+bcos^2x+c$ ayniyat bajarilsa, $a-b$ ni toping.
A) 3 B) 7 C) 16 D) 0

15. Dioganallari 90° burchak ostida kesishuvchi $ABCD$ trapetsiyaning asoslari mos ravishda 9 va 3 ga teng. Dioganallarning kesishish nuqtasidan asoslariga parallel to`g`ri chiziq o`tkazilgan. Ushbu to`g`ri chiziqning yon tomonlar bilan chegaralangan kesma uzunligini toping
A) 3,6 B) 3,75 C) 4,25 D) 4,5

16. $R=16$ va $r=4$ radiusli ikkita aylana bir–biriga va to`g`ri chiziqqa urinadi. Shu to`g`ri chiziqqa va aylanalarga urinadigan kichik aylana radiusini toping.



A) $\frac{4}{9}$ B) $\frac{36}{25}$ C) $\frac{9}{16}$ D) $\frac{16}{9}$

17. ABCD trapetsiyaning dioganallari kesishish nuqtasidan BC tomonga AB=36 va CD=18 bo`lgan asoslariga parallel qilib o`tkazilgan kesma uzunligini toping.
A) 16 B) 15 C) 9 D) 12

18. Piramidaning asosi tomoni $3\sqrt{3}$ ga va o`tkir burchagi 30° ga teng bo`lgan rombdan iborat. Piramidaga yasovchisi asos tekisligi bilan 45° li

Konusning hajmini toping.

A) $\frac{\sqrt{3}\pi}{4}$ B) 3π C) $\frac{\sqrt{3}\pi}{8}$ D) 2π

19. ABCD parallelogramm uchta uchining koordinatalari ma`lum: A(0;1), B(1;3), C(11;3). D uchining absissasini toping
A) 10 B) 0 C) 14 D) 5

20. ABCD parallelogramm uchta uchining koordinatalari ma`lum: A(0;1), B(1;3), C(10;3). ABCD parallelogramm yuzini toping.
A) 27 B) 24 C) 18 D) 25

21. 10 nafar pochta xodimlaridan har biri 12 ta pochta quttisiga gazeta soldi. Ma`lumki, har bir pochta quttisiga 5 ta gazeta solindi. Jami bo`lib nechta pochta quttisi mavjud?
A) 22 B) 16 C) 12 D) 24

22. Ixtiyoriy x, y haqiqiy sonlar uchun $a = 6x^2 + \frac{1}{6}y^2$ va $b = 2|xy|$ bo`lsin. Qaysi tengliklar har doim o`rinli?
A) $a \geq b$ B) $a < b$ C) $a > b$ D) $a \leq b$

23. $y = \sin^2 x$ funksiya grafigi berilgan bo`lib, uni parallel ko`chirish yordamida $y = \sin^2(x - m) + n$ funksiya grafigi hosil qilingan. BUNday parallel ko`chirishda koordinata boshi qanday nuqtaga ko`chadi?
A) N(–m; n) B) N(–m; –n) C) N(m; –n) D) N(m;n)

24. Perimetri 58 ga teng bo`lgan to`g`ri burchakli uchburchak radiusi 5 ga teng bo`lgan aylanaga teshqi chizilgan. Gipotenuza uzunligini toping.

A) 21 B) 13 C) 25 D) 24

25. Dastlabki 10 ta tub son ketma–ket bir qatorga yozilib 6 ta raqam shunday o`chirildiki, natijada eng katta son hosil bo`ldi. Shu sonning birinchi raqamini toping.
A) 5 B) 7 C) 1 D) 3

26. Dastlabki 52 ta natural sonlar orasida nechtasi 3 yoki 4 ga karrali emas?
A) 26 ta B) 18 ta C) 20 ta D) 32 ta

27. Oxirgi raqami 1 bo`lgan va [49; 350] kesmaga tegishli bo`lgan barcha natural sonlar yig`indisini toping.
A) 5539 B) 4877 C) 5880 D) 5208

28. Agar $x = \frac{\sqrt{11}+1}{2}$ va $\frac{x^3-2x^2+6,5x-1}{x^2-x+1}$ kasrning qiymatini hisoblang.
A) $\sqrt{11} - 1$ B) $\sqrt{11} + 2$ C) $\sqrt{11}$ D) $\sqrt{11} + 1$

29. $(2x-1)^4 - 8x^2 + 8x - 2 = 8$ tenglamaning haqiqiy ildizlari ko`paytmasini toping.
A) -1 B) 1 C) 0 D) –2

30. Yarim sharga silindr ichki chizilganki, silindr bitta asosi yarim shar asosida yotadi. Agar silindr balandligining yarim shar radiusiga nisbati 4:9 kabi bo`lsa, silindr hajmining yarim shar hajmiga nisbatini toping.
A) $\frac{130}{243}$ B) $\frac{65}{243}$ C) $\frac{130}{729}$ D) $\frac{65}{81}$

31. To`g`ri tenglikni ko`rsating.
A) 1 K bit=1024 bayt B) 1 K bit=1000 bit
C) 1 Kbit=1024 bit D) 1 Kbit= 1 bayt

32.MS Excel dasturida. =ОСТАТ(220; 136)–ЗНАЧЕН(ЗАМЕНИТЬ(СЦЕПИТЬ(2;2);2;3;2)) buyrug`ining natijasini toping.
A) 66 B) 82 C) 62 D) 80

33. Informatika o`rganadigan asosiy ashyoni aniqlang.
A) algoritm B) dastur
C) kompyuter D) axborot

34. Ikkilik sanoq sistemasida amallarni bajaring:
$11100 \cdot (1 \cdot 2^5 + 1 \cdot 2^4 + 1 \cdot 2^2 + 1 \cdot 2^1)$
A) 1111101000 B) 10111101000
C) 10110101100 D) 10100101000

35.Faylga yo`l berilgan: C:\$My\ pictures\klass\ picture.bmp$ Bosh katalogni ko`rsating.
A) my pictures B) picture C) C: D) klass

36. MS Excel. A1=10; B1=14; B2=6 bo`lsa, =СУММ(A1–B2;A2–B1) funksiyaning javobi 5 ga teng bo`lishi uchun A2 katakda qanday son bo`lishi kerak?
A) 16 B) 15 C) 17 D) 14

Variant 111

1. $x < 0$ da $|x - |x - 8| - 8|$ ifodani modul belgisiz yozing.
A) 0 B) $2x - 16$ C) $16 - 2x$ D) $2x$

2. Ko`phadni ozod hadini toping.

$$f(x) = (2x+1)^2 \cdot (3x+2)^3 \cdot (x-1)^{202} + (x-1)^{2000} + 17$$

A) 17 B) 33 C) 20 D) 26

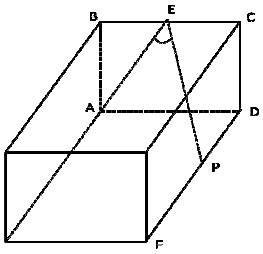
3. $y = \sqrt{4 - (x-3)^2}$ va $y = 0$ funksiya grafiklari bilan chegaralangan soha yuzini toping.
A) 2π B) 3π C) 4π D) π

4. Tomonlari 6, 10 va 12 ga teng bo`lgan uchburchakka aylana ichki chizilgan. Aylanaga urinma shunday o`tkazilganki, u uchburchakning ikkita katta

tomonlarini kesib o`tadi. Bu Urinma ajratgan uchburchakning perimetrini toping.
A) 14 B) 16 C) $8\sqrt{2}$ D) $7\sqrt{3}$

5. O`tkir burchagi 45° ga, balandligi va katta asosining yig`indisi 8 ga teng bo`lgan teng yonli trapetsiyalar ichida eng katta yuzaga ega bo`lganining kichik asosini toping.
A) 4 B) 6 C) 2 D) 8

6. Shaklda berilgan kub uchun BE=EC, FP=PD bo`lsa, $cosx$ ni toping.



A) $\frac{\sqrt{10}}{30}$ B) $\frac{10\sqrt{3}}{33}$ C) $\frac{\sqrt{30}}{10}$ D) $\frac{\sqrt{30}}{30}$

7. Axborot– resurs markazida 20 ta kompyuter o`rnatilmoqda, bunda ayrimlari kabel bilan ulanmoqda. Har bir kompyuterdan 6 kabel chiqishi lozim bo`lsa, jami bo`lib nechta kabel kerak?
A) 56 B) 60 C) 120 D) 40

8. a va b natural sonlarning eng katta umumiy bo`luvchisi 4 ga teng bo`lsa, $2a+b$ va a sonlarning eng katta umumiy bo`luvchisi nechaga teng.
A) 2 B) 1 C) 4 D) bir qiymatli aniqlab bo`lmaydi

9. Markazi M(–3;4) nuqtada bo`lib, koordinata boshidan o`tuvchi aylana tenglamasi ko`rinishini toping.
A) $x^2+y^2+6x-8y=0$
B) $x^2+y^2-6x-8y=0$
C) $x^2+y^2+6x-8y=9$
D) $x^2+y^2+6x-8y=16$

10. Agar $a=6^{300}$ va $b=3^{600}$ bo`lsa, quyidagi munosabatlardan qaysi biri o`rinli bo`ladi?
A) $a=b$ B) $a<b$ C) $a>b$ D) $a=b+1$

11. Agar $\cos\left(\frac{\pi}{4}-\alpha\right)=\sqrt{\frac{1}{8}}$ bo`lsa, $sin2\alpha$ ning qiymatini toping.
A) 0,75 B) $-0{,}5$ C) $-0{,}75$ D) 0,25

12. Qandaydir m,n uchun $(x+2)(x+m)=x^2+nx+6$ ayniyat bajarilsa, $5m-2n$ ni toping.
A) 9 B) 5 C) 0 D) 1

13. $\begin{cases} x-y=9 \\ lgx+lgy=1 \end{cases}$ tenglamalar sistemasining yechimlaridan iborat barcha x va y larning yig`indisini toping.
A) 22 B) 14 C) 11 D) 28

14. $(m^2+n^2+9)x^2+2(m+n+3)x+3=0$ tenglama haqiqiy yechimlarga ega bo`lsa, $4m-n$ ni toping.
A) -3 B) -4 C) 8 D) 9

15. $\frac{3\cdot 2^{2x-1}}{4^x-9^x}>3+\left(\frac{4}{9}\right)^x$ tengsizlikni yeching.
A) $(0;1)$ B) $(-0{,}5;0)$ C) $(-1;0)$ D) $(0;0{,}5)$

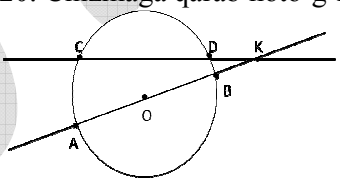
16. $y=-\frac{2}{x^2+2}$ funksiyaning qiymatlar sohasini toping.
A) $(0;\infty)$ B) $(0;1)$ C) $(0;1]$ D) $[-1;0)$

17. ABC uchburchakda BD va CE medianalar o`zaro perpendikulyar. Agar $BD=1{,}5, CE=3$ bo`lsa, ABC uchburchak yuzini toping.
A) 1 B) 4 C) 2 D) 3

18. $\vec{a}(1;1)$ va $\vec{b}(0;-1)$ vektorlar berilgan $2\vec{a}-3\vec{b}$ vektorni toping.
A) $(2;-5)$ B) $(5;2)$ C) $(2;5)$ D) $(-2;5)$

19. 8 nafar ishchilardan 3 ta ishchidan iborat brigada tuzish kerak. Bu ichni nechta usulda amalga oshirsa bo`ladi?
A) 56 B) 120 C) 84 D) 24

20. Chizmaga qarab noto`g`ri tasdiqni aniqlang.



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

21. Dastlabki 10 ta tub son ketma–ket bir qatorga yozilib oltita raqam shunday o`chirildiki, natijada eng katta son hosil bo`ldi. Shu sonning oltinchi raqamini toping.
A) 2 B) 3 C) 9 D) 7

22. Arifmetik progressiyada 10–hadi 7 ga, 7–hadi esa 10 ga teng. Progressiyaning 9–hadini toping.
A) 13 B) 14 C) 8 D) 10

23. $3-4\sin^2\alpha$ ifodani ko`paytma ko`rinishiga

A) $4\cos(\alpha-60°)\cdot\sin(\alpha+60°)$
B) $-4\sin(60°-\alpha)\cdot\sin(\alpha+60°)$
C) $4\sin(\alpha-60°)\cdot\cos(\alpha+60°)$
D) $4\sin(60°-\alpha)\cdot\sin(\alpha+60°)$

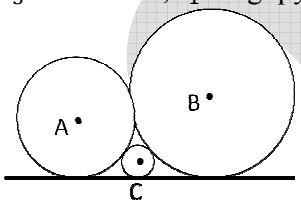
24. Agar $-3<x<2$ bo`lsa, $|x-2|+|x+3|$ ifodani soddalashtiring.
A) 1 B) 5 C) $-2x-2$ D) $2x+1$

25. $2,(99):x=5:4$ tenglamani yeching
A) 2,5 B) 2,4 C) 2,(5) D) 2,(4)

26. $\begin{cases} y-x=3 \\ y-z=4 \\ x^2+y^2+z^2=30 \end{cases}$ tenglamalar sistemasini yeching.
A) $(3;1{,}4),\left(-\frac{2}{3},-\frac{5}{3},-\frac{1}{3}\right)$
B) $(-3{,}3;\ -0{,}3;\ -4{,}3),(2;5;1)$
C) $(1;4;0),(2;5;1)$
D) $\left(-3\frac{1}{3};\ -\frac{1}{3};-4\frac{1}{3}\right),(2;5;1)$

27. Radiusi 5 ga teng bo`lgan aylanaga ichki chizilgan uchburchakning $45°$ li burchagi qarshisidagi tomon uzunligini toping.
A) 5 B) $2\sqrt{2}$ C) $5\sqrt{2}$ D) 10

28. Umumiy urinmaga ega bo`lgan A, B, C markazli aylanalar o`zaro tashqi urinadilar. Ularning radiuslari mos ravishda $r_1, r_2\ va\ r_3$ bo`lsin. Agar $r_2=12$ va $r_3=3$ bo`lsa, r_1 ning qiymatini toping.



A) 36 B) 9 C) 12 D) 8

29. Konusning yasovchisi $2\sqrt{3}$ ga teng. Konusning uchidan unga ichki chizilgan shar markazigacha bo`lgan masofa 2 ga teng. Konus yasovchisi va asos tekisligi orasidagi burchakni toping.
A) $2arctg3$ B) $\frac{\pi}{4}$ C) $2arctg\frac{1}{3}$ D) $\frac{\pi}{3}$

30. $y=x, y=-x$ va $y=-2$ to`g`ri chiziqlar hosil qilgan uchburchak yuzini toping.
A) 1 B) 4 C) 2 D) 3

31. MS Excel. A1=100; B1=120; A2=146 bo`lsa, = СУММА(A1–B2; A2–B1) funksiyaning javobi 46 ga teng bo`lishi uchun B2 katakda qanday son bo`lishi kerak?
A) 80 B) 90 C) 110 D) 40

32. Web brauzerda matnning ko`rinishi quyidagicha bo`lishi uchun HTML kodi qanday bo`lishi kerak?
6. Chala kvadrat tenglama $ax^4+c=0$ ko`rinishida bo`lmaydi.
A) <ul type=”circle”> Chala kvadrat tenglama <s>ax⁴+c=0 </s> ko`rinishida bo`lmaydi.
B) <ol start=”6”>
Chala kvadrat tenglama ax⁴+c=0</s> ko`rinishda bo`lmaydi.
C) <ol start=”6”>Chala kvadrat tenglama <s>ax⁴+c=0<s> ko`rinishda bo`lmaydi.
D) <s><site> Chala kvadrat tenglama ax²+c=0 ko`rinishda bo`lmaydi.</site></s>

33. Pascal tilida quyidagi dastur qismining bajarilishi natijasida ekranga chiqariladigan axborotni aniqlang:
a:=’Uzbekistan’; K:=Length(a); write (k, a);
A) 10Uzbekistan B) $K=10$
C) Uzbekistan 10 D) 10 Uzbekistan
34. MSExcel. =ОСТАТ(–100;40)–ЗНАЧЕН(ЗАМЕНИТЬ(СЦЕПИТЬ(–23;6);3;3;10)) funksiyaningnatijasinitoping.
A) 230 B) 364 C) 210 D) 226

35. Axborotni uzatish o`lchov birligi sifatida…. qabul qilingan.
A) 1 megabit B) 1 bit C) 1 bot D) 1 bayt

36. 240, 301, 220, 332 butun sonlarni yozish mumkin bo`lgan eng kichik asosli sanoq sistemasida shu sonlar yig`indisini aniqlang.
A) 2143 B) 1535 C) 3013 D) 1423

Variant 112

1. Manfiy x, y sonlar uchun $a=8x+\frac{1}{8}y$ va $b=2\sqrt{xy}$ bo`lsin. Qaysi tengsizlik har doim o`rinli?
A) $a>b$ B) $a<b$ C) $a\geq b$ D) $a\leq b$

2. $y=f(x)$ funksiya D to`plamda no`qatiy kamayuvchi bo`lsin. D to`plamdan olingan ixtiyoriy a, b elementlari uchun $a<b$ quyidagi munosabatlardan qaysi biri o`rinli?
A) $f(a)\leq f(b)$ B) $f(b)<f(a)$
C) $f(a)=f(b)$ D) $f(b)\leq f(a)$

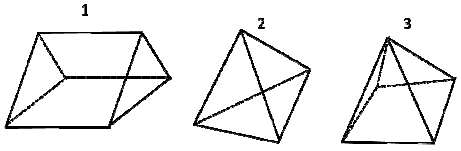
3. $(a+2b)^3$ ko`phadni standart ko`rinishga keltiring va to`rtinchi hadini koeffitsiyentini toping.
A) 4 B) 8 C) 6 D) 3

4. $a+b+c=4$ va $\frac{1}{a+b}+\frac{1}{b+c}+\frac{1}{c+a}=1$ bo`lsa, $a+b+c-\left(\frac{a}{b+c}+\frac{b}{c+a}+\frac{c}{a+b}\right)$ ifodaning qiymatini toping.
A) 1 B) 3 C) 9 D) 6

5. $log_4\left(8\left(1+\frac{1}{x}\right)^2\right)=\sqrt{2-log_4\frac{x}{x+1}}=log_4\frac{1}{2}$ tenglamaning haqiqiy ildizlari yig`indisini toping.
A) $\sqrt{2}-\frac{1}{3}$ B) $\sqrt{2}+1$ C) $\sqrt{2}+\frac{1}{3}$ D) $\sqrt{2}-1$

6. $x^2+y^2+z^2=6x+8y+10z-50$ bo`lsa, x ni toping.
A) 27 B) cheksiz ko`p C) 1 D) 3

7. Rasmda ko`rsatilgan ko`pyoqlardan qaysi birida 5 ta yoq, 8 ta qirra bor.



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

8. ABCD teng yonli trapetsiyaning AD katta asosi 15 ga teng. Uning AC dioganali orqali ACD uchburchak hosil qilingan va unga aylana ichki chizilgan. Agar aylana CD yon tomoni D uchidan boshlab hisoblanganda 6 va 4 ga teng kesmalarga ajratgan holda urinsa, BD diogalali uzunligini toping.
A) 13 B) 14 C) 12 D) 10

9. Piramidaning asosi tomoni 6 va o`tkir burchagi 30° ga teng bo`lgan rombdan iborat. Ushbu piramidaga ichki chizilgan konusning yasovchisi asos tekisligi bilan 60° li burchak tashkil etadi. Konus hajmining piramida hajmiga nisbatini toping.
A) $\frac{\pi}{24}$ B) $\frac{\pi}{12}$ C) $\frac{\pi}{6}$ D) $\frac{\pi}{8}$

10. Balandligi 2 ga va asosining radiusi 1 ga teng bo`lgan konus sharga ichki chizilgan. Shar sirtining yuzini toping.
A) 6π B) $6{,}75\pi$ C) $6{,}25\pi$ D) 3π

11. ABCD parallelogrammning uchta uchi koordinatalari ma`lum: $A(0;1).B(1;2),C(13;2)$. ABCD parallelogramm yuzini toping.
A) 6 B) 12 C) 8 D) 14

12. $\overline{ab}$ va $\overline{ba}$ ikki xonali sonlar. Agar $\overline{ab}-\overline{ba}=63$ bo`lsa, a^2+b^2-2ab ning qiymatini toping.
A) 49 B) 64 C) 16 D) 36

13. Yarim sharga silindr shunday ichki chizilganki, silindrning bitta asosi yarim shar asosida yotadi. Agar silindr balandligining yarim shar radiusiga nisbati 2: 5 nisbatini toping.
A) $\frac{36}{75}$ B) $\frac{65}{92}$ C) $\frac{72}{125}$ D) $\frac{65}{81}$

14. Uchlari A(5; 2) va B(–1; 2) nuqtalarga bo`lgan AB kesmaning uzunligini toping.
A) 5 B) 10 C) 12 D) 6

15. $\int_{-1}^{1}(5x^2-x^3+5x)dx$ aniq integralni hisoblang.
A) $\frac{3}{4}$ B) $\frac{10}{3}$ C) 0 D) $\frac{5}{24}$

16. $y=x^3\cdot(x^3-54)$ funksiya ekstrimumini toping.
A) –729;0 B) –243;0 C)–243 D) –729

17. Ifodaning eng katta qiymatini toping.
$$\cos^2\alpha-sin\alpha\cdot cos\alpha$$
A) $\frac{2+\sqrt{2}}{2}$ B) $\frac{\sqrt{2}-2}{2}$ C) 0 D) $\frac{1+\sqrt{2}}{2}$

18. 3^{101} soni 101 ga bo`linganda qoldiqni toping.
A) 1 B) 3 C) 9 D) 27

19. $\frac{11n+3}{13n+4}$ kasr qisqaradigan [2;30] kesmaga tegishli natural n sonlar nechta?
A) 4 B) 3 C) 9 D) 5

20. Asoslarining radiuslari 4 va 5 ga teng bo`lgan kesik konus va unga tengdosh silindrning balandliklari bir xil. Silindr asosining radiusini toping.
A) $\sqrt{29}$ B) $\sqrt{19}$ C) $\sqrt{20\frac{1}{3}}$ D) $\sqrt{20\frac{2}{3}}$

21. Beshta a_1,a_2,a_3,a_4,a_5 tub son ayirmasi 6 ga teng bo`lgan arifmetik progressiyani tashkil qiladi. $\frac{a_1+a_3}{2}$ ni toping.
A) bir qiymatli aniqlab bo`lmaydi B) 13 C) 11 D) 17

22. $5\frac{1}{3}x:\frac{5}{8}=11\frac{1}{3}:1\frac{8}{9}$ tenglamani yeching.
A) $\frac{9}{13}$ B) $\frac{90}{131}$ C) $\frac{45}{64}$ D) $\frac{90}{101}$

23. Uchburchakning ichki burchaklari o`suvchi arifmetik progressiyaning ketma–ket hadlarini tashkil etadi. Shu uchburchakning eng katta va eng kichik burchaklari yig`indisini toping.
A) 135° B) 110° C) 90° D) 120°

24. a va b natural sonlarning EKUB i 30 ga, ko`paytmasi 36000 ga teng bo1lsa, shu sonlarning EKUK ini toping.
A) 1200 B) 900 C) 1800 D) 1000

25. To`g`ri burchakli ABC uchburchak CD balandlik bilan BCD va ACD uchburchaklarga bo`lingan. Shu uchburchaklar yarim perimetrlari mos ravishda 7 va 24 ga teng. ABC uchburchakning yarim perimetrini

toping.
A) 26 B) 21 C) 25 D) $22\sqrt{2}$

26. Konus uchidan unga ichki chizilgan shar markazigacha masofa 2 ga, konus yasovchisi esa 4 ga teng. Konus yasovchisi va asos tekislik orasidagi burchakning tangensini toping.
A) $\frac{3}{4}$ B) $\frac{4}{3}$ C) 4 D) 3

27. Ushbu $\begin{cases} y = x^8 \\ y = x + 5 \end{cases}$ tenglamalar sistemasi nechta yechimga ega?
A) 2 B) 0 C) 4 D) 1

28. 10 nafar o`quvchilardan iborat guruhda 3 nafar a`zodan tashkil topgan qo`mitani tanlab olish kerak. Bu ishni nechta usulda amalga oshirsa bo`ladi?
A) 56 B) 120 C) 30 D) 84

29. $f(x)$ funksiya berilgan $(a;b)$ intervalda differensiallanuvchi bo`lsin. $\left(f(x)\right)^4$ funksiyaning $(a;b)$ intervalda hosilasini toping.
A) $\left(f(x)\right)^3 \cdot f'(x)$ B) $3\left(f(x)\right)^3 \cdot f'(x)$
C) $3\left(f(x)\right)^3$ D) $4\left(f(x)\right)^3 \cdot f'(x)$

30. Ketma–ket x, y, z natural sonlar uchun $\frac{x}{y}+\frac{y}{z}+\frac{z}{x}+\frac{y}{x}+\frac{x}{z}+\frac{z}{y}$ son butun bo`lsa, $x+y-z$ ni toping.
A) 2 B) 3 C) 0 D) 1

31. Qaysi javobda faqat qobiq dasturlar keltirilgan?
A) Norton Commander, MS DOS, Volkov Commander
B) Vista, DOS3.3, Total Commander
C) Linux, Norton Commander
D) Total Commander, Norton Commander

32. A1=–7, B1=8, B2=4 bo`lsin. Quyidagi formula natijasi $-23$ ga teng bo`lishi uchun A2 katakka keltirilishi kerak bo`lgan qiymatni aniqlang.
=ЕСЛИ(ИЛИ(A1+B2<=A2*B1; A1*B1>0); A1*B2+B1–A2; A1*B1+B2+A2)
A) 3 B) 1 C) 0 D) 5

33. Raqamli signalni analogli signalga va aksinchaga aylantirib beruvchi qurilma nomini toping.
A) deshifrator B) telefaks
C) modem D) Shifrator

34. Paskal. Quyidagi dastur natijasini aniqlang.
vara, b, c: integer;
Begin a:=30; b:=6; a:=a/*b;
if a>b then c:=a+4*b else c:=a–4*b;
write(c; 1); end.
A) 114 B) 6 C) 66 D) Kompilyatsiyada xatolik xabari chiqadi.

35. Microsoft Excel. =ОСТАТ(–40; 16) – ЗНАЧЕН(ЗАМЕНИТЬ(СЦЕПИТЬ(1; 2);1; 2;2)) buyrug`ining natijasini toping.
A) 6 B) 2 C) 1 D) 8

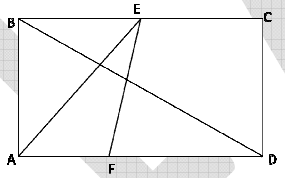
36. Bir terabayt necha gigabaytga teng?
A) 2^{25} gigabayt B) 2^{10} gigabayt
C) 2^{30} gigabayt D) 2^{20} gigabayt

Variant 113

1. Agar $|x-6| = \frac{x}{2} + a$ tenglama bitta yechimga ega bo`lsa, a parametr nechta qiymat qabul qiladi?
A) 1 B) 2 C) 0 D) cheksiz ko`p

2. Agar $f(x) = asinx + bsin2x - 2$ funksiya uchun $f(-3) = -2$ shart bajarilsa, $f(3)$ qiymatni toping.
A) –2 B) –1 C) bir qiymatli aniqlanmaydi D) 1

3. Rasmda ABCD to`g`ri to`rtburchak. Agar BD dioganal 13 sm, AF= 5sm va FD=7 sm ga teng bo`lsa, AEF Uchburchakning yuzini (sm^2) toping.



A) 12,5 B) 15 C) 13,5 D) 10

4. $\frac{6x-1}{5} + 0{,}1 = \frac{8x+1}{2} - \frac{9x}{5}$ tenglamani yeching.
A) –1 B) 2 C) –0,6 D) 1

5. $\frac{2,(99)-3,2}{x} = \frac{5\frac{1}{2}-3\frac{2}{3}}{7:2}$ praporsiyadan x ni toping.
A) $-\frac{21}{55}$ B) $-\frac{5}{7}$ C) $\frac{22}{59}$ D) $\frac{49}{73}$

6. $x^2 + ax + 3 = 0, x^2 - 3x - a = 0$ tenglamalar faqat bitta umumiy haqiqiy yechimga ega bo`lsa, a ni toping.
A) –3 B) 3 C) 5 D) 4

7. Teng yonli uchburchakning asosiga parallel o`rta chizig`i 7 ga, perimetri esa 30 ga teng. Uning yon tomonining asosiga nisbatini toping.
A) $\frac{4}{7}$ B) $\frac{2}{7}$ C) $\frac{3}{7}$ D) $\frac{1}{7}$

8. $\left(\left[\frac{218}{37}\right]^2 + [-12,(99)]\right)^2$ ni hisoblang. Bu yerda $[a] - a$ sonining butun qismi.
A) 196 B) 169 C) 144 D) 121

9. a ning qanday qiymatida $P(x) = 2x^{12} - ax^6 +$

yig`indisi 6 ga teng bo`ladi?
A) 2 B) 3 C) –1 D) –4

10. $\frac{2x}{3x-\frac{4-3x}{4x-\frac{2+3x}{2}}} = 2$ tenglamani yeching.
A) -1 B) -1 va 1 C) -1 va 0,8 D) 1

11. $y = 3 - \sqrt{16 - \sqrt{4x^2 - 4\sqrt{3}x + 3}}$ funksiyaning qiymatlar sohasiga nechta butun son tegishli?
A) 4 ta B) 3 ta C) 5 ta D) 7 ta

12. Sotuvchi mahsulotni A so`mdan sotmoqda. Agar mahsulot narxini 20% ga oshirib, so`ngra 20% ga kamaytirilsa, u holda sotuvchi foyda ko`radimi yoki zararmi?
A) 2% zarar B) 4% zarar C) 4% foyda D) 2% foyda

13. Oxirgi raqami 1 bo`lgan va $[50; 350]$ kesmaga tegishli bo`lgan barcha natural sonlar yig`indisini toping.
A) 4877 B) 5880 C) 5539 D) 5208

14. $x^3 + x^2 + 180$ ko`phadni ko`paytuvchilarga ajrating.
A) $(x+6)\cdot(x^2-6x+30)$
B) $(x+30)\cdot(x^2+5x+6)$
C) $(x-6)\cdot(x^2-5x=30)$
D) $(x+6)\cdot(x^2-5x+30)$

15. $1\frac{3}{7} : 4\frac{2}{7} = 7\frac{1}{3}x : 3{,}3$ tenglamani yeching.
A) $\frac{1}{4}$ B) $\frac{13}{20}$ C) $\frac{3}{20}$ D) $\frac{1}{5}$

16. $3\cdot x^{log_5 9} - 5\cdot 3^{log_5 x} - 12 = 0$ tenglama ildizlari ko`paytmasini (Agar ildizi bitta bo`lsa ildizini) toping.
A) 25 B) 10 C) 5 D) 1

17. $y = \sqrt[4]{\frac{\sqrt[6]{17-15x-2x^2}}{x+3}}$ funksiyaning aniqlanish sohasini toping.
A) $(-3; 1]$ B) $[-8; 5\}\cup(-3; 1]$
C) $(-3; +\infty)$ D) $(-3; -1]$

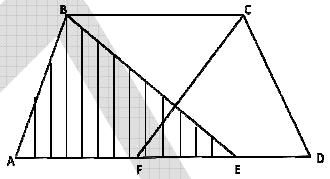
18. ABC teng yonli (AB=AC) uchburchakning BD bissektrisasi AC tomonni AD=8 va DC=4 kesmalarga ajratsa, BD bissektrisa uzunligini toping.
A) 10 B) $2\sqrt{5}$ C) 5 D) $2\sqrt{10}$

19. Teng yonli trapetsiyaning katta asosi 75, yon tomoni 20 va dioganali 65 bo`lsa, trapetsiyaning yuzini toping.
A) 1108 B) 2016 C) 908 D) 1008

20. Kubning dioganalidan ushbu dioganal bilan kesishmaydigan qirrasigacha bo`lgan masofa 6 ga teng. Kubning hajmini toping.
A) $450\sqrt{2}$ B) $432\sqrt{2}$ C) $216\sqrt{2}$ D) $360\sqrt{2}$

21. M va N to`plamlarning kamida bittasida mavjud bo`lgan barcha elementlardan tuzilgan to`plam qanday nomlanadi?
A) M yoki N to`plamning ko`paytmasi
B) M va N to`plamning birlashmasi
C) Universal to`plam
D) M va N to`plamning kesishmasi

22. Agar rasmda shtrixlangan ABE uchburchakning yuzi 12 sm^2 bo`lsa, CFD uchburchakning yuzini (sm^2) toping. Bu yerda AD||BC, BE||CD va CF||AB.



A) 24 B) 4 C) 8 D) 12

23. Uchburchakning balandligi $\sqrt{7}$ ga teng va u asosni 1:7 nisbatda bo`ladi. Balandlikka parallel bo`lib, uchburchakni tengdosh bo`laklarga bo`luvchi kesma uzunligini toping.
A) 1,6 B) 2 C) 1,5 D) 1

24. M va N to`plamlar kesishmasi qanday belgilanadi?
A) MN B) MUN C) M∩N D) M·N

25. Bir kunlik dars jadvalida turli fanlar bo`yicha 3 ta dars bor. 10 ta fandan iborat bo`lgan shunday jadvallar sonini toping.
A) 720 B) 990 C) 120 D) 210

26. Quyida keltirilgan jumlalardan to`g`risini toping.
A) Uchburchakning tashqi burchagi, ikkala ichki burchaklar yig`indisiga teng.
B) Burchak tomonlaridan teng masofada uzoqlashgan burchak ichidagi nuqta shu burchakning bissektrisasida yotadi.
C) Uchburchakning istalgan bir tomoni qolgan ikki tomon yig`indisidan katta
D) Agar ikki kesma kesishmasa ular o`zaro parallel bo`ladi

27. $5\cdot\left[12\frac{2}{7} + 5\frac{3}{7}\right] - 8\cdot\left[3\frac{2}{3}\right]\cdot[2, (9)]$ ni hisoblang. Bu yerda [a]–asonning butun qismi.
A) 15 B) 13 C) 12 D) 37

28. Tarozining bir pallasiga g`isht qo`yildi va muvozanatni saqlash uchun tarozining ikkinchi pallasiga yarimta g`isht va 1 kg tosh qo`yildi. G`ishtning og`irligini (kg) toping.

29. Agar $x < 0$ va $0 < z < y$ bo`lsa, $\frac{|y-z|+|x-y|}{|x|+|z|}$ ifodani soddalashtiring.
A) $\frac{2y+z+x}{z-x}$ B) 1 C) $\frac{2y-z-x}{z-x}$ D) -1

30. $2 + 5 + 8 + \cdots + x = 57$ tenglamani qanoatlantiradigan x musbat sonni toping.
A) 23 B) 14 C) 17 D) 20

31. Rim sznoq sistemasida to`g`ri tenglikni aniqlang.
A) CLXXXIII+XXIX=CCXIII
B) XXX·XXIX=DCCCLXVIII
C) CCIII:XXIX=VII
D) CCLXXVII–LXXXVIII=CXC

32. Windows operatsion tizim (Sistema) ida fayl nomi noto`g`ri berilgan javobni toping.
A) (Informatika).doc B) [Informatika].doc
C) informatika.doc D) <Informatika>.doc

33. MS Excel. =ОСТАТ(–40;32)–ЗНАЧЕН(ЗАМЕНИТЬ(СЦЕПИТЬ(1; 2);1; 1;1)) hisoblash amalga oshirilgandagi qiymatni toping.
A) 26 B) 12 C) –12 D) –26

34. Internet qanday tarmoq turiga mansub?
A) mintaqaviy B) korporativ
C) global D) local

35. Paskal tilining quyidagi takrorlash operatorlaridagi takrorlanishlar sonini aniqlang:
I:=2014; While i<=1997 do i:=i–1;
A) 18 B) 0 C) 1 D) 17

36. A1=14, A2=16, B1=19, B2=20 bo`lsin. Natijani 35 ga teng bo`ladigan formulani aniqlang.
A) =СЧЕТЕСЛИ(A1:B2;"<7")
B) =СТЕПЕНЬ(B2;A1+1)
C) =МИН(–A1–B1;A2–B1)
D) =МАКС(ABS(A1)+B2;A2+B1)

Variant 114.

1. $(x^2 + 1)^2 + 5(x^4 - 1) - 6(x^2 - 1)^2 = 0$ tenglamaning ildizlari ko`paytmasini toping.
A) 0 B) 2,5 C) $-\frac{1}{8}$ D) $-\frac{5}{7}$

2. $\frac{2^x-3^x}{3\cdot 2^{x-1}} > 3 + \left(\frac{2}{3}\right)^x$ tengsizlikning butun sonlardan iborat yechimlari nechta?
A) 0 B) 1 C) 2 D) 3

3. $y = \sqrt{4x^2 - 4x + 1} + \sqrt{x^2 - 6x + 9}$ funksiyaning eng kichik qiymatini toping.
A) 5 B) 2,5 C) 1,5 D) 3,25

4. ABCD kvadratning AB tomonini gipotenuza qilib kvadrat tashqarisida teng yonli to`g`ri burchakli AEB uchburchak chizilgan. ABCD kvadratning AD tomonini teng ikkiga bo`luvchi F nuqta belgilandi. Agar BD=10sm bo`lsa, EF kesmaning uzunligini(sm) toping.
A) $5\sqrt{6}$ B) $6\sqrt{2}$ C) $5\sqrt{2{,}5}$ D) $4\sqrt{3}$

5. Piramidaning asos katetlari 5 va 12 ga teng bo`lgan to`g`ri burchakli uchburchakdan iborat. Piramidaning barcha yon qirralari asos tekisligi bilan 45° li burchak tashkil etsa piramidaning katta yon yog`I yuzini toping.
A) 36 B) 32,5 C) 45 D) 42,25

6. Muntazam to`rtburchakli prizma asosining yuzi 36 ga teng. Agar prizmaning dioganali yon qirrasi bilan 30° li burchak tashkil qilsa, prizmaning yon sirti nimaga teng.
A) $140\sqrt{6}$ B) $143\sqrt{6}$ C) $144\sqrt{6}$ D) $141\sqrt{6}$

7. Agar $a > 0$ bo`lsa, $y = \frac{a}{|x+a|}$ funksiyaning gorizontal asimtotasini toping.
A) $x = -a$ B) $y = 0$ C) $y = -a$ D) $x = 0$

8. $log_{\sqrt{6}-\sqrt{5}}(241 + 44\sqrt{30})$ ni hisoblang.
A) -4 B) -5 C) 4 D) 6

9. $\frac{16x^2}{(1+x^2)(9x^2+1)}$ ifodaning eng katta qiymatini toping.
A) 3 B) $\frac{4}{5}$ C) 1 D) 2

10. $\frac{x-2}{x+3} + \frac{3x+9}{x-2} = -4$ tenglama ildizlari yig`indisini toping.
A) –2,25 B) –3 C) –2 D) –0,5

11. Qaysi jism(lar)ning simmetriya tekisliklari chekli sonda?
1) shar; 2) prizma; 3) konus
A) 1 B) 2 C) 2, 3 D) 3

12. Yuk tashish mashinasi 240 km yo`lni bosib o`tishi kerak edi. Mashina yo`lning o`rtasida 30 daqiqa to`xtab qolgach tyezligini 20 km/soatga oshirib, belgilangan joyga o`z vaqtida yetib keldi. Mashinaning boshlang`ich tezligini(km/soat) toping.
A) 45 B) 70 C) 20 D) 60

13. $12:2x = 24:2$ tenglamani yeching.
A) 2 B) 1 C) 12 D) 0,5

14. Agar $\begin{cases} tg\alpha + ctg\alpha = -3 \\ sin\beta \cdot cos\alpha = 0{,}2 \end{cases}$ bo`lsa, $\cos(\alpha - \beta)$ ning qiymatini toping.
A) 0,8 B) –0,4 C) 0,6 D) –0,6

15. $y = (x + 8) \cdot e^{x-8}$ funksiyaning minimum nuqtasini toping.
A) –8 B) –10 C) –9 D) –7

16. Radiusi 3 ga teng bo`lgan O nuqta ABC to`g`ri burchakli uchburchakning AC gipotenuzasida yotadi. Agar OC kesmaning uzunligi 5 ga teng bo`lsa, aylana uchburchakning katetlariga urinsa, uchburchak yuzini toping.
A) $17\frac{3}{8}$ B) $18\frac{3}{8}$ C) $17\frac{1}{8}$ D) $18\frac{1}{8}$

17. Radiusi 4 ga teng bo`lgan sharga yasovchisi 5 ga teng bo`lgan konus ichki chizilgan. Konus yasovchisining asos tekisligi bilan tashkil etgan burchak sinusini toping.
A) $\frac{5}{16}$ B) $\frac{5}{12}$ C) $\frac{5}{8}$ D) $\frac{4}{5}$

18. Dastlabki 10 ta tub son ketma–ket bir qatorga yozilib 6 ta raqam shunday o`chirildiki, natijada eng katta son hosil bo`ldi. Shu sonning sakkizinchi raqamini toping.
A) 7 B) 2 C) 1 D) 3

19. Dastlabki 100 ta natural sonlar orasidan nechtasi 4 yoki 6 ga karrali emas?
A) 67 ta B) 64 ta C) 63 ta D) 66 ta

20. Agar $tg\alpha = -2$ bo`lsa, $\frac{3cos2\alpha+2}{1-3\cos^2\alpha}$ ning qiymatini toping.
A) –0,5 B) –0,95 C) 0,5 D) –3,16

21. Agar $c = 4$ bo`lsa, $\frac{4c^2}{(c-2)^2}:\left(\frac{1}{(c+2)^2}+\frac{1}{(c-2)^2}-\frac{2}{c^2+4}\right)$ ifodaning qiymatini toping.
A) 60 B) 90 C) 120 D) 30

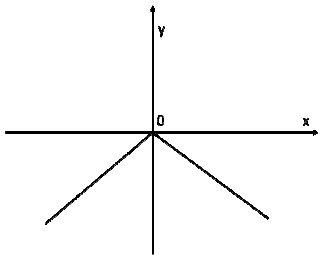
22. $y = 3-\sqrt{16-\sqrt{4x^2-4\sqrt{3}x+3}}$ funksiyaning qiymatlar sohasiga tegishli bo`lmagan eng kichik natural sonni toping.
A) 3 B) 5 C) 4 D) 1

23. $\frac{3x-1}{x-2} = 4+\frac{x-1}{x-2}$ tenglamaning haqiqiy ildizlari ko`paytmasini (agar ildiziyagona bo`lsa ildizini) toping.
A) 8 B) 12 C) 4 D) –8

24. Agar $a < 0$ va $b > 0$ bo`lsa, $ax + a > bx + b$ tengsizlikning katta butun yechimini toping.
A) –2 B) 0 C) 2 D) –1

25. $y = \frac{\sqrt{x+1}+\sqrt{7x-6-x^2}}{|5x-x^2|}$ funksiyaning aniqlanish sohasini toping.
A) $[1;5)$ B) $(5;6]$ C) $[1;6]$ D) $[1;5)\cup(5;6]$

26. Rasmda $y = a\cdot\sqrt{(x-b)^2+2c}+d$ funksiya grafigi tasvirlangan. Quyidagi javoblardan qaysi biri



A) $a^2bc > 0$ B) $\frac{b+a^2c}{a} = 0$
C) $\frac{cb^2}{\sqrt{d-a}} < 0$ D) $\frac{db^2}{\sqrt{c-a}} > 0$

27. ABCD to`g`ri to`rtburchak AC dioganali orqali ikkita ABC va ACD uchburchaklarga ajratilgan. Agar AB=6, AD=8 bo`lsa, ABC va ACD uchburchaklarga ichki chizilgan aylanalar markazlari orasidagi masofani toping.
A) $2\sqrt{5}$ B) 4 C) 5 D) $\sqrt{5}$

28. $x^{\lg^2 x-4lgx+1} < 10000$ tengsizlikning eng katta natural yechimini toping.
A) 1001 B) 999 C) 10001 D) 9999

29. ABCD trapetsiya berilgan, uning asoslari AD=5, BC=3. CD tomonda yotuvchi M nuqta va A nuqta orqali o`tkazilgan to`g`ri chiziq trapetsiyaning ikki yondosh bo`laklarga bo`ladi. CD:MD nisbatni toping.
A) 1:3 B) 1:4 C) 1:2 D) 2:3

30. Balandligi 3 ga va asosining radiusi 1 ga teng bo`lgan konus sharga ichki chizilgan. Shar sirtining yuzini toping.
A) $11\frac{2}{9}\pi$ B) $12\frac{2}{3}\pi$ C) $11\frac{1}{9}\pi$ D) $12\frac{1}{9}\pi$

31. Bir nechta bola 36 dona olmani yeyishmoqchi edi. Ali “Men olmalarni shunday taqsimlay olamanki, har birimizda 5 tadan ko`p olma bo`lmaydi” dedi.
Vali esa “Men olmalarni shunday taqsimlay olamanki, xech birimiz olmasiz qolmaymiz va barchamizda olmalar soni turlicha bo`ladi”. Bolalar sonini aniqlang.
A) 10 ta B) 11 ta C) 8 ta D) 9 ta

32. Faqat arxivlangan fayllar kengaytmasi berilgan javobni ko`rsating.
A) .zip, .rar, .atj B) .htm, .arj, .txt
C) .zip, .jpg, .rar D) .avi, .com, .bac

33. Operatsion sistema(tizim) ni faollashtiruvchi dastur–…
A) BIOS B) Total Commander
C) Command.com D) Boot Record

34. Paskal. Quyidagi dastur natijasini aniqlang.
Var X, Y, A:Integer;
Begin X:=25; Y:=15; IF X<Y THEN

begin A:=Y; Y:=(X+Y) /2; X:=A*X; end; Write (X'=', X, 'Y=', Y; END
A) X=0Y=0
B) X=375Y=20
C) Kompilyatsiyada xatolik xabari chiqadi
D) X=20Y=375

35. 16 bayt necha bitga teng?
A) 164 B) 132 C) 160 D) 128

36.MS Excel. =ОСТАТ(–20;12)–ЗНАЧЕН(ЗАМЕНИТЬ(СЦЕПИТЬ(2; 4);2; 3;1)) funksiyaning natijasini toping.
A) –23 B) -19 C) -29 D) -17

Variant 115

1. Agar $a = 5, b = -2$ bo`lsa, $(a^3 + a^2b + ab^2 + b^3) \cdot (a - b)$ ifodaning qiymatini toping.
A) 625 B) 609 C) 615 D) 641

2. $\frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \frac{1}{5} = P$ bo`lsa, $\frac{5}{2} + \frac{10}{3} + \frac{17}{4} + \frac{26}{5}$ yig`indi P dan qancha ko`p?
A) 15 B) 14 C) 8 D) 13

3. ABCD teng yonli trapetsiyaning AD katta asosi 15 ga teng. Uning AC dioganali orqali ACD uchburchak hosil qilingan va unga aylana ichki chizilgan. Agar aylana CD yon tomonini D uchidan boshlab hisoblaganda 6 va 4 kesmalarga ajratgan holda urinsa, BD dioganalning uzunligini toping.
A) 14 B) 10 C) 12 D) 13

4. $x \cdot 4^{log_x 5} \leq 20$ tengsizlikning butun sonlardan iborat yechimlari nechta?
A) 4 B) 0 C) 2 D) 1

5. $f(x) = \frac{x^2+x}{x+16}, g(x) = \frac{x+16}{x^2+x}$ funksiyalar bir xil qiymat qabul qiladigan x ning haqiqiy qiymatlari ko`paytmasini toping.
A) 24 B) –16 C) 4 D) –12

6. $2,(99) : x = 5 : 4$ tenglamani yeching.
A) 2,(4) B) 2,4 C) 2,(5) D) 2,5

7. Qaysi javobda berilgan xossa 2 soni uchun o`rinli?
A) u eng kichik butun son
B) u tub son
C) u na tub, na murakkab son
D) u murakkab son

8. ABCD rombning tomoni dioganallarining o`rta proporsionalioga teng. Rombning burchaklarini toping.
A) $50°; 130°$ B) $60°; 120°$
C) $40°; 140°$ D) $30°; 150°$

9. Agar $\begin{cases} \frac{1}{2x+y} + \frac{1}{2x-y} = \frac{4}{9} \\ \frac{1}{2x-y} - \frac{1}{2x+y} = \frac{2}{9} \end{cases}$ bo`lsa, $x \cdot y$ ning qiymatini toping.
A) 6 B) 9 C) 15 D) 12

10. 8 mart kuni 10 nafar o`g`il bola o`quvchilardan har biri 8 nafar qiz bola sinfdoshiga bittadan sovg`a berdi. Ma`lumki, sinfdagi har bir qiz 5 ta sovg`a oldi. Sinfda nechta qiz bola o`qiydi?
A) 24 B) 18 C) 8 D) 16

11. Arifmetik progressiyaning ikkinchi va o1`n yettinchi hadlari yig`indisi 35 ga , o`n to`qqizinchi va o`n yettinchi hadlari ayirmasi 5 ga teng. Progressiyaning dastlabki yigirmata hadi yig`indisini toping.
A) 400 B) 410 C) 250 D) 380

12. Agar $\frac{4^x+8^x+12^x}{5^x+10^x+15^x} = \frac{250}{128}$ bo`lsa, x ni toping.
A) –5 B) –2 C) –3 D) –4

13. $\frac{3}{2-\frac{x-2}{2-\frac{5+x}{7}}} = 8$ tenglamani yeching.
A) $\frac{228}{69}$ B) $\frac{225}{69}$ C) $\frac{229}{69}$ D) $\frac{231}{69}$

14. $log_3(log_3 10 \cdot lg 27)$ ni hisoblang.
A) $log_3 2$ B) 1 C) 2 D) 4

15. Aylanaga o`tkazilgan vatar uni 5:7 nisbatda bo`ladi. Ushbu vatarga tiralgan, aylanaga ichki chizilgan katta burchaklarni toping.
A) $105°$ B) $135°$ C) $120°$ D) $150°$

16. $[200; 1000]$ kesmada 2, 3, 5 va 7 sonlariga bo`lganda qoldiq 1 ga teng bo`ladigan natiral sonlar nechta?
A) 2 B) 3 C) 4 D) 1

17. $\sqrt{6-x} < x$ tengsizlikning butun yechimlari o`rta arifmetigini toping.
A) 4,5 B) 1 C) 2,5 D) 3,5

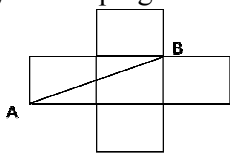
18. 1, 2, 3, …, 9 raqamlardan nechta har xil to`rt xonali sonlar tuzish mumkin (bu yerda to`rt xonali sonlar turli raqamlardan tashkil topgan)?
A) 15120 B) 3024 C) 1612 D) 504

19. $y = \frac{x^3-64}{x-4}$ funksiyaning eng kichik butun qiymatini toping.
A) 12 B) 15 C) 9 D) 6

20. Akvariumning bo`yi 150 sm, eni 110 sm, balandligi 80 sm. Suv sathi yuqoridan 10 sm pastda bo`lishi

uchun akvariumga necha litr suv quyish kerak?
A) 1255 B) 115,5 C) 1455 D) 1155

21. Bechta bir xil kvadratlardan rasmdagidek shakl hosil qilingan. Agar $AB = 3\sqrt{2}$ bo`lsa, shaklning yuzini toping.



A) 18 B) 24 C) 6 D) 9

22. Dastlabki o`n uchta natural sonlar yig`indisining kvadrati 8281 ga teng bo`lsa, shu sonlar kublarining yig`indisini toping.
A) 1296 B) 753571 C) 46656 D) 8281

23. To`g`ri tenglikni aniqlang.
A) $(-124)^{\frac{7}{3}} = \sqrt[3]{124^7}$
B) $(5^{log_{25}9} - log_{\frac{1}{3}}27)^{((\sin^2 18+\sin^2 468^2)\sqrt[3]{2}-\sqrt{3})} = 0$
C) $\sqrt{(x-2)^2} = |x-2|$
D) $\frac{4(2a^2-a-1)}{5(2a+1)} = \frac{4}{5}(a-1), a\epsilon R$

24. 2001 ta butun musbat sonning ko`paytmasi 105 ga, yig`indisi 2021 ga teng. Bu sonlarning eng kattasi nimaga teng?
A) 15 B) 105 C) 21 D) 35

25. To`g`ri burchakli uchburchak gipotenuzasiga tushirilgan balandligi 3 ga, to`g`ri burchak bissektrisasi 4 ga teng. Uchburchakning yuzini toping.
A) 36 B) 96 C) 64 D) 72

26. 9 nafar ishchidan 3 ta kishidan iborat brigada kerak. Bu ishni nechta usulda amalga oshirsa bo`ladi?
A) 27 B) 36 C) 84 D) 120

27. Kvadratning tomonlari koordinata o`qlariga parallel va 6 ga teng. Uning markazi (2; 1) nuqtada joylashgan. Kvadrat tomonlarining absissa o`qibilan kesishish nuqtalari koordinatalarini toping.
A) (1; 0), (5; 0) B) $(0; 0), (6; 0)$
C) $(-1; 0), (5; 0)$ D) $(-1; 0), (0; 5)$

28. “Ikkita irratsional sonlar ayirmasi irratsional son bo`ladi” tasdiqni qanday inkor etish mumkin?
A) Ikkita irratsional sonlar ayirmasi ratsional son ham bo`lishiga misol keltirish yetarli
B) “Ixtiyoriy irratsional son ikkita irratsional sonlar ayirmasidir” tasdig`ini isboti yetarli
C) Hech qanday. Keltirilgan tasdiq to`g`ri.
D) “Ixtiyoriy irratsional son ikkita ratsional sonlar ayirmasidir” tasdig`ini isboti yetarli

29. $x^2 + y^2 + z^2 = 6x + 8y + 10z - 50$ bo`lsa, $x + y + z$ ni toping.
A) 12 B) 10 C) 6 D) 0

30. Raqamlari yig`indisi 2001 ga teng bo`lgan eng kichik natural sonning birinchi raqami nimaga teng?
A) 4 B) 1 C) 3 D) 2

31. Aniq bir predmet sohasi bo`yicha masalalar yechishga mo`jjallangan dasturlar majmuasi bu–…
A) dasturlar yaratish vositalari
B) yordamchi dasturiy ta`minot
C) tizim (sistema) li dasturiy ta`minot
D) amaliy dasturiy ta`minot

32. Quyidagi html–hujjat kodi yozilishi bo`yicha kataklar ketma–ket sanalganda birinchi katakda qanday shriftdagi ro`yxat qo`llanilgan?
<table><tr><td>test
</td><td colspan=3>test
</td></tr><tr><td>colspan=2>
test</td><td>test
</td><td><storong>
test
</storong></td></tr></table>
A) Og`ma shriftli tartiblangan ro`yxat
B) Oddiy shriftli tartiblangan ro`yxat
C) O`g`ma shriftli marketlangan ro`yxat
D) Qalin shriftli marketlangan ro`yxat

33. MS Excel. =ОСТАТ(–20;12)–ЗНАЧЕН(ЗАМЕНИТЬ(СЦЕПИТЬ(3; 2);2; 3;2)) hisoblash amalga oshirilgandagi qiymatni toping.
A) 23 B) -28 C) -20 D) -26

34. A=”Boot Record operatsion dasturni faollashtiruvchi dasturdir.”B=”Freeware– mutloqo bepul, birlamchi kodi ochiq dasturiy ta`minotdir” “C–“ Paradox operatsion sistemadir. Shu mulohazalar asosida quyidagi mantiqiy ifidaning qiymatini toping.
C or nto (B or not A)
A) Ifodada xatolik bor
B) ba`zi mulohazalarning qiymatini aniqlab bo`lmaydi
C) Rost
D) Yolg`in

35. MS Excel. A1=4, B1=2, A2=3, B2=10 bo`lsa, =?(??(A1; A2);??(B1; B2)) formulaning natijasi 1024bo`lishi uchun? va ?? belgilarning o`rniga qo`yish mumkin bo`lgan funksiyalar to`g`ri berilgan javobni aniqlang.
A) Степень, Сцепить B) Степень, Степень
C) Макс, СтепеньD) Сумм, Степень

36. Paskal. Quyidagi dastur natijasini aniqlang.
Var X, Y :Integer;

Begin X:=20; Y:=40; IF X<Y THEN
begin X:=(X+Y) div 2; Y:=X*Y; end ELSE begin
Y:=(X+Y) div2; X:=X*Y; end;
Write('X=', X, 'Y=', Y); End
A) Kompilyatsiyada xatolik xabari chiqadi
B) X=20Y=40
C) X=800Y=80
D) X=60Y=1200

Variant 116

1. Dastlabki 48 ta natural sonlar orasida nechtasi 3 yoki 4 ga karrali emas?
A) 28 ta B) 23 ta C) 24 ta D) 16 ta

2. ABC uchburchakning BC va AC tomonlarida mos ravishda D va E nuqtalar shunday olindiki, bunda $\angle BAD = 50°, \angle ABE = 30°$ bo`lsa, $\angle BED$ ni toping.
A) 40° B) 80° C) 70° D) 50°

3. Qavariq ABCDEF oltiburchakda ichki burchaklari o`zaro teng. Agar $AB = 3, BC = 4, CD = 5, EF = 2$ bo`lsa, AF tomon uzunligini toping.
A) 7 B) 2 C) 6 D) bir qiymatli aniqlab bo`lmaydi

4. Teng yonli uchburchak asosidagi burchak tangensi $\sqrt{3}$ ga teng. Uning yon tomoniga o`tkazilgan medianasi va asosi orasidagi burchakni toping.
A) 60° B) 30° C) 15° D) 45°

5. Bir gala chumchuqlar bittadan shoxga qo`nganda bitta chumchuq ortib qoladi, ikkitadan qo`nsa, bitta shox ortib qoladi. Nechta chimchuq va nechta shox bo`lgan.
A) 6; 8 B) 8; 6 C) 4; 3 D) 3; 4

6. m va n natural sonlar $m^2 = n^2 + 173$ tenglikni qanoatlantirsa, n ni toping.
A) 169 B) 85 C) 87 D) 86

7. $\alpha = 30°, a = (tg\alpha)^{tg\alpha}, b = (ctg\alpha)^{ctg\alpha}$, $c = (ctg\alpha)^{tg\alpha}$ bo`lsa, quyidagilardan qaysi biri o`rinli?
A) $b > c > a$ B) $c > b > a$
C) $a > c > b$ D) $b > a > c$

8. Natural n sonning kvadrati 3 ga bo`linganda nechta qoldiq hosil bo`lishi mumkin?
A) 1 B) 2 C) 3 D) 0

9. $x^2 + 100x + 2 = 0$ kvadrat tenglamaning haqiqiy yechimlari $x^2 + mx + n = 0$ tenglamaning haqiqiy yechimlarining kublariga teng. $m^3 - 3mn$ ning qiymatini toping.
A) 125 B) 50 C) 100 D) 81

10. $[1; 10]$ kesmada berilgan $f(x)$ funksiyaning eng katta va eng kichik qiymatlari teng bo`lsin. U holda $f(9) - f(5)$ ifodaning eng katta qiymatini toping.
A) 0 B) 4 C) 9 D) $f(4)$

11. Muntazam tetrayedrning balandligi 2 ga teng bo`lsa, uning to`la sirtini toping.
A) $6\sqrt{3}$ B) $12\sqrt{3}$ C) $18\sqrt{3}$ D) $3\sqrt{3}$

12. ABC uchburchakning AB, BC, CA tomonlariga mos ravishda shunday M, N, P nuqtalar olinganki, AM:AB=BN:BC=CP:CA=1:3 munosabat o`rinli. MNP uchburchak yuzasi 5 ga teng bo`lsa, ABC uchburchak yuzasini toping.
A) 25 B) 20 C) 15 D) 10

13. Uchburchakning medianalari m_1, m_2 va m_3 ga teng bo`lsa, uning tomonlari qanday aniqlanadi?
A) $2m_1; 2m_2; 2m_3$
B) $\frac{2}{3}\sqrt{2m_1^2 + 2m_2^2 - m_3^2}; \frac{2}{3}\sqrt{2m_1^2 + 2m_3^2 - m_2^2}$; $\frac{2}{3}\sqrt{2m_2^2 + 2m_3^2 - m_1^2}$
C) $\frac{\sqrt{3}}{2}m_1; \frac{\sqrt{3}}{2}m_2; \frac{\sqrt{3}}{2}m_3$;
D) $\frac{1}{2}\sqrt{2m_1^2 + 2m_2^2 - m_3^2}; \frac{1}{2}\sqrt{2m_1^2 + 2m_3^2 - m_2^2}$; $\frac{1}{2}\sqrt{2m_2^2 + 2m_3^2 - m_1^2}$

14. a, b manfiy butun sonlar uchun $a = b + 5$ va $a + b - c = 13$ bo`lsa, c ning qiymatini toping.
A) –20 B) –10 C) –17 D) –19

15. Agar $\int_a^b (4x + 5)dx = 225$ va $a + b = 10$ bo`lsa, $b - a$ ni toping.
A) 6 B) 2 C) 7 D) 9

16. Amfiteatr qatorlari soni 10 ta bo`lib, har bir keyingi qatordagi o`rinlar soni o`zidan oldingi qatordagidan 20 ta ortiq. Agar oxirgi qatorda 280 ta o`rin bo`lsa, amfiteatr necha o`rinlik?
A) 2800 B) 1900 C) 2400 D) 2100

17. Agar $a > 0$ bo`1sa, $y = \frac{a}{|x-a|}$ funksiyaning vertikal asimptotasini toping.
A) $y = -a$ B) $x = -a$ C) $x = a$ D) $y = 1 - a$

18. $\int_1^2 -4x^{-4}dx$ integralni hisoblang.
A) $1\frac{1}{6}$ B) $1\frac{5}{6}$ C) $-\frac{1}{6}$ D) $-1\frac{1}{6}$

19. $log_2 10 \cdot lg4$ ni hisoblang.
A) $lg40$ B) 1 C) 2 D) 3

20. Radiusi 3 ga teng bo`lgan aylanaga ichki chizilgan uchburchakning 30° li burchagi qarshisidagi tomon uzunligini toping.
A) 3 B) 6 C) 2 D) $\sqrt{2}$

21. $21:7 = x:2\frac{1}{3}$ tenglamani yeching.
A) $2\frac{1}{3}$ B) 7 C) $\frac{1}{7}$ D) $\frac{7}{9}$

22. $log_X 4(1{,}75 - \sqrt{3}) = 2$ tenglama ildizlari yig`indisini toping.
A) $\sqrt{3} - 2$ B) 0 C) $2 - \sqrt{3}$ D) $2\sqrt{3}$

23. To`g`ri tenglikni aniqlang.
A) $(-5^2)^{\frac{1}{2}} = -5$
B) $\sqrt[3]{log_2 \frac{1}{256}} = -2$
C) $\frac{4(x^2-4)}{5(x-2)} = \frac{4}{5}(x+2), x \epsilon R$
D) $(4\sin^2\frac{7\pi}{9} + 4\sin^2\frac{5\pi}{18} + 4cos4\left(\pi + \frac{\pi}{4}\right))^0 = 1$

24. $\int_{-1}^{1}(2x^5 - 3x^3 + x + 1)dx$ aniq integralni hisoblang.
A) $\frac{5}{24}$ B) $\frac{3}{4}$ C) 2 D) $\frac{7}{3}$

25. Markazi M(2; 5) nuqtada bo`lib, koordinata boshidan o`tuvchi aylana tenglamasi ko`rinishini toping.
A) $x^2 + y^2 - 4x - 10y = 0$
B) $x^2 + y^2 - 4x + 10y = 0$
C) $x^2 + y^2 - 4x - 10y = 9$
D) $x^2 + y^2 - 4x - 10y = 29$

26. $cos3 + \cos\{\pi\}$ ifodaning qiymati nechaga teng? (bunda$\{x\} - x$ kasr qism)
A) 0 B) 1 C) 0,5 D) –1

27. Quyidagi keltirilgan jumlalardan noto`g`risini toping.
A) Uchburchakning istalgan bir tomoni qolgan ikki tomoni yig`indisidan kichik
B) Burchak bissektrisasining ixtiyoriy nuqtasidan burchak tomonlarigacha bo`lgan masofalar o`zaro teng.
C) Uchburchakning katta burchagi qarshisida katta tomon yotadi
D) Uchburchakning tashqi burchaklari har doim o`tmas bo`ladi

28. M nuqta $ABCA_1B_1C_1$ muntazam prizma ABC asosidagi BC tomonining o`rtasi bo`lsin. Prizmaning yon qirrasi $\sqrt{11}$ ga, asosining tomonlari 16 ga teng bo`lsa, $B_1M$ to`g`ri chiziq va ABB_1A_1 yon yoqi orasidagi burchakning sinusini toping.
A) $\frac{1}{2}$ B) 0,6 C) $\frac{2}{3}$ D) 0,8

29. Juft sondagi hadlardan tashkil topgan arifmetik progressiyaning ayirmasi 3 ga teng. Toq nomerli hadlar yig`indisi va juft nomerli hadlar yig`indisi mos ravishda 16 va 28 ga teng bo`lsa, uning barcha hadlari nechta?
A) 12 B) 8 C) 6 D) 10

30.$\overline{ab}$ va $\overline{ba}$ ikki xonali sonlar. Agar $\overline{ab} - \overline{ba} = 36$ bo`lsa, $a^2 + b^2 - 2ab$ ning qiymatini toping.
A) 16 B) 36 C) 9 D) 25

31. 111, 213, 22, 333 butun sonlarni yozish mumkin bo`lgan eng kichik asosli sanoq sistemasida shu sonlar yig`indisini toping.
A) 2011 B) 1123 C) 10010 D) 1234

32. A1=5, A2=10, B1=7, B2=8 bo`lsin. Natijani 10 ga teng bo`ladigan formulani aniqlang.
A) =СЧЕТЕСЛИ(A1:B2;"<7")
B) =СТЕПЕНЬ(B2;A1+1)
C) =МИН(–A1–B1;A2–B1)
D) =МАКС(ABS(A1)–B2;A2)

33. Sinovdan o`tkazish muddatiga ega bo`lgan dasturlar–bu…
A) Freeware B) Shareware
C) Hardware D) Software

34. MS Excel. =ОСТАТ(–16;4)–ЗНАЧЕН(ЗАМЕНИТЬ(СЦЕПИТЬ(2; 4);2; 2;1)) hisoblash amalga oshirilgandagi qiymatni toping.
A) -23 B) 19 C) -30 D) -21

35. Paskal tilida qaysi javobda A[k]=k formula orqali aniqlangan N ta elementli massivning elementlari qiymatini kamayish tartibida ekranga chiqaruvchi dastur lavhasi yozilgan?
A) For k:=1 downto N do writeln(A[k]);
B) For x:=N downto 1 do writeln (A[x]);
C) For m:=1 to N do writeln(A[m]);
D) For j:=S to 1 do writeln (A[N–j+1]);

36. Microsoft Word dasturining fayl kengaytmasi qaysi javobda to`g`ri keltirilgan.
A) doc B) xls C) rar D) img

Variant 117.

1. Biror ikki xonali son va uning raqamlari o`rnini almashtirib, ularni qo`shganda biror sonning kvadrati bo`ladigan barcha ikki xonali sonlarni toping.
A) 29, 38, 47, 56, 65, 74, 83, 92
B) 29, 35, 45, 56, 65, 74, 83, 92
C) 29, 32, 47, 56, 65, 74, 83, 92
D) 29, 38, 45, 56, 65, 74, 83, 92

2. $log_{\frac{\sqrt{3}+1}{2}}(28 - 16\sqrt{3})$ ni hisoblang.
A) 6 B) –4 C) 4 D) –5

3.Axborot– resurs markazida 15 ta kompyuter o`rnatilmoqda, bunda ayrimlari kabel bilan ulanmoqda.

Har bir kompyuterdan 4 kabel chiqishi lozim bo`lsa, jami bo`lib nechta kabel kerak?
A) 24 B) 30 C) 40 D) 60

4. $\begin{cases} |6+x| \le 10, \\ |2x+7| \ge 15 \end{cases}$ tengsizliklar sistemasi nechta butun yechimga ega?
A) 8 B) 4 C) 6 D) 7

5. Piramidaning asosi tomoni $6\sqrt{3}$ ga va o`tkir burchagi $30°$ ga teng bo`lgan rombdan iborat. Piramidaga yasovchisi asos tekisligi bilan $45°$ li burchak tashkil etuvchi konus ichki chizilgan. Konusning hajmini toping.
A) $\frac{27\sqrt{3}\pi}{8}$ B) $\frac{3\pi}{4}$ C) $\frac{9\sqrt{3}\pi}{16}$ D) $\frac{3\pi}{8}$

6. Muntazam o`noltiburchakli piramidaning yon qirrasi 10 ga, piramidaning balandligi 6 ga teng. Piramidaga tashqi chizilgan sferaning radiusini toping.
A) 7 B) 8 C) $8\frac{2}{3}$ D) $8\frac{1}{3}$

7. Birinchi poyezdda 792 ta, ikkinchi poyezdda 864 ta, Uchinchi poyezdda 936 ta yo`lovchilar uchun joy bor. Agar vagonlardagi yo`lovchilar uchun mo`jjallangan joylarning soni bir xil bo`lsa, har bir poyezd eng kamida nechta vagonga ega bo`ladi?
A) 11, 12, 13 B) 9; 12; 24
C) 8; 16; 24 D) 11, 13, 14

8. $\frac{mn}{n^2+12m^2} = \frac{1}{7}$ ekanligi ma`lum bo`lsa, $\frac{3mn}{2n^2-5m^2}$ ni toping.
A) $1\frac{5}{12}$ B) $\frac{9}{13}$ C) $\frac{4}{9}$ yoki $\frac{9}{13}$ D) $\frac{4}{9}$ yoki $\frac{12}{17}$

9. $0,(\overline{7a})$ davriy kasrning qiymati $\frac{8}{11}$ ga teng bo`lsa, a ning qiymatini toping. (bu yerda $\overline{7a}$ ikki xonali son)
A) 2 B) 5 C) 0 D) 7

10. To`g`ri to`rtburchakning eni 16% ga orttirildi, bo`yi esa 16% ga kamaytirildi. Natijada uning yuzi qanday o`zgaradi?
A) 2,56% ga ortadi B) 2,56% ga kamayadi
C) 1,6% ga ortadi D) o`zgarmaydi

11. Dastlabki sakkizta natural sonlar yig`indisining kvadrati 1296 ga teng bo`lsa, shu sonlar kublarining yig`indisini toping.
A) 1296 B) 287496 C) 4356 D) 46656

12. Oxirgi raqami 1 bo`lgan va $[47; 350]$ kesmaga tegishli bo`lgan barcha natural sonlar yig`indisini toping.
A) 4877 B) 5880 C) 5539 D) 5208

13. Agar $x + \frac{1}{x} = 3$ bo`lsa, $x^4 - 7x^2 + 3$ ifodaning qiymatini toping.
A) 3 B) 5 C) 4 D) 2

14. $2x^3 - 5x^2 + 3x + 42 = 0$ tenglamaning haqiqiy ildizi x_0 bo`lsa, $\frac{x_0+5}{3}$ ning qiymatini toping.
A) $\frac{7}{3}$ B) 2 C) 1 D) $\frac{4}{3}$

15. $y = \frac{\sqrt{6x-x^2-5}+\sqrt{x-3}}{\sqrt{x^2+8x+18}}$ funksiyaning aniqlanish sohasini toping.
A) [1;3] B) [1; 5] C) [3; 5] D) $[5; \infty)$

16. $y = 1 - \sqrt{9 - \sqrt{2x^2 + 6\sqrt{2}x + 9}}$ funksiyaning qiymatlat sohasiga tegishli bo`lmagan eng kichik natural va eng katta manfiy butun sonlar ayirmasini toping.
A) 4 B) 5 C) -2 D) -6

17. Agar $f(x) = \frac{x^2+3x}{x^2+1}$ bo`lsa, $f'(0)$ ni toping.
A) 5 B) 3 C) 4 D) 0

18. $\int \frac{dx}{\sqrt{9-x^2}}$ ni hisoblang.
A) $\frac{1}{3}\arcsin\frac{x}{3} + C$ B) $\arcsin\frac{x}{3} + C$
C) $\frac{1}{3}arcsinx + C$ D) $arcsinx + C$

19. AB kesmaning bir tomonida $AA_1 = 3$ va $BB_1 = 1$ perpendikulyar o`tkazilgan. $A_1B$ va $AB_1$ to`g`ri chiziqlarning kesishish nuqtasidan AB kesmagacha bo`lgan masofani toping.
A) 0,25 B) 1,2 C) 1,5 D) 0,75

20. Balandligi h ga yon yoqi va asos tekisligi orasidagi burchak $60°$ ga teng bo`lgan muntazam piramidaga ichki chizilgan sharning hajmini toping.
A) $\frac{4h^3}{81}\pi$ B) $\frac{16h^3}{81}\pi$ C) $\frac{2h^3}{9}\pi$ D) $\frac{4h^3}{27}\pi$

21. Axborot– resurs markazida 30 ta kompyuter o`rnatilmoqda, bunda ayrimlari kabel bilan ulanmoqda. Har bir kompyuterdan 4 kabel chiqishi lozim bo`lsa, jami bo`lib nechta kabel kerak?
A) 56 B) 40 C) 60 D) 120

22. Quyida keltirilgan jumlalardan noto`g`risini toping.
A) Ikkita tomoni teng bo`lgan uchburchak teng yonli uchburchak deb ataladi
B) Teng yonli uchburchakning medianasi uning ham bissektrisasi, ham balandligi bo`ladi
C) O`z–o`zini kesishmaydigan yopiq siniq chiziq ko`pburchak deb ataladi
D) Uchburchak uchidan shu uch qarshisidagi tomon

yotgan to`g`ri chiziqqa tushirilgan perpendikulyar uchburchakning balandligi deyiladi.

23. ABCD teng yonli trapetsiyaning AC dioganali 8 ga teng va AD katta asos bilan 15° li burchak tashkil etadi. Trapetsiyaning yuzini toping.
A) 8 B) 20 C) 16 D) 18

24. Markazi O nuqtada bo`lgan aylanadan tashqaridagi P nuqtadan aylanani A va B nuqtalarda kesuvchi to`g`ri chiziq o`tkazilgan. Agar PA=3, AB=4 va PO=$\sqrt{46}$ bo`lsa, aylananing radiusini toping.
A) 3,5 B) 4 C) 2,5 D) 5

25. ABC uchburchakning AD medianasi AB va AC tomonlar bilan mos ravishda 60° va α burchaklarni tashkil qiladi. AB=$\sqrt{3}$, AC=3 bo`lsa, $sin\alpha$ ning qiymatini toping.
A) $\frac{\sqrt{3}}{2}$ B) $\frac{1}{2}$ C) $\frac{1}{3}$ D) $\frac{2\sqrt{2}}{3}$

26. Agar $a = 11{,}4$ va $b = -1{,}4$ bo'lsa, $a^3 + a^2b - ab^2 - b^3$ ni toping.
A) 1280 B) 128 C) 1480 D) 1440

27. To'g'ri tenglikni aniqlang. ($a\epsilon R, \frac{m}{n}\epsilon Q$)
A) $(a+1)^{\frac{m}{n}} = \sqrt[n]{(a+1)^m}$ B) $\sqrt{(a+1)^2} = a+1$
C) $(a+1)^{-1} = \frac{1}{a+1}$ D) $\sqrt{(a^2+1)^2} = a^2+1$

28. Agar $\frac{x}{a} + \frac{y}{b} + \frac{z}{c} = 1$ va $\frac{a}{x} + \frac{b}{y} + \frac{c}{z} = 0$ bo`lsa, $\frac{a^2}{x^2} + \frac{b^2}{y^2} + \frac{c^2}{z}$ ni toping.
A) 1 B) 2 C) 0 D) 0,5

29. x_1 va x_2 sonlar $x^2 - 3x - 4 = 0$ tenglamaning ildizlari bo`lsa, $(x_1^2x_2 + x_1x_2^2)^2$ ni hisoblang.
A) 144 B) 196 C) 121 D) 169

30. Taqqoslang: $a = \frac{7}{15}, b = \frac{9}{20}$ va $c = \frac{8}{17}$
A) $c > a > b$ B) $a > c > b$
C) $b > c > a$ D) $c > b > a$

31. Paskal tilida quyidagi dastur lavhasi bajarilgach b o`zgaruvchi qiymatini aniqlang:
x:=–1; y:=–1; a:=0,1; IF(x*x+y>0) AND (a=1/10) THEN b:=true else b:=false;
A) 1 B) false C) –1 D) true

32. MS Excel. A1=30; B1=26; A2=25 bo`lsa, =СУММА(A1–B2; A2–B1) funksiyaning javobi 54 ga teng bo`lishi uchun B2 katakda qanday son bo`lishi kerak?
A) -25 B) -23 C) -10 D) -24

33. Qaysi atamalar axborotning xususiyatlari hisoblanadi?
A) analog, diskret B) diskret, qimmatli
C) qisqa, foydali D) ishonchli, analog

34. Rim sanoq sistemasida berilgan ifodalardan to`g`ri tenglikni aniqlang.
A) CCCXVII–VLI=CCLXX
B) CVLII+XXVIII=CLXXIV
C) IL·VLII=MMCCCIII
D) CXII:XXVIII=V

35. Brauzerning sarlavha satrida Web–sahifaning nomi aks ettiruvchi tegni ko`rsating.
A) <BOD/>…</BODY>
B) <HI>…</HI>
C) <TITLE>…<TITLE>
D) <JMG SRC=”nnme”>

36. Microsoft Excel formula satrida =ОСТАТ(–12;10)–ЗНАЧЕН(ЗАМЕНИТЬ(СЦЕПИТЬ(–3;4);2;21)) kiritilgan. Natijani toping.
A) 3 B) 9 C) 10 D) –10

Variant 118.

1. $\frac{5^x}{5^{x-4^x}} < 5$ tengsizlikning eng katta butun manfiy va eng kichik musbat yechimlari yig`indisini toping.
A) –1 B) 2 C) –3 D) 1

2. $y = \frac{|x^2-x-12|}{\sqrt{11x-x^2-18}}$ funksiyaning aniqlanish sohasini toping.
A) (4;9) B) (2;4] C) (2;9) D) (–3;9)

3. $y = (x+5)\cdot e^{x-5}$ funksiyaning minimum nuqtasini toping.
A) –8 B) –7 C) –6 D) –5

4. Agar $\int_a^b (3x^2+1)dx = 108$ va $a^2 + ab + b^2 = 17$ bo`lsa, $b - a$ ni toping.
A) 7 B) 9 C) 2 D) 6

5. Raqamlar yig`indisi 4 ga teng bo`lgan nechta uch xonali son bor?
A) 9 B) 8 C) 7 D) 10

6. $\sqrt[3]{26+15\sqrt{3}}\left(2-\sqrt{3}\right) + \sqrt[3]{9+\sqrt{80}}\cdot\sqrt[3]{9-\sqrt{80}}$ hisoblang.
A) $2+\sqrt{3}$ B) 2 C) $3+\sqrt{2}$ D) 4

7. $\begin{cases} EKUB(x;y) = 30 \\ \frac{x}{y} = \frac{3}{5} \end{cases}$ tenglamalar sistemasini yeching. $(x;y\epsilon N)$
A) $x = 60, y = 90$ B) $x = 90, y = 150$
C) $x = 30, y = 50$ D) $x = 450, y = 60$

8. Arifmetik progressiyaning ikkinchi va o`n yettinchi hadlari yig`indisi 14 ga , o`n to`qqizinchi va o`n yettinchi hadlari ayirmasi 6 ga teng. Progressiyaning dastlabki yigirmata hadi yig`indisini toping.
A) 200 B) 150 C) 220 D) 180

9. a ning qanday qiymatida
$P(x) = x^{12} - ax^6 + 7x^3 + 3x^2 - 6x - 3$
ko`phadning koeffitsiyentlari yig`indisi 13 ga teng bo`ladi?
A) -11 B) –8 C) 8 D) 11

10. Agar $\frac{2^x+12^x+14^x}{5^x+30^x+35^x} = \frac{375}{24}$ bo`lsa, x ni toping.
A) –5 B) –2 C) –4 D) –3

11. $(a^2 + b^2 + 9)x^2 + 2(a + b + 3)x + 3) = 0$ tenglama haqiqiy yechimlarga ega bo`lsa, $a + b$ ni toping.
A) 0 B) 3 C) –4 D) 6

12. $log_x 8 > 3$ tengsizlikni yeching.
A) $(2; \infty)$ B) $(2; 3)$ C) $(0; 2)$ D) $(1; 2)$

13. $\vec{a}, \vec{b}$ va $\vec{c}$ vektorlar $\vec{a} + \vec{b} + \vec{c} = 0$ shartni qanoatlantiradi. Agar $|\vec{a}| = 1, |\vec{b}| = 3, |\vec{c}| = 4$ bo`lsa, $\vec{a} \cdot \vec{b} + \vec{c} \cdot \vec{b} + \vec{a} \cdot \vec{c}$ ni hisoblang.
A) –26 B) 13 C) –13 D) 26

14. Raqamlari ko`paytmasi ikkilanganiga teng bo`lgan ikki xonali sonni toping.
A) 26 B) 36 C) 46 D) 56

15. Agar $a, b, c > 0$ va $a^b = 81, b^c = 2, a^c = 3$ teng bo`lsa, $(4c)^c$ ni toping.
A) 2 B) 8 C) 3 D) 4

16. a, b haqiqiy sonlar uchun qanday munosabat doimo o`rinli?
A) $|a - b| \le |a| - |b|$ B) $|a - b| > |a| - |b|$
C) $|a - b| \ge |a| - |b|$ D) $|a - b| < |a| - |b|$

17. Quyida keltirilgan jumlalardan noto`g`risini toping.
A) Hamma tomonlari o`zaro teng bo`lgan uchburchakning burchaklari teng bo`ladi
B) Teng yonli uchburchak asosiga tushurilgan bissektrisa uning ham medianasi, ham balandligi bo`ladi
C) Mediana–uchburchak tomonini teng ikkiga bo`luvchi chiziq
D) kesma o`rta perpendikulyarining ixtiyoriy nuqtasi kesma uchlaridan teng uzoqlikda joylashadi.

18. Agar [m]=[n] bo`lsa, ([x] va {x} mos ravishda x ning butun va kasr qismi), u holda m va n sonlar uchun qanday munosabat doim o`rinli?
A) $m, n \epsilon Z$ B) $m - n = \pm 1$
C) $m - n = \{m\} - \{n\}$ D) $m = n$

19. Asosi a ga va yon tomoni b ga teng bo`lgan teng yonli uchburchakning yon tomoniga tushurilgan bissektrisa uzunligini toping.
A) $l_b = \frac{a}{a+b}\sqrt{2a^2 + ab}$ B) $l_b = \frac{b}{a+b}\sqrt{2b^2 + ab}$
C) $l_b = \frac{b}{a+b}\sqrt{2a^2 + ab}$ D) $l_b = \frac{a}{a+b}\sqrt{2b^2 + ab}$

20. $0, (\overline{8a})$ davriy kasrning qiymati $\frac{28}{33}$ ga teng bo`lsa, a ning qiymatini toping.(bu yerda $\overline{8a}$ ikki xonali son)
A) 1 B) 0 C) 4 D) 7

21. “Tutgan balig`ining og`irligi qancha?” degan savolga baliqchi:”baliqning dumi 4 kg, boshi uning dumi hamda tanasi yarmining og`irligiga teng, tanasi esa boshi va dumining og`irligiga teng”, deb javob berdi. Baliqning og`irligini(kg) toping.
A) 24 B) 18 C) 6 D) 12

22. $x^4 - 5x^2 - 36 \le 0$ tengsizik nechta butun yechimga ega?
A) 3 B) 5 C) cheksiz ko`p D) 7

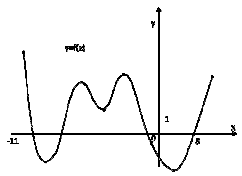
23. Agar $f(x) = ax^3 + 3x^2 + b$ va $f'(2) = 16$ bo`lsa, a ni toping.
A) 3 B) 1 C) $\frac{2}{3}$ D) $\frac{1}{3}$

24. $log_4\left(8\left(1 + \frac{1}{x}\right)^2\right) = \sqrt{2 - log_4 \frac{x}{x+1}} - log_4 \frac{1}{2}$ tenglamaning haqiqiy ildizlari yig`indisini toping. (Agar ildizi bitta bo`lsa, uni toping.)
A) $\sqrt{2} - \frac{1}{3}$ B) $\sqrt{2} + 1$ C) $\sqrt{2} + \frac{1}{3}$ D) $\sqrt{2} - 1$

25. $x^6 - 28x^3 + 27 \le 0$ tengsizlik nechta butun yechimga ega?
A) 1 B) 27 C) 3 D) cheksiz ko`p

26. $y = -2x - 5$ va $y = 2x + 3$ funksiyalarning grafiklari qaysi koordinatalar choragida kesishadi?
A) III B) I C) IV D) II

27. Chizmada (–11;3) oraliqda aniqlangan $f(x)$ funksiya hosilasining grafigi tasvirlangan. Nechta nuqtada $f(x)$ funksiya grafigiga urinma $y = x - 5$ to`g`ri chiziqqa parallel bo`ladi yoki u bilan ustma–ust tushadi?



A) 0 B) 6 C) 1 D) 4

28. M nuqta $ABCA_1B_1C_1$ muntazam prizma ABC asosidagi BC tomonning o`rtasi bo`lsin. Prizmaning yon qirrasi $\sqrt{44}$ ga, asosining tomonlari 16 ga teng bo`lsa, $B_1M$ to`g`ri chiziq va ABB_1A_1 yon yoqi orasidagi burchakning sinusini toping.
A) $\frac{1}{2}$ B) 0,6 C) $\frac{2}{3}$ D) 0,8

29. $y=(13x-7)lnx$ funksiyaning hosilasini toping.
A) $\frac{-13x-7}{x}$ B) $\frac{13x-7}{x}$ C) $13lnx+\frac{13x-7}{x}$ D) $-\frac{13x-7}{x}$

30. Ushbu $f(x)=\frac{2x+1}{x^2+x-6}$ funksiyaning boshlang`ich funksiyasini toping.
A) $\frac{2x^2}{(x-2)(x+3)}+C$ B) $\ln|x+3|+C$
C) $\ln(|x-1|\cdot|x+3|)+C$ D) $\ln(x-2)+C$

31. MSExcel. =ОСТАТ(2;5)–ЗНАЧЕН(ЗАМЕНИТЬ(СЦЕПИТЬ(–23; 6);1; 1;3)) funksiyaningnatijasinitoping.
A) –3234 B) –3634 C) –3632 D) –3226

32. Paskal. Dastur natijasini aniqlang.
Var a, b, k: integer;
Begin Randomize; a:=1; k:=1;
Repeat b:=trunk((k÷random(k))/k),
a:=a*b; k:k+1; until k>=6;
Write(a+b+k); readln; End.
A) Natijani aniqlab bo`lmaydi B) 40 C) 8 D) 16

33. Nashriyot tizim(Sistema)larida qaysi dasturlar ishlatiladi?
A) Adobe Page Maker, MS Acces, MathCAD.
B) Adobe Page Maker, Latex, Tex, Quark Xpress
C) Adobe Page Maker, Latex, MS Word, MS Excel
D) Adobe Page Maker, Quark Xpress, MS Excel

34. Quyidagi mulohazalardan rost qiymatga egalarini aniqlang:
1) Axborot ikki turga bo`linadi
2) Web–sahifalarni hosil qilish vositasi–brauzerlar.
3) Plotter–chizmalarni qog`ozga chiqaruvchi qurilma.
4) www.uz–milliy qidiruv tizimi emas
A) 1, 3 B) 4, 2 C) 1, 4 D) 2, 3

35. Qaysi atamalar axborotni turlari hisoblanadi
A) Ishonchli, analog B) analog, diskret
C) diskret, qimmatli D) qisqa foydali

36. Rost mulohazalarni mos sonlar yig`indisini rim sanoq sistemasida hisoblang.
CCXLVIII–"Ob havo holati uzluksiz axborotga misol bo`ladi"
XCVII–"Insonga uzluksiz ta`sir etuvchi axborotlar analog axborotlar deb ataladi"
hid, tovush, mimika"
A) CVLI B) CCCXCIV C) CCVCII D) CCCVL

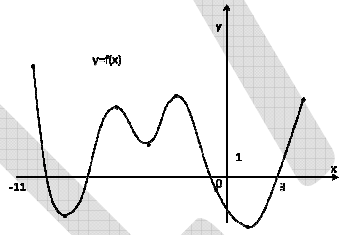
Variant 119.

1. $ctg60°+ctg^260°+ctg^360°+\cdots$ yig`indini hisoblang.
A) $\frac{\sqrt{3}+1}{2}$ B) 1 C) $\frac{\sqrt{3}-1}{2}$ D) $\frac{\sqrt{3}}{3}$

2. $a^2<422$ tengsizlikni qanoatlantiruvchi eng katta natural sonningnatural bo`luvchilari yig`indisini toping.
A) 45 B) 42 C) 48 D) 40

3. $\overline{ab}$ va $\overline{ba}$ ikki xonali sonlar. Agar $\overline{ab}-\overline{ba}=54$ bo`lsa, a^2+b^2-2ab ning qiymatini toping.
A) 36 B) 64 C) 16 D) 49

4. Chizmada (–11;3) oraliqda aniqlangan $f(x)$ funksiya hosilasining grafigi tasvirlangan. Nechta nuqtada $f(x)$ funksiya grafigiga urinma $y=3x-11$ to`g`ri chiziqqa parallel bo`ladi yoki u bilan ustma–ust tushadi?



A) 0 B) 4 C) 6 D) 1

5. $y=\frac{\sqrt{2x-1}+\sqrt{x-1}}{x^2-5x+8}$ funksiyaning aniqlanish sohasini toping.
A) $\left[\frac{1}{2};+\infty\right]$ B) $\left(-\infty;\frac{1}{2}\right]$ C) $[1;\infty)$ D) $\left[\frac{1}{2};1\right]$

6. Uchlari A(4;–2) va B(–1;3) nuqtalarga bo`lgan AB kesmaning uzunligini toping.
A) 60 B) 40 C) 50 D) 48

7. $y=x^2+7x-6$ funksiya grafigiga o`tkazilgan urinma $y=6x+9$ to`g`ri chiziqqa parallel. Urinish nuqtasining absissasini toping.
A) 0,5 B) –0,5 C) –3,5 D) –1,5

8. Agar $f(x)=lne^x-log_xx^2$ bo`lsa, $f'(1)+f(e)$ ning qiymatini toping.
A) e B) –2 C) $e-2$ D) $e-1$

9. Agar $f'(x)=-\frac{2}{e^x}, f(ln2)=0$ bo`lsa, $f(x)$ ni toping.
A) $-2e^{-x}-1$ B) $-2e^{-x}+2$
C) $2e^{-x}-1$ D) $2e^{-x}+2$

10. Dioganallari 90° burchak ostida kesishuvchi ABCD trapetsiyaning asoslari mos ravishda 7 va 2 ga

parallel to`g`ri chiziq o`tkazilgan. Ushbu to`g`ri chiziqning yon tomonlar bilanchegaralangan kesma uzunligini toping.
A) $2\frac{1}{3}$ B) $1\frac{1}{9}$ C) $3\frac{2}{9}$ D) $3\frac{1}{9}$

11. $\int e^{2sinx} \cdot cosxdx$ integralni hisoblang.
A) $cosx + e^{2sinx} + C$ B) $\frac{1}{2}e^{2sinx} + C$
C) $-\frac{1}{2}e^{2sinx} + C$ D) $\frac{e^{2sinx}}{2cosx} + C$

12. $\frac{0,(1)}{0,(5)} + \frac{0,(13)}{0,(65)} + \frac{0,(19)}{0,(95)} - 0,(9)$ ni hisoblang.
A) $-0,2$ B) $-0,4$ C) $-0,3$ D) $-0,1$

13. Sinfda 40 ta o`quvchi bor edi. Ulardan 32 tasi “Matematika” to`garagida, 21 tasi “Yosh rassomlar” To`garagida shug`ullanadi. 15 ta o`quvchi ikkalasida ham shug`ullanadi. Qancha o`quvchi ikkalasida ham shug`ullanmaydi?
A) 2 B) 28 C) 3 D) 38

14. $a_1, a_2, \ldots$ va $b_1, b_2, \ldots$ arifmetik progressiyalar uchun $a_1 = 2,5, b_1 = 7,5,\ a_{100} + b_{100} = 10$ bo`lsin. $a_1 + b_1,\ a_2 + b_2, \ldots$ ketma–ketlikning dastlabki 100 ta hadlat yig`indisini toping.
A) 100 B) 10 C) 0 D) 1000

15. Agar $tg4\alpha = -\frac{2}{5}$ bo`lsa, $ctg\alpha - tg\alpha - 2tg2\alpha$ ning qiymatini toping.
A) -10 B) -5 C) -8 D) 12

16.Markazi $M(4;-5)$ nuqtada bo`lib, koordinata boshidan o`tuvchi aylana tenglamasi ko`rinishini toping.
A) $x^2 + y^2 - 8x + 10y = 0$
B) $x^2 + y^2 - 8x - 10y = 0$
C) $x^2 + y^2 - 8x + 10y = 14$
D) $x^2 + y^2 - 8x + 10y = 25$

17. Koordinatalari $A(x;1)$ va $B(-1;-2)$ nuqtalarga bo`lgan AB kesmaning uzunligi 5 ga teng, x–ni toping.
A) 5 B) 3 C) 1 D) 6

18. Hisoblang: $cos20° + 2 \cdot \sin^2 55° - \sqrt{2} \cdot sin65°$
A) 0 B) $sin5°$ C) $\sqrt{2}$ D) 1

19. Agar $log_9 5 = a, log_{25} 8 = b$ bo`lsa, $log_2 3$ ni a va b orqali ifodalang.
A) $\frac{4}{3ab}$ B) $\frac{3ab}{4}$ C) $\frac{3}{4ab}$ D) $\frac{4ab}{3}$

20.a, b manfiy butun sonlar uchun $a = b + 4$ va $a + b - c = 13$ bo`lsa, c ning qiymatini toping.
A) 17 B) 11 C) -15 D) -19

21. $a + b + c = 5$ va $\frac{1}{a+b} + \frac{1}{b+c} + \frac{1}{c+a} = 1$ bo`lsa, $a + b + c - \left(\frac{a}{b+c} + \frac{b}{c+a} + \frac{c}{a+b}\right)$ ifodaning qiymatini toping.
A) 8 B) 3 C) a, b, c ga bog`liq D) 6

22. $xlg10^{x+3} + lg100 = 0$ tenglamaning ildizlari yig`indisini toping.
A) -1 B) -3 C) -2 D) -4

23. $\begin{cases} y = x^3 \\ y = cosx \end{cases}$ tenglamalar sistemasi nechta yechimga ega?
A) 3 B) 1 C) 2 D) 0

24. $x^2 - (k+1)x + k^2 + k - 32 = 0$ tenglama ildizlaridan biri 2 dan katta, ikkinchisi esa 2 dan kichik bo`lsa, $k$ ning butun qiymatlari yig`indisini toping.
A) 6 B) 5 C) 4 D) 0

25. $\frac{2}{x} + 3 \le \sqrt{41 - \frac{16}{x}}$ tengsizlikni yeching.
A) $x \ge 1$ B) $x < 0$ yoki $x \ge 1$
C) $x < 0$ D) $x \le 0$ yoki $x \ge 2$

26. Tomonlari 6 va 8 ga teng bo`lgan to`g`ri to`rtburchak birlik kvadratchalarga bo`lingan. Uning dioganali birlik kvadratchalarning uchlari bo`lmish nuqtalarning nechtasidan o`tadi?
A) 0 B) 3 C) 2 D) 4

27. $f(x) = 3cosx - 4sinx + 3$ funksiyaning qiymatlar sohasini toping.
A) $[-4;6]$ B) $[-3;7]$ C) $[-2;8]$ D) $[-5;5]$

28. Perimetri 64 ga teng bo`lgan to`g`ri burchakli uchburchak radiusi 5 ga teng bo`lgan aylanaga tashqi chizilgan. Gipotenuza uzunligini toping.
A) 16 B) 23 C) 27 D) 29

29. $f(x) = 3^{cosx}$ bo`lsa, $f'\left(\frac{\pi}{2}\right)$ ni hisoblang.
A) 0 B) $3ln3$ C) $-ln3$ D) $ln3$

30. Agar $f(x) = ax^3 + 4x^2 + b$ va $f'(2) = 28$ bo`lsa, a ni toping.
A) 1 B) 2 C) 4 D) 3

31. MS Excel. A1=3, B1=4 bo`lsa, =?(A1; B1)+ЗНАЧЕН(??(B1; A1)) formulaning natijasi 71 bo`lishi uchun? va ?? belgilarning o`rniga qo`yish mumkin bo`lgan funksiyalar to`g`ri berilgan javobni aniqlang.
A) Степень, Сцепить B) Степень, Степень
C) Макс, СтепеньD) Сумм, Степень

32. Quyidagihtml–hujjatkodiyozilishibo`yichakataklarketma–

ketsanalgandanechanchikatakdaog`mashriftlimarketlan ganro`yxatqo`llanilgan?
<table><tr><td colspan=2><a href><test> test</td><td rowspan=2><sup>
test <sup>
<td><tr><tr><td><img src=test jpg test </td></td></dl><sub><dt>test<sub></dl> </td></tr></table>
A) Ikkinchi katakda B) to`rtinchi katakda
C) Uchinchi katakda D) Birinchi katakda

33. Faqat rost mulohazalarni aniqlang va ularga tenglashtirilgan sonlar yig`indisini rim sanoq sistemasida hisoblang.
XCIX–“ Informatika odatda, Hardware va Software kabi ikki qismning birligi sifatida qaraladi”
XIX–“XX asrning 50–yillarida informatika faniga asos solingan”
IV–“Informatika, odatda, Hardware sifatida qaraladi”
A) CXVIII B) CXVII C) CXIX D) XXIII

34.Ali sakkizlik sanoq sistemasida $(54; 67)$ oraliqdagi barcha butun sonlarni yozib chiqdi. Vali esa shu sonlardan 6 raqami qatnashgan barcha sonlarni o`chirib tashladi. Qolgan sonlar yig`indisini sakkizlik sanoq sistemasida aniqlang va ikkilik sanoq sistemasiga o`tkazing.
A) 1011100 B) 1101101 C) 1011101 D) 11110010

35. Microsoft Excel 2003 dasturida $A1 = 6, A2 = A1*(-1), A3 = A2$*СТЕПЕНЬ (A1;2) Б A4=СЧЕТЕСЛИ(A1:A3;”>0) bo`lsa, A4 katakchadagi formula natijasini toping.
A) 36 B) 1 C) 6 D) 0

36. Quyidagi html–hujjat kodi yozilishi bo`yicha kataklar ketma–ket sanalganda nechanchi katakda og`ma shiriftli marketlangan ro`yxat qo`llanilgan?
<table><tr><td colspan=2> test</td><td rowspan=2>test
<td><td><cite>
test</cite></td></tr></table>
A) Birinchi katakda B) Ikkinchi katakda
C) Uchinchi katakda D) To`rtinchi katakda

Variant–120

1. $\int_{-1}^{1}(5x^5 - 3x^3 + x + 21)dx$ aniq integralni hisoblang.
A) $\frac{3}{4}$ B) 42 C) $\frac{5}{54}$ D) 1

2.$y = -3\sqrt{x}$ va $y = -3x^3$ egri chiziqlar bilan chegaralangan soha yuzini toping.
A) $\frac{5}{3}$ B) $\frac{5}{12}$ C) $\frac{5}{4}$ D) $\frac{5}{6}$

3. ABCD parallelogramm berilgan. M nuqta BD dioganalda yotadi, bunda MD:BM=2:1. Agar ADCM to`rtburchak yuzi 30 ga teng bo`lsa, ABCD parallelogramm yuzini toping.
A) 50 B) 60 C) 35 D) 45

4. $y = \sqrt[4]{\frac{7-x}{\sqrt[6]{4x^2-19x+12}}}$ funksiyaning aniqlanish sohasiga tegishli eng katta va eng kichik natural sonlar yig`indisini toping.
A) 12 B) 10 C) 13 D) 18

5. Uchburchakning ikki tomoni mos ravishda 1 va $\sqrt{10}$, uchinchi tomoni medianasi 2 ga teng. Uchburchak yuzini toping.
A) $\frac{\sqrt{15}}{2}$ B) 1,5 C) 5 D) $\frac{\sqrt{15}}{4}$

6. Dioganallari 90° burchak ostida kesishuvchi $ABCD$ trapetsiyaning asoslari mos ravishda 9 va 1 ga teng. Dioganallarning kesishish nuqtasidan asoslariga parallel to`g`ri chiziq o`tkazilgan. Ushbu to`g`ri chiziqning yon tomonlar bilan chegaralangan kesma uzunligini toping.
A) 1,8 B) 1,2 C) 1,6 D) 0,9

7. $y = g(x)$ funksiya D to`plamda yuqoridan chegaralangan bo`lsin. U holda qaysi munosabat ixtiyoriy $x \epsilon D$ uchun o`rinli?
A) biror K musbat haqiqiy son uchun $|g(x)| > K$
B) biror K musbat haqiqiy son uchun $|g(x)| < K$
C) biror K haqiqiy son uchun $|g(x)| > K$
D) biror K haqiqiy son uchun $|g(x)| < K$

8. Quyida keltirilgan jumlalardan noto`g`risini toping.
A) Uchburchakning kishik burchagi qarshisida kichik tomoni yotadi.
B) teng yonli uchburchakda teng tomonlar qarshisida teng burchaklar yotadi.
C) To`g`ri burchakli uchburchakning balandligi gipotenuzasining yarmiga teng.
D) Burchak bissektrisasining ixtiyoriy nuqtasidan burchak tomonlarigacha bo`lgan masofalar o`zaro teng.

9. $\overline{ab}$ va $\overline{ba}$ ikki xonali sonlar. Agar $\overline{ab} - \overline{ba} = 27$ bo`lsa, $a^2 + b^2 - 2ab$ ning qiymatini toping.
A) 9 B) 27 C) 16 D) 25

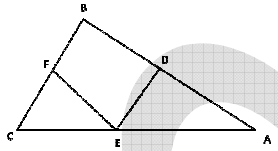
10. Bir guruh bolalarning o`rtacha og`irligi 40 kg ga teng. Qiz bolalarning o`rtacha og`irligi 35 kg, o`g`il bolalarning o`rtacha og`irligi esa 50 kg ligi ma`lum. Agar guruh a`zolarining 26 nafari qiz bolalar bo`lsa, o`g`il bolalar sonini toping.
A) 12 B) 13 C) 18 D) 11

11. Musbat sonlardan tashkil topigan $a_1, a_2, a_3, \ldots$ ketm–ketlik uchun $a_1 = a_2 = 1$ va barcha natural n larda $a_{n+2} = a_n a_{n+1}$ shartlar bajarilsin. Ketma–ketlikning 70– hadini toping.
A) 10 B) 1 C) 1050 D) 0

12. $y = \sin^2 x$ funksiya grafigi berilgan bo`lib, uni parallel ko`chirish yordamida $y = \sin^2(x + a) + b$ funksiya grafigi hosil qilingan. Bunday parallel ko`chirishda koordinata boshi qanday nuqtaga ko`chadi?
A) N(a;b) B) N(–a;b) C) N(a;–b) D) N(b;a)

13. Quyida keltirilgan jumlalardan noto`g`risini toping.
A) Kesma o`rta perpendikulyarining ixtiyoriy nuqtasi kesma uchlaridan teng uzoqlikda joylashgan
B) Agar ikki uchburchakning bir tomoni va ikki burchagi mos ravishda teng bo`lsa, bu uchburchaklar teng bo`ladi.
C) Teng tomonli uchburchak teng yonli uchburchak ham bo`ladi
D) Uchburchakning bir uchi va shu uchining qarshisidagi tomon o`rtasini tutashtiruvchi kesma uning medianasi deyiladi.

14.Rasmda ABC uchburchak berilgan. Agar $DE||BC$ va $EF||AB$ bo`lib, $S_{ADE} = 18, S_{EFC} = 12$ bo`lsa, $BDEF$ to`rtburchakning yuzini toping.



A) $12\sqrt{6}$ B) $15\sqrt{2}$ C) 15 D) $4\sqrt{2}$

15. Quti sirtining 75% ini bo`yash uchun 450 gramm bo`yoq sarflandi. Qutining qolgan qismini bo`yash uchun necha gramm bo`yoq kerak bo`ladi?
A) 150 B) 200 C) 175 D) 150

16. Agar $f(x) = lne^x - log_x x^2$ bo`lsa, $f'(1) + f(e)$ ning qiymatini toping.
A) e B) -2 C) $e - 1$ D) $e - 2$

17. $2\sin^2\alpha - 1$ ifodaningko`paytma ko`rinishiga keltiring.
A) $2\sin(\alpha - 30°) \cdot \cos(\alpha + 30°)$
B) $2\cos(\alpha - 30) \cdot \sin(\alpha + 30°)$
C) $-4\sin(45° - \alpha) \cdot \sin(\alpha + 45°)$
D) $-2\sin(45° - \alpha) \cdot \sin(\alpha + 45°)$

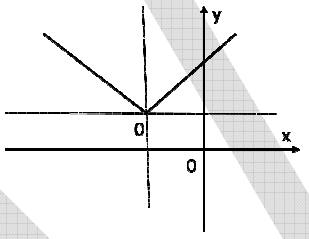
18. Qandaydir a, b, c uchun
$cos4x = a\cos^4 x + bcos^2 x + c$ ayniyat bajarilsa, $a + 2b + c$ ni toping.
A) 3 B) –7 C) 0 D) –4

19. $(x; y)$ juftlik $\begin{cases} EKUB(x; y) = 12 \\ \frac{x}{y} = \frac{3}{4} \end{cases}$ tenglamalar sistemasining yechimi bo`lsa, $x + y$ ni hisoblang $(x, y \epsilon N)$
A) 216 B) 168 C) 108 D) 84

20. $x^2 - (m-3)x - 5 = 0$ tenglamaning $x_1\ va\ x_2$ ildizlari orasida$x_1 + \frac{1}{x_2} = 2$ munosabat o`rinli. m ning qiymatini toping.
A) 2,5 B) –1,5 C) 3,5 D) –2,5

21. $(x^2 + 2x)^2 - (x + 1)^2 = 55$ tenglamaning haqiqiy ildizlari nechta?
A) 3 ta B) 2 ta C) 0 D) 1 ta

22. Rasmda $y = a \cdot \sqrt{(x-b)^2 + c} + d$ funksiya grafigi tasvirlangan. Quyidagi javoblardan qaysi biri doim noto`g`ri?



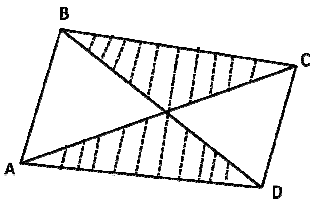
A) $a - bc \leq 0$ B) $2ad + bc > 0$
C) $a^2 bc \leq 0$ D) $a\sqrt{c} + d > 0$

23.$\left[\frac{2}{96}\right] \cdot 12 + \left[5\frac{2}{37}\right] \cdot 7{,}4 - [5{,}222\ldots] \cdot [2, (7)]$ ni hisoblang.
A) 0 B) 27 C) $16\frac{2}{3}$ D) $25\frac{5}{8}$

24. $\int_{-1}^{1}(2x^5 - 3x^3 + x + 1)dx$ aniq integralni hisoblang.
A) $\frac{7}{3}$ B) $\frac{3}{4}$ C) 2 D) $\frac{5}{54}$

25. AB kesmaning bir tomonida $AA_1 = 4$ va $BB_1 = 2$ perpendikulyar o`tkazilgan. $A_1B$ va $AB_1$ to`g`ri chiziqlarning kesishish nuqtasidan AB kesmagacha bo`lgan masofani toping.
A) $1\frac{2}{3}$ B) 2,4 C) $1\frac{1}{3}$ D) 1,5

26. Agar rasmda shtrixlangan soha yuzasi 12 sm^2 bo`lsa, ABCD parallelogrammning yuzini(sm^2) toping.



A) 18 B) 26 C) 30 D) 24

27.8 nafar o`quvchidan iborat guruhda 4 nafar a`zodan tashkil topgan qo`mitani tanlab olish kerak.Bu ishni nechta usulda amalga oshirsa bo`ladi?
A) 70 B) 120 C) 84 D) 32

28. Uchlari $A(-4;0), B(5;3)$ va $C(0;-2)$ nuqtalarda bo`lgan $ABC$ uchburchakning $BC$ tomonining $Ox$ o`qi bilan kesishish nuqtasi koordinatasini toping.
A) $(3;0)$ B) $(2{,}2;0)$ C) $(2;0)$ D) $(1{,}8;0)$

29. $x^3 - 0{,}1x = 0{,}3x^2$ tenglamaning haqiqiy ildizlari ko`paytmasini toping.
A) 0 B) 3 C) $-0{,}1$ D) 1

30. Muntazam to`rtburchakli piramidaga kub ichki chizilgan. Agar Piramida balandligi $18\sqrt{2}$ga va piramida asosining tomoni $12\sqrt{2}$ teng bo`lsa, kub qirrasini toping.
A) $6\sqrt{2}$ B) $3{,}6\sqrt{2}$ C) $7{,}2\sqrt{2}$ D) $4\sqrt{2}$

31. Alisher sakkizlik sanoq sistemasida (177; 217) oraliqdagi barcha butun sonlarni yozib chiqdi. G`anisheresa shu sonlardan 1 raqami qatnashgan barcha sonlarni o`chirib tashladi. Qolgan sonlar yig`indisini sakkizlik sanoq sistemasida aniqlang.
A) 1633 B) 723 C) 1132 D) 2157

32. Paskal. Dastur natijasini aniqlang.
Var a,k: byte; s,N:stiring; A:array[1..11] of byfe;
Begin Randomire; S:='INFORMATIKA'
A[1]:=Random(1)+1; A[2]:=trune(random)+I;
N:";For k:3 To 6 Do A[k]:=A[k+1]+[k+2];
For k:=1 To 6 Do N+copya, A[k], 1;
Write(N):readin:End.
A) IFMTK B) natijani aniqlab bo`lmaydi
C) NIFOAA D) IINFRT

33. A1=–3, A2=11, B1=–17, B2=30 bo`lsin. =MAKC(ABS(A1)+B2, A2+B1) komandasi kiritilsa natija nimaga teng bo`ladi?
A) 36 B) 40 C) 33 D) 24

34. A=""Mening kompyuterim" maxsus qobiq dasturdir"
B="Fayl nomida*, \, /belgilarini ishlatish mumkin emas"
C=" Kompyuter ishiga zarar keltiruvchi dasturlar antivirus dasturlar deb ataladi,"Shu mulohazalar asosida quyidagi mantiqiy ifodaning natijasini toping:
(not A or B) and (C or not B) or not C
A) Ifodada xatolik bor
B) Yolg`on
C) Rost
D) Ba`zi mulohazalarning qiymatini aniqlab bo`lmaydi

35. Rost mulohazalarni mos sonlar yig`indisini rim sanoq sistemasida hisoblang.
CXXIX–"Vaqt uzluksiz axborotdir"
XCVII–"Insonga uzluksiz ta`sir etuvchi axborotlar diskert axborotlar deb ataladi"
XLIX–"Axborot xususiyatlariga quyidagilar kiradi: qimmatlilik, ishonchlilik, to`liqlik"
A) CCXXVI B) CXLVI C) CCXXVIII D) CCLXXV

36. Ketma–ketlikdagi qonuniyatni aniqlab nuqtalar o`rniga mos keladigan sonni qo`ying.
3, 7, 15, 31, …
A) 45 B) 63 C) 54 D) 42

Variant 121

1. Radiusi 5 ga teng bo`lgan aylanaga ichki chizilgan uchburchakning $60°$ li burchagi qarshisidagi tomon uzunligini toping.
A) $5\sqrt{3}$ B) 5 C) 10 D) $5\sqrt{2}$

2. To`g`ri burchakli trapetsiya o`tkir burchagining kosinusi $\frac{2}{3}$ bo`lsa, katta burchagining tangensini toping.
A) $-\frac{13}{12}$ B) $\pm\frac{\sqrt{5}}{2}$ C) $\frac{3}{2}$ D) $-\frac{\sqrt{5}}{2}$

3. Qandaydir a, b, c uchun $cos4x = a\cos^4 x + bcos^2 x + c$ ayniyat bajarilsa, $a+b$ ni toping.
A) 3 B) 1 C) –4 D) 0

4. $3-4+5-6+..+2017-2018+2019$ ni hisoblang.
A) –1011 B) 1011 C) –1008 D) 1010

5. Quti sirtini 75% bo`yash uchun 450 gramm bo`yoq sarflangan bo`lsa, quti sirtini to`la bo`yash uchun necha gramm bo`yoq kerak bo`ladi?
A) 650 B) 500 C) 600 D) 625

6. Agar $\begin{cases} x_2 + x_3 + \cdots + x_{10} + x_{11} = 1 \\ x_1 + x_3 + \cdots + x_{10} + x_{11} = 2 \\ \cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots \\ x_1 + x_2 + x_3 + \cdots + x_{10} = 11 \end{cases}$ bo`lsa, x_{11}nechaga teng?
A) –4,4 B) 8,3 C) 6,3 D) 5,4

7. $f(x) = \cos^4 x + \sin^4 x$ funksiya berilgan. Agar $sin2\alpha = \frac{2}{3}$ ekanligi ma`lum bo`lsa, $f(\alpha)$ ni toping.
A) $\frac{1}{3}$ B) $\frac{7}{9}$ C) $\frac{2}{3}$ D) 1

8. $\frac{\lg(2cos15°)}{\lg(2sin15°)}$ ni hisoblang.
A) 3 B) –1 C) 2 D) 1

9. x, y butun sonlar uchun $-2 \le x < 4$ va $-5 \le y < 4$ bo`lsa, $x^2 - y^2$ ning eng kichik qiymatini toping.
A) 21 B) 8 C) 10 D) 32

10. $f(x) = a^2 \frac{(x-b)(x-c)}{(a-b)(a-c)} + b^2 \frac{(x-a)(x-c)}{(b-a)(b-c)} + c^2 \frac{(x-a)(x-b)}{(c-a)(c-b)}$ funksiyaning $x = -1$ da hosilasini toping.
(Bu yerda $(a-b)(a-c)(b-c) \neq 0$)

A) a, b, c ga bog`liq B) –1 C) 0 D) –2

11. Piramidaning asosi tomoni $2\sqrt{3}$ va o`tkir burchagi 30° ga teng bo`lgan rombdan iborat. Ushbu piramidaga ichki chizilgan konusning yasovchisi asos tekisligi bilan 60° li burchak tashkil etadi. Konus hajmining piramida hajmiga nisbatini toping.
A) $\frac{\pi}{4}$ B) $\frac{\pi}{8}$ C) $\frac{\sqrt{3}\pi}{4}$ D) $\frac{\sqrt{3}\pi}{8}$

12. Konusning yasovchisi $\sqrt{3}$ ga teng. Konusning uchidan unga ichki chizilgan shar markazigacha bo`lgan masofa 1 ga teng. Konus asosi radiusining shar radiusiga nisbatini toping.
A) 1 B) $\frac{1}{\sqrt{3}}$ C) $\sqrt{3}$ D) 3

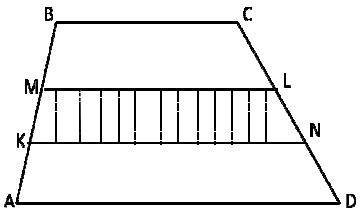
13. $ABCD$ parallelogramm uchta uchining koordinatalari ma`lum: $A(0;1), B(1;3), C(13;3)$. D uchining absissasini toping.
A) 7 B) 13 C) 12 D) 5

14. Agar $f(x) = ax^3 + 2x^2 + b$ va $f'(2) = 32$ bo`lsa, a ni toping.
A) 4 B) 1 C) 3 D) 2

15. $\int_1^8 \frac{4}{x} dx$ integralni hisoblang.
A) 12ln2 B) 6 ln2 C) 18ln2 D) 12ln4

16. Agar $f(2x) = 6x^3 + 4x^2 + 2x + 1$ bo`lsa, $f'(2) - f(2)$ ni toping.
A) 2 B) 3 C) 1 D) 4

17. ABCD trapetsiya berilgan bo`lib, AD||BC. Agar AK=KM=MB, DN=NL=LC va $S_{ABCD} = 30\ sm^2$ bo`lsa, u holda S_{KMNL} ni (sm^2) toping.



A) 7,5 B) 15 C) 10 D) 20

18.ABCD (AD||BC) trapetsiyada AD=10, BC=6. Trapetsiya balandligi 6 ga teng. AD asosi, dioganallar yuzini toping.
A) 20 B) 12 C) 16 D) 18

19. $\frac{x^2+x-5}{x} + \frac{3x}{x^2+x-5} = -4$ tenglama nechta butun ildizga ega?
A) 4 ta B) 3 ta C) 2 ta D) 1 ta

20. $x < 6$ bo`lsa, $3x + 4y - 6 = 0$ tenglamadan y ning qiymatlarini toping.
A) $y > -3$ B) $y > -6$ C) $y < -6$ D) $-1 < y < 1$

21. $y = 4x - 13$ va $y = -5 - 6x$ funksiyalarning grafiklari qaysi koordinatalar choragida kesishadi?
A) II B) III C) IV D) I

22. $y = \frac{x^2+2}{x}$ funksiyaning qiymatlar sohasiga tegishli bo`lmagan butun sonlar yig`indisini toping.
A) 1 B) 0 C) –2 D) –1

23. $y = f(x)$ funksiya D to`plamda no`qatiy kamayuvchi bo`lsin. D to`plamdan olingan ixtiyoriy a, b elementlari uchun $(a > b)$ quyidagi munosabatlardan qaysi biri o`rinli?
A) $f(a) \le f(b)$ B) $f(b) < f(a)$
C) $f(a) = f(b)$ D) $f(b) \le f(a)$

24. $\left[\frac{1000}{8^2}\right] \cdot 8$ ni hisoblang. Bu yerda [a]–a sonning butun qismi.
A) 100 B) 125 C) 140 D) 120

25. Bir guruh bolalarning o`rtacha og`irligi 40 kg ga teng. Qiz bolalarning o`rtacha og`irligi 35 kg, o`g`il bolalarning o`rtacha og`irligi esa 50 kg ligi ma`lum. Agar guruh a`zolarining 12 nafari o`g`il bolalar bo`lsa, qiz bolalar sonini toping.
A) 26 B) 24 C) 28 D) 22

26. $\frac{tg(\alpha+\beta)-tg\alpha-tg\beta}{tg\beta \cdot tg(\alpha+\beta)}$ ifodaning son qiymatini toping.
bu yerda $\alpha = \frac{2\pi}{3}, \beta = \frac{3\pi}{5}$
A) –1 B) $-\sqrt{3}$ C) $\sqrt{3}$ D) 1

27. Qandaydir a, b, c uchun $cos4x = a\cos^4 x + bcos^2 x + c$ ayniyat bajarilsa, $a + 2b$ ni toping.
A) 3 B) 0 C) –8 D) –4

28. Agar $log_9 25 = a, log_{25} 8 = b$ bo`lsa, $log_2 3$ ni a va b orqali ifodalang.
A) $\frac{3ab}{4}$ B) $\frac{2}{3ab}$ C) $\frac{3}{2ab}$ D) $\frac{2ab}{3}$

29. Qandaydir a, b uchun $(x+2)(x+a) = x^2 + bx + 6$ ayniyat bajarilsa, $4a - 3b$ ni toping.
A) 0 B) –3 C) 1 D) 9

30. Barcha musbat a, b, c sonlar uchun $\frac{a}{b}+\frac{b}{c}+\frac{c}{a}$ ifodaning eng kichik qiymatini toping.
A) 2,5 B) 1 C) 1,5 D) 3

31. A=”BIOS dasturi kompyuterning doimiy xotirasida joylashgan “B=Software–sinovdan o`tkazish muddatiga ega bo`lgan dasturlardir. “C=” Windows yo`lboshlovchisining ishlashiga Explorer exe dasturi javob beradi” Shu mulohazalar asosida quyidagi mantiqiy ifodaning natijasini toping.

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

A) rost
B) Yolg`on
C) Ifodada xatolik bor
D) Ba`zi mulohazalarning qiymatini aniqlab bo`lmaydi

32. MS Excel. ?(3;4)+ЗНАЧЕН(??(3; 4)) formulaning natijasi 71 bo`lishi uchun? va ?? belgilarning o`rniga qo`yish mumkin bo`lgan funksiyalar to`g`ri berilgan javobni aniqlang.
A) Степень, Сцепить B) Степень, Степень
C) Макс, СтепеньD) Сумм, Степень

33. Qobil sakkizlik sanoq sistemasida (73;100) oraliqdagi barcha butun sonlarni yozib chiqdi. Qodir esa shu sonlardan 6 raqam qatnashgan barcha sonlarni o`chirib tashladi. Qolgan sonlarni yig`indisini sakkizlik sanoq sistemasida aniqlang va bechlik sanoq sistemasiga o`tkazing.
A) 430 B) 341 C) 343 D) 143

34. Paskal dastur natijasini aniqlang.
Var N;k: word, S String;
Begin Randomize; S=’DTM–2017’
n:random Post(‘DT’,s)+pos(‘21’,s));+1;
S:=a[n]+s[n+1];
K:=2+Random(1)+1
Write(S/k+1);readin;End
A) D B) natijani aniqlab bo`lmaydi C) T D) M

35. Bir terabayt necha gigabaytga teng?
A) 2^{25} gigabayt B) 2^{10} gigabayt
C) 2^{30} gigabayt D) 2^{20} gigabayt

36. Raqamli signalni analogli signalga va aksincha aylantirib beruvchi qurilma nomini toping.
A) deshifrator B) telefaks
C) modem D) shifrator

Variant 122.

1. $\{x|x\epsilon N, x^2 < 29{,}9\}$ to`plamning nechta qism–to`plamlari mavjud?
A) 5 B) 29 C) 32 D) 16

2. Qandaydir a, b, c uchun $cos4x = \text{acos}^4 x + bcos^2 x + c$ ayniyat bajarilsa, b ni toping.
A) 8 B) 4 C) –8 D) –4

3. $y=\frac{x^2+4}{x}$ funksiyaning qiymatlar sohasini toping.
A) $(-\infty;-4)\cup(4;\infty)$ B) $(-\infty;-4]\cup[4;\infty)$
C) $(-\infty;0)\cup[4;\infty)$ D) $[4;\infty)$

4. ABCD parallelogramm berilgan. m nuqta BD dioganalda yotadi, bunda MD:BM=2:1. Agar ADCM to`rtburchak yuzi 32 ga teng bo`lsa, ABCD parallelogramm yuzini toping.
A) 36 B) 52 C) 60 D) 48

5. $\left(\frac{x-2y}{x^3+y^3}+\frac{y}{x^3-x^2y+xy^2}\right)\cdot\frac{x^3-xy^2}{x^2+y^2}+\frac{2y^2}{x^3+x^2y+xy^2+y^3}$ ifodani soddalashtiring.
A) 0 B) $\frac{1}{x}+\frac{1}{y}$ C) $\frac{1}{x+y}$ D) 1

6. $\frac{1}{a(a-b)(a-c)}+\frac{1}{b(b-a)(b-c)}+\frac{1}{c(c-a)(c-b)}$ ifodani soddalashtiring.
A) $\frac{1}{abc}$ B) $\frac{abc}{2}$ C) $-\frac{1}{abc}$ D) $\frac{1}{bc}$

7. Agar $\frac{3^x+6^x+9^x}{5^x+10^x+15^x}=\frac{50}{18}$ bo`lsa, x ni toping.
A) –2 B) –3 C) –4 D) –5

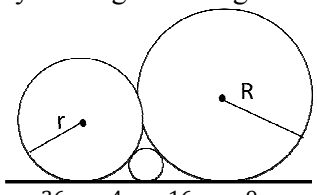
8. $x^2-\sqrt{x^2-10x+25}=-5$ tenglamaning haqiqiy ildizlari yig`indisini toping.
A) –2 B) 0 C) –1 D) 1

9. ABCD to`rtburchak aylanaga ichki chizilgan ABC burchak 114° ga, CAD burchak 54° ga teng bo`lsa, ABD burchakning gradus o`lchovini toping.
A) 56° B) 72° C) 50° D) 60°

10. $x^{\lg^2 x-4lgx+1} > 10000$ tengsizlikning eng kichik natural yechimini toping.
A) 10000 B) 10001 C) 100 D) 1001

11. $\frac{|x+2|+x}{x+1} > 1$ tengsizlikning manfiy butun yechimlarini toping.
A) cheksiz ko`p B) 3 C) 1 D) 2

12. $R=9$ va $r=1$ radiusli ikkita aylana bir–biriga va to`g`ri chiziqqa urinadi. Shu to`g`ri chiziqqa va aylanalarga urinadigan kichik aylana radiusini toping.



A) $\frac{36}{}$ B) $\frac{4}{}$ C) $\frac{16}{}$ D) $\frac{9}{}$

13. ABCD teng yonli trapetsiyaning AC dioganali 8 ga teng va u AD katta asos bilan 22,5° li burchak tashkil etadi. Trapetsiya yuzini toping.
A) 16 B) 8 C) $16\sqrt{2}$ D) $8\sqrt{2}$

14. Uchburchakning balandligi $\sqrt{6}$ ga teng va u asosni 2:6 nisbatda bo`ladi. Balandlikka parallel bo`lib, uchburchakni tengdosh bo`laklarga bo`luvchi kesma uzunligini toping.
A) 2,2 B) 1,8 C) 1 D) 2

15. Muntazam to`rtburchakli piramidaga kub ichki chizilgan. Agar piramida balandligi $16\sqrt{2}$ ga va piramida asosining tomoni $12\sqrt{2}$ ga teng bo`lsa, kub qirrasini toping.
A) $7\sqrt{2}$ B) $\frac{48\sqrt{2}}{7}$ C) $\frac{36\sqrt{2}}{7}$ D) $6\sqrt{2}$

16. $\begin{cases} |x+7| \le 13 \\ |2x+9| \ge 21 \end{cases}$ tengsizliklar sistemasi nechta butun yechimga ega?
A) 4 B) 7 C) 6 D) 8

17. Koordinatalari A(–2;0) B(4;0) va C(2;3) nuqtalarda bo`lgan uchburchakning $Ox$ o`qi atrofida aylanishidan hosil bo`lgan jismning hajmini toping.
A) 16π B) 18π C) 15π D) 12π

18. $\{x|x\epsilon N, -6{,}9 < x < 5{,}9\}$ to`plamni nechta usul bilan ikkita kesishmaydigan qism–to`plamlarga ajratish mumkin
A) 16 B) 8 C) 32 D) 11

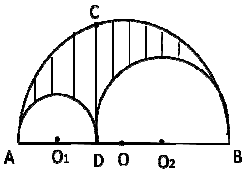
19. $y = arcsin\frac{x-3}{2}$ funksiyaning aniqlanish sohasini toping.
A) [1; 5] B) [1;3] C) [1; 4] D) [1; 2]

20. Agar $f(x) = x^3 - 5x^2 + x + a$ va $f''(2) = f(2)$ bo`lsa, a ni toping.
A) 12 B) 10 C) 5 D) 6

21. $\int e^{3sinx} \cdot cosxdx$ integralni hisoblang.
A) $\frac{1}{3}e^{3sinx} + C$ B) $cosx + e^{3sinx} + C$
C) $-\frac{1}{3}e^{3sinx} + C$ D) $\frac{e^{3sinx}}{3cosx} + C$

22. ABCD to`g`ri to`rtburchak AC dioganali orqali ikkita ABC va ACD uchburchaklarga ajratilgan. Agar AB=6, AD=8 bo`lsa, ABC va ACD uchburchaklarga ichki chizilgan aylanalar markazlari orasidagi masofani toping.
A) 5 B) $\sqrt{5}$ C) $2\sqrt{5}$ D) 4

23. “Arximed pichog`i” deb ataluvchi shakl (shtrixlangan soha) ning yuzini toping. Bu yerda teng. O, O_1 va O_2 aylanalar markazlari.



A) π B) 3π C) 2π D) $\frac{\pi}{2}$

24. $2x^2 - 3x + 10$ va $16 - x^2$ ifodalari arifmetik progessiyaning ketma–ket hadlari bo`ladigan $x$ ning barcha qiymatlari yig`indisini toping.
A) 4 B) 3 C) 6 D) 2

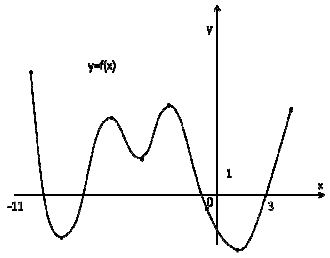
25. $log_{\sqrt{3}-\sqrt{2}}(40 + 20\sqrt{6})$ ni hisoblang.
A) 4 B) -4 C) -5 D) 6

26. $P(x) = (3x-1)^{2017} \cdot (2x-1)^{2016} + (4x-3)^2 \cdot (6x-5)^2 + 2$ ko`phad koeffitsiyentlarining yig`insini toping.
A) $2^{2017} + 3$ B) $2^{2017} + 1$ C) 9 D) 16

27. $f(x) = a^2\frac{(x-b)(x-c)}{(a-b)(a-c)} + b^2\frac{(x-a)(x-c)}{(b-a)(b-c)} + c^2\frac{(x-a)(x-b)}{(c-a)(c-b)}$ funksiyaning $x = 3$ da hosilasini toping. (Bu yerda $(a-b)(a-c)(b-c) \neq 0$)
A) 0 B) a, b, c ga bog`liq C) 6 D) 4

28. Arifmetik progressiyada 10–hadi 7 ga, 7–hadi esa 10 ga teng. Progressiyaning 6 –hadini toping.
A) 14 B) 15 C) 11 D) 13

29. Chizmada $(-11; 3)$ oraliqda aniqlangan $f(x)$ funksiya hosilasining grafigini tasvirlang. Nechta nuqtada $f(x)$ funksiya grafigiga urinma $y = 2x - 5$ to`g`ri chiziqqa parallel bo`ladi yoki U bilan ustma–usttushadi?



A) 0 B) 6 C) 1 D) 4

30. $(a^2 + b^2 + 1)x^2 + 2(a + b + 1)x + 3 = 0$ tenglama haqiqiy yechimlarga ega bo`lsa, $3a - b$ ni toping.
A) –4 B) 2 C) –3 D) 3

31. A=” kompyuter qurilmalarini boshqaruvchi dasturlar drayverlar deyilar deb ataladi.”B=”Fayl nomida<, >, ? belgilarini ishlatish mumkin. “C=”Total Commander qobiq dasturdir. Shu

natijasini toping.

$$A \wedge \neg(C \vee \neg B)$$

A) Ifodada xatolik bor
B) Yolg`on
C) Rost
D) Ba`zi mulohazalarning qiymatini aniqlab bo`lmaydi

32. MS Excel. A1=3, B1=4 bo`lsa, =?(A1; B1)+ЗНАЧЕН(??(B1; A1)) formulaning natijasi 68 bo`lishi uchun? va ?? belgilarning o`rniga qo`yish mumkin bo`lgan funksiyalar to`g`ri berilgan javobni aniqlang.
A) Степень, Сцепить B) Степень, Степень
C) Макс, СтепеньD) Сумм, Степень

33. Paskal dasturlash tilida berilgan uchbu ifodaning qiymatini toping.
trund(sqrt(abs(trunk(5.5)+sqrt(100)*round(1.5)))
A) 4 B) 7 C) 5 D) 6

34. Olim sakkizlik sanoq sistemasida $(66; 77)$ oraliqdagi barcha butun sonlarni yozib chiqdi. Odil esa shu sonlardan 6 raqami qatnashgan barcha sonlarni o`chirib tashladi. Qolgan sonlar yig`indisini sakkizlik sanoq sistemasida aniqlang.
A) 214 B) 520 C) 424 D) 203

35.MSExcel. =ОСТАТ(2;5)–ЗНАЧЕН(ЗАМЕНИТЬ(СЦЕПИТЬ(–23; 6);3; 3;10)) funksiyaningnatijasinitoping.
A) 220 B) 364 C) 210 D) 226

36. Qanday teg yordamida HTML hujjatlarida hujjatning bir joydan boshqa joyiga o`tish yoki boshqa hujjatga o`tish mumkin?
A) < B > B) < A > C) < U > D) < I >

Variant 123.

1. $\frac{71^2-23^2+94\cdot 42}{62^2-32^2}$ ni hisoblang.
A) 3 B) $\frac{1}{3}$ C) 4 D) $\frac{5}{6}$

2. Mahsulotning bozordagi narhi uning tan narxidan 20% qimmat. Bozordagi maxsulot yaxshi sotilmagani uchun uning sotuvdagi narxi 55 ga kamaytirilganda narxi 285 so`m bo`lsa, uning tannarxini toping.
A) 210 B) 230 C) 270 D) 250

3. Dioganallari 90° burchak ostida kesishuvchi $ABCD$ trapetsiyaning asoslari mos ravishda 9 va 3 ga teng. Dioganallarning kesishish nuqtasidan asoslariga parallel to`g`ri chiziq o`tkazilgan. Ushbu to`g`ri chiziqning yon tomonlar bilan chegaralangan kesma uzunligini toping.
A) 3,6 B) 3,75 C) 4,25 D) 4,5

4. To`g`ri burchakli uchburchakning bitta kateti 13 ga teng, qolgan ttomonlari butun sonlardan iborat. Ularni toping.
A) 80, 81 B) 81, 82 C) 83, 84 D) 84, 85

5. O`tkir burchagi 45° ga, balandligi va katta asosining yig`indisi a ga teng bo`lgan teng yonli trapetsiyalar ichida eng katta yuzaga ega bo`lganining kichik asosini toping.
A) $\frac{3}{4}a$ B) $\frac{1}{4}a$ C) $\frac{7}{4}a$ D) $\frac{5}{4}a$

6. Dastlabki 10 ta tub son ketma–ket bir qatorga yozilib 6 ta raqam shunday o`chirildiki natijada eng katta son hosil bo`ldi. Shu sonning ikkinchi raqamini toping.
A) 9 B) 2 C) 1 D) 3

7. Bir necha matematiklar va 8 hafar fiziklardan tashkil topgan bir guruh olimlarning o`rtacha yoshi 40 ga teng. Matematiklarning o`rtacha yoshi 35 ga, fiziklarning o`rtacha yoshi esa 50 ga tengligi ma`lum bo`lsa, matematiklar sonini toping.
A) 14 B) 16 C) 18 D) 20

8. $\frac{1}{3}; -\frac{1}{4}; \frac{1}{5}; -\frac{1}{6}$; ... ketma–ketlikning umumiy hadi formulasini ko`rsating.
A) $a_n = \frac{(-1)^{n+1}}{n+1}$ B) $a_n = \frac{(-1)^{n+1}}{n+2}$
C) $a_n = \frac{(-1)^{n-1}}{n+1}$ D) $a_n = \frac{(-1n)^{n+1}}{n-2}$

9. Arifmetik progressiyaning ikkinchi va o`n yettinchi hadlari yig`indisi 32 ga , o`n to`qqizinchi va o`n yettinchi hadlari ayirmasi 6 ga teng. Progressiyaning dastlabki yigirmata hadi yig`indisini toping.
A) 400 B) 380 C) 250 D) 370

10. Ifodani soddalashtiring: $\frac{tg(\alpha+\beta)-tg\alpha-tg\beta}{tg\beta\cdot tg(\alpha+\beta)}$

$$\alpha, \beta \in (\frac{3\pi}{2}; 2\pi)$$

A) $tg\beta$ B) 1 C) $tg\alpha$ D) $-tg\alpha$

11. Agar $x = \frac{\sqrt{17+1}}{2}$ bo`lsa, $\frac{x^3-3x^2+8x-2}{x^2-x+1}$ kasrning qiymatini hisoblang.
A) $\sqrt{17}-2$ B) $\sqrt{17}+1$ C) $\sqrt{17}$ D) $\sqrt{17}-1$

12. $x^3 - 2x - 1 = 0$ tenglamaning haqiqiy ildizlari ko`paytmasini toping.
A) –2 B) 1 C) –1 D) 0

13. $log_2(x^2-4x)^2 = 2log_2(18-5x)$ tenglamaning katta ildizini toping.
A) 6 B) $\frac{\sqrt{73}-1}{2}$ C) 3 D) $\frac{1+\sqrt{73}}{2}$

14. $\frac{2^{x-1}-1}{2^{x+1}+1} < 2$ tengsizlikni yeching.
A) $\emptyset$ B) $(-\infty;\infty)$ C) $(0;\infty)$ D) $(-\infty;0)$

15. $f(x) = -3x^2 + 9x + t - 3$ funksiyaning maksimumi 5 ga teng. t ning qiymatini toping.
A) 1,75 B) 1 C) 2 D) 1,25

16. To`g`ri burchakli uchburchakning gipotenuzasi 25 ga, unga ichki chizilga aylana radiusi 4 ga teng. Uchburchakning perimetrini toping.
A) 51 B) 48 C) 45 D) 58

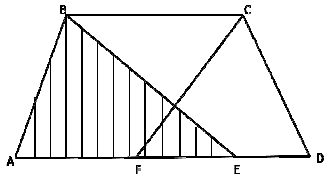
17. $5 - 6 + 7 - 8 + 9 - 10 + \cdots + 2015 - 2016 + 2017$ ni hisoblang.
A) –1006 B) 1011 C) –1011 D) 1010

18. To`p 2 m 43 sm balandlikdan tashlandi va yerga urilib, har gal balandligining 2/3 qismiga teng balandlikka ko`tarildi. To`p necha marta urilishidan keyin 32 sm balandlikka ko`tariladi? (32 sm dan yuqoriga o`tib ketadigan hollarni qaramang)
A) 4 B) 5 C) 7 D) 8

19. Kubning dioganalidan ushbu dioganal bilan kesishmaydigan qirrasigacha bo`lgan masofa 6 ga teng. Kubning hajmini toping.
A) $450\sqrt{2}$ B) $432\sqrt{2}$ C) $216\sqrt{2}$ D) $360\sqrt{2}$

20. M va N to`plamlarning kamida bittasida mavjud bo`lgan barcha elementlardan tuzilgan to`plam qanday nomlanadi?
A) M yoki N to`plamning ko`paytmasi
B) M va N to`plamning birlashmasi
C) Universal to`plam
D) M va N to`plamning kesishmasi

21. Agar rasmda shtrixlangan ABE uchburchakning yuzi 12 sm^2 bo`lsa, CFD uchburchakning yuzini (sm^2) toping. Bu yerda AD||BC, BE||CD va CF||AB.



A) 24 B) 4 C) 8 D) 12

22. Uchburchakning balandligi $\sqrt{7}$ ga teng va u asosni 1:7 nisbatda bo`ladi. Balandlikka parallel bo`lib, uchburchakni tengdosh bo`laklarga bo`luvchi kesma uzunligini toping.
A) 1,6 B) 2 C) 1,5 D) 1

23.Koordinatalari $A(-2;0), B(-8;0), C(-6;3)$ nuqtalarda bo`lgan uchburchakning $Ox$ o`qi atrofida aylantirishdan hosil bo`lgan jismning hajmini toping.

24. $\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} (sin2x - 3sinx)dx$ aniq integralni hisoblang.
A) $\frac{3}{4}$ B) $\frac{\sqrt{3}}{3}$ C) $\frac{\sqrt{3}}{3} - \frac{1}{2}$ D) 0

25. a va b natural sonlarning umumiy bo`luvchilari soni 6 ga teng bo`lsa, $2a + b$ va a sonlarining umumiy bo`luvchilari nechta?
A) 1 B) 6 C) 4 D) bir qiymatli aniqlab bo`lmaydi

26. $x < 0$ da $|x - |x - 11| - 11|$ ifodani modul belgisiz yozing.
A) 0 B) $2x - 22$ C) $-2x$ D) 2x

27. $\sqrt{x+1} + |x - 4| \leq 6$ tenglamaning butun sonlardan iborat yechimlari yig`indisini toping.
A) 27 B) 8 C) 7 D) 25

28. Agar $f(x) = mx^2 - (m-9)x - 2$ parabolaning simmetriya o`qi tenglamasi $x = -2$ bo`lsa, m ning qiymatini toping.
A) 4 B) 1,8 C) 3 D) 2,4

29. $13\frac{1}{3} : 1\frac{1}{3} = 0{,}2x : 26$ tenglamani yeching.
A) 1200 B) 1500 C) 1300 D) 1250

30. Ta`lim muassasasida barcha o`quvchilar kamida bitta –ingliz yoki nemistilida so`zlasha oladilar, ayrimlari esa ikkala tilni ham biladilar. O`quvchilarning 85% i ingliz tilini, 65% i nemis tilini biladilar. Ikkala tilni ham biladigan o`quvchilar barcha o`quvchilarning necha foizini tashkil etadilar?
A) 45 B) 50 C) 75 D) 60

31. MSExcel. =OCTAT(–30; 10)–ЗНАЧЕН(ЗАМЕНИТЬ(СЦЕПИТЬ(–23;6);4; 4;6)) buyrug`i berilgandaqandaynatijahosilbo`ladi.
A) 222 B) 236 C) 622 D) 212

32. MS Excel.=?(OCTAT(23,9)+??(сумм(23,9));2 formulaning natijasi 4 bo`lishi uchun ? va ?? belgilarining o`rniga qo`yish mumkin bo`lgan funksiyalar to`g`ri berilgan javobni aniqlang.
A) Левсимв, Длстр B) Степень, Длстр
C) Срзнач, Знак D) Левсимв, Сумм

33. Quyidagihtml–hujjatkodiyoilishibo`yichakataklarketma–ketsanalgandanechanchikatakdaog`mashriftlimarketlanganro`yxatqo`llaniladi?
<table><tr><tdcolspan=2><u>
test
</u></td><tdrowspan=2>
test
<td><tr><tr><td><i></dt></dd>test</dt>
</mb><td><tr></table>
A) ikkinchikatakdaB) birinchikatakda

34. A1=–6, A2=1, B1=7, B2=2 bo`lsin. Natijani 3 ga teng bo`ladigan formulani aniqlang.
A) =СЧЕТЕСЛИ(A1:B2;"<7>")
B) =СТЕПЕНЬ(B2;A1+1)
C) =МИН(–A1–B1;A2–B1)
D) =МАКС(ABS(A1)+B2;A2+B1)

35. Internet qanday tarmoq turiga mansub?
A) mintaqaviy B) korporativ
C) global D) local

36. Paskal tilida quyidagi takrorlash operatorlardagi takrorlanishlar sonini aniqlang:
I:=2014; While i<=1997 do i:=i–1;
A) 18 B) 0 C) 1 D) 17

Variant 124.

1. $\{x|x\epsilon N, -4{,}5 < x < 4{,}5\}$ to`plamni nechta qism–to`plamlari mavjud
A) 16 B) 10 C) 32 D) 4

2. ABCD to`g`ri to`rtburchak AC dioganali orqali ikkita ABC va ACD uchburchaklarga ajratilgan. Agar AB=9, AD=12 bo`lsa, ABC va ACD uchburchaklarga ichki chizilgan aylanalar markazlari orasidagi masofani toping.
A) 4 B) $3\sqrt{5}$ C) $2\sqrt{5}$ D) 6

3. Agar $f(x) = x^3 + 2ax^2 + 3bx + 4$ va $f''(2) = 20$ bo`lsa, a ni toping.
A) 4 B) 3 C) 1 D) 2

4. $\int_{-1}^{1}(x^5 - x^3 + 5x + 5)dx$ aniq integralni hisoblang.
A) 2 B) $\frac{7}{3}$ C) $\frac{5}{54}$ D) 10

5. Kubning dioganali ushbu dioganal bilan kesishmaydigan qirrasigacha bo`lgan masofa 2 ga teng. Kubning hajmini toping.
A) $12\sqrt{2}$ B) $18\sqrt{2}$ C) $16\sqrt{2}$ D) $24\sqrt{2}$

6. A(–3;–1),B(–1;–8),C(1;–1) nuqtalarni tutashtirishdan hosil bo`lgan uchburchak yuzini toping.
A) 15 B) 14 C) 17 D) 12

7. Agar $\vec{a}(4;-3{,}5)\ va\ \vec{b}(\frac{1}{2};\frac{1}{3};-\frac{1}{5})$ bo`lsa, $\vec{a}$ va $\vec{b}$ vektorlar orasidagi burchak kosinusini toping.
A) 1 B) $\frac{\sqrt{3}}{2}$ C) $\frac{\sqrt{2}}{2}$ D) 0

8. Nomanfiy x, y sonlar uchun $a = 5x + \frac{1}{5}y$ va $b = 2\sqrt{xy}$ bo`lsin. Qaysi tengsiliklar har doim o`rinli?
A) $a > b$ B) $a < b$ C) $a \geq b$ D) $a \leq b$

9. $y = \cos^2 x$ funksiya grafigi berilgan bo`lib, uni parallel ko`chirish yordamida $y = \cos^2(x + a) + b$ funksiya grafigi hosil qilingan. Bunday parallel ko`chirishda koordinata boshi qanday nuqtada ko`chadi?
A) N(a;–b) B) N(a;b) C) N(–a;b) D) N(b;a)

10. Quyidagi keltirilgan jumlalardan noto`g`risini toping.
A) Uchburchak tomonlari uunliklarining yig`indisi uning perimetri deyiladi
B) Agar ikki uchburchakning burchaklari mos ravishda teng bo`lsa, bu uchburchaklar teng bo`ladi
C) O`z –o`zini kesmaydigan yopiq siniq chiziq ko`pburchak deyiladi
D) Kesma o`rta perpendikulyarining ixtiyoriy nuqtasikesma uchlaridan teng uzoqlikda joylashgan.

11. $1 - 2 + 3 - 4 + 5 - 6 + \cdots + 2015 - 2016 + 2017$ ni hisoblang
A) –1009 B) –1008 C) 1009 D) 1010

12.Bir necha matematiklar va 15 hafar fiziklardan tashkil topgan bir guruh olimlarning o`rtacha yoshi 40 ga teng. Matematiklarning o`rtacha yoshi 35 ga, fiziklarning o`rtacha yoshi esa 50 ga tengligi ma`lum bo`lsa, matematiklar sonini toping.
A) 32 B) 30 C) 34 D) 38

13. A(0,5;0,5), B(2,5;6,5), C(5,5;0,5) nuqtalarni tutashtirishdan hosil bo`lgan uchburchak yuini toping.
A) 16 B) 15 C) 14 D) 17

14. To`g`ri tenglikni aniqlang.
A) $\left(\left(\frac{1}{4}\sin^2\frac{7\pi}{4} + \frac{1}{4}\sin^2\frac{5\pi}{18}\right) - 2^{-2}\right)^0 = 1$
B) $(log_{3}\frac{1}{6561})^{\frac{1}{3}} = 2$
C) $(-5)^{\frac{5}{7}} = 5^{\frac{5}{7}}$
D) $\frac{3n}{4n} = \frac{3}{4}, n \neq 0$

15. Agar $-6 < x < 4$ bo`lsa, $|x - 4| + |x + 6|$ ifodani soddalashtiring.
A) $-2x - 2$ B) 10 C) $2x + 2$ D) 2

16. Agar $x = -2$ bo`lsa, $a^2\frac{(x-b)(x-c)}{(a-b)(a-c)} + b^2\frac{(x-a)(x-c)}{(b-a)(b-c)} + c^2\frac{(x-a)(x-b)}{(c-a)(c-b)}$ ning qiymatini toping..
(Bu yerda $(a-b)(a-c)(b-c) \neq 0$)
A) a, b, c ga bog`liq B) 4 C) 0 D) 2

17. $y = 6x + 3$ va $y = -8 - 2x$ funksiyaning grafiklari qaysi koordinatalar choragida kesishadi?
A) III B) I C) IV D) II

18. $y=\sqrt{x^2+2x+1}+\sqrt{x^2-6x+9}$ funksiyaning eng kichik qiymatini toping.
A) 2 B) 3 C) 5 D) 4

19. Agar $f(x)=lne^{2x}+log_e x^2$ bo`lsa, $f'(2)+f(e)$ ning qiymatini toping.
A) $2e+1$ B) $4+e$ C) $2+e$ D) $1-2e$

20. $\int \frac{dx}{3+x^2}$ ni hisoblang.
A) $\frac{1}{\sqrt{3}}arctgx+C$ B) $\frac{1}{\sqrt{3}}arctg\frac{x}{3}+C$
C) $\frac{1}{\sqrt{3}}arctg\frac{x}{\sqrt{3}}+C$ D) $\frac{1}{3}arctg\frac{x}{3}+C$

21. $\int_{-1}^{1}(2x^2-x^3+2x)dx$ aniq integralni hisoblang.
A) $\frac{3}{4}$ B) $\frac{7}{3}$ C) 0 D) $\frac{5}{24}$

22. Agar $f(x)=x^{3x}$ bo`lsa, $f'(x)$ ni toping.
A) $x^{3x}(1+lnx)$ B) $3x^{3x}(1+3lnx)$
C) $3x^{3x}(1+lnx)$ D) $3x^{3x}(3+lnx)$

23. Uchburchakning asosi 20% ga orttirilib, unga tushurilgan balandlik 20% ga kamaytirilsa, uning yui qanday o`garadi?
A) O`garmaydi B) 2% ga kamayadi
C) 4% ga kamayadi D) 4% gaortadi

24. Agar $f(x)=x^{-3x}$ bo`lsa, $f'(x)$ ni toping.
A) $x^{-3x}(1-lnx)$ B) $-3x^{-3x}(1+3lnx)$
C) $-x^{-3x}(1+lnx)$ D) $-3x^{-3x}(1+lnx)$

25. Markazi M(3;4) nuqtada bo`lib, koordinata boshidan o`tuvchi aylana tenglamasi ko`rinishini toping.
A) $x^2+y^2-6x-8y=0$
B) $x^2+y^2-6x+8y=0$
C) $x^2+y^2-6x-8y=9$
D) $x^2+y^2-6x-8y=16$

26. $\int_2^0 \frac{\sin(lnx)}{x}dx$ integralni hisoblang.

A) xatolik mavjud B) $1-cos1$ C) 1 D) 0

27. Piramidaning asosi tomoni $4\sqrt{3}$ va o`tkir burchagi $30°$ ga teng bo`lgan rombdan iborat. Ushbu piramidaga ichki chizilgan konusning yasovchisi asos tekisligi bilan $45°$ li burchak tashkil etuvchi konusichki chiilgan.Konusning hajmini toping.
A) $\frac{3\pi}{2}$ B) $\sqrt{3}\pi$ C) 3π D) $\frac{\sqrt{3}\pi}{4}$

28. Konusning yasovchisi $\sqrt{3}$ ga teng. Konusning uchidan unga ichki chiilgan shar markaigacha bo`lgan masofa 1 ga teng. Konus yasovchisi va asos tekisligi orasidagi burchakni toping.
A) $2arctg\frac{1}{3}$ B) $\frac{\pi}{3}$ C) $2arctg3$ D) $\frac{\pi}{4}$

29. ABCD parallelogramm uchta uhining koordinatalari ma`lum: A(0;1), B(1;3), C(12; 3). D uchining absissasi va ordinatasining yig`indisini toping.
A) 4 B) 12 C) 13 D) 5

30. ABCD parallelogramm uchta uchining koordinatalari ma`lum: A(–2;–1), B(1;3), C(8;3) ABCD parallelogramm yuzini toping.
A) 14 B) 12 C) 21 D) 25

31. Rost mulohazalarni mos sonlar yig`indisini rim sanoq sistemasida hisoblang.
CIX–"Soat millarining harakati uluksi axborotga misol bo`ladi"
XCVII–"Insonga uzluksiz ta`sir etib turuvchi axborotlar diskret axborotlar deyiladi"
XLIX–"Axborot hususiyatlariga quyidagilar kiradi: qimmatlik. Ishonchlilik, to`liqlik"
A) CLVIII B) CXLVI C) CLVI D) CCVL

32. Ali sakkizlik sanoq sistemasida (120;140) oraliqdagi barcha butun sonlarni yozib chiqdi. Vali esa shu sonlardan 1 raqami qatnashgan barcha sonlarni o`chirib tashladi. Qolgan sonlar yig`indisini sakkizlik sanoq sistemasida aniqlang.
A) 771 B) 505 C) 1165 D) 631

33. A ="Command com–buyruq protsessoridir"
B="To`liq nomi C:\Test\DTM\test dtm.doc bo`lgan faylning joriy katalogi DTM katalogidir."
C="Doppix dasturi bilan ma`lumotlar omborini boshqarish sistemasidir". Shu mulohaalar asosida quyidagi mantiqiy ifodaning natijasini toping.

$$A\wedge(B\vee C)\wedge(A\vee B)$$

A) Rost B) Yolg`on
C) Ifodada xatolik bor
D) Ba`zi mulohazalarning qiymatini aniqlab bo`lmaydi

34. Paskal dasturi natijasini aniqlang.
Var N,k: byte, S String;
Begin Randmire: S="DTM–2017"n random (1)+2;
delete(a, n, 1)
S:=a[n]+s[7]K:=2+Random(1)
Write(S/k):readin:End
A) 7 B) natijani aniqlab bo`lmaydi C) T D) 1

35. Rost mulohazalarni mos sonlar yig`indisini rim sanoq sistemasida hisoblang.
CXLIX–"Axborot jarayonlari axborot ustida bajareiladigan amallar bilan bog`liq"
XCVII–"Insonga uzluksiz ta`sir etib turuvchi axborotlar diskret axborotlar deyiladi"
XLIX–"Axborot ni uzlukli turi analog axborot deb ataladi"
A) CXLVV B) CCXLI C) CVXXLI D) CCCXXVI

36. A=”IO SYS –ma`lumotlarni kiritish chiqarish sistemalarini kengaytirish moduli:B=”Free and Open Source Software–mutloqa bepul, birlamchi kodi ochiq dastiriy ta`minot. C=”Fox Pro operatsion sistemadir” Shu mulohaalar asosida quyidagi mantiqiy ifodaning natijasini toping. (A or B) and (not(B or C)
A) Yolg`on B) Ba`zi mulohazalarning qiymatini aniqlab bo`lmaydi
C) Rost D) Ifodada xatolik bor

Variant 125

1. Axborot– resurs markazida 24 ta kompyuter o`rnatilmoqda, bunda ayrimlari kabel bilan ulanmoqda. Har bir kompyuterdan 5 kabel chiqishi lozim bo`lsa, jami bo`lib nechta kabel kerak?
A) 120 B) 56 C) 40 D) 60

2. Qaysi javob berilgan xossa 1 soni uchun o`rinli?
A) u tub son
B) u murakkab son
C) U na tub na murakkab son
D) U eng kichik butun son

3. $\begin{cases} EKUB\ (x;y) = 12 \\ \frac{x}{y} = \frac{3}{4} \end{cases}$ tenglamalar sistemasini yeching. $(x, y \epsilon N)$
A) $(60; 72)$ B) (48; 60) C) (24; 36) D) (36; 48)

4. $[2x - 11] = x$ tenglamaning yechimlari yig`indisini (agar yechimlari bitta bo`lsa, o`zini) toping. Bu yerda $[a] - a$ sonning butun qismi.
A) 1 B) 3 C) 2 D) 0

5. Piramidaning asosi tomoni $3\sqrt{3}$ va o`tkir burchagi $30°$ ga teng bo`lgan rombdan iborat. Ushbu piramidaga ichki chizilgan konusning yasovchisi asos tekisligi bilan $45°$ li burchak tashkil etuvchi konus ishki chizilgan. Konusning hajmini toping.
A) $\frac{\sqrt{3}\pi}{4}$ B) 3π C) $\frac{\sqrt{3}\pi}{8}$ D) 2π

6. $\int_{-1}^{1}(3x^5 - 2x^3 + x)dx$ aniq integralni hisoblang.
A) $\frac{3}{4}$ B) 0 C) $\frac{7}{3}$ D) $\frac{5}{24}$

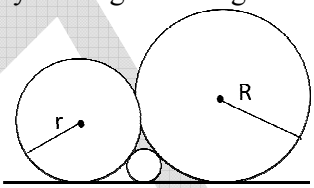
7. $y = -2\sqrt{x}$ va $y = -2x^3$ egri chiziqlar bilan chegaralangan soha yuzini toping.
A) $\frac{5}{4}$ B) $\frac{5}{6}$ C) $\frac{5}{3}$ D) $\frac{5}{12}$

8. Agar $log_3 25 = a, log_{25} 16 = b$ bo`lsa, $log_2 3$ ni a va b orqali ifodalang.
A) $\frac{4ab}{3}$ B) $\frac{1}{4ab}$ C) $\frac{4}{ab}$ D) $\frac{ab}{4}$

9. Tomonlari 55 va 60 ga teng bo`lgan to`g`ri dioganali birlik kvadratchalarning uchlari bo`lmish nuqtalarning nechtasidan o`tadi?
A) 2 B) 6 C) 1 D) 5

10. Dioganallari $90°$ burchak ostida kesishuvchi $ABCD$ trapetsiyaning asoslari mos ravishda 9 va 3 ga teng. Dioganallarning kesishish nuqtasidan asoslariga parallel to`g`ri chiziq o`tkazilgan. Ushbu to`g`ri chiziqning yon tomonlar bilan chegaralangan kesma uzunligini toping
A) 3,6 B) 3,75 C) 4,25 D) 4,5

11. $R = 16$ va $r = 4$ radiusli ikkita aylana bir–biriga va to`g`ri chiziqqa urinadi. Shu to`g`ri chiziqqa va aylanalarga urinadigan kichik aylana radiusini toping.



A) $\frac{4}{9}$ B) $\frac{36}{25}$ C) $\frac{9}{16}$ D) $\frac{16}{9}$

12. ABCD trapetsiyaning dioganallari kesishish nuqtasidan BC tomonga AB=36 va CD=18 bo`lgan asoslariga parallel qilib o`tkazilgan kesma uzunligini toping.
A) 16 B) 15 C) 9 D) 12

13. Agar $x = \frac{\sqrt{15}+1}{2}$ bo`lsa, $\frac{x^3-2x^2+6,5x-1}{x^2-x+1}$ kasrning qiymatini hisoblang.
A) $\sqrt{15} - 1$ B) $\sqrt{15} + 2$ C) $\sqrt{15}$ D) $\sqrt{15} + 1$

14. $P(x) = (3x-1)^{2017} \cdot (x-1)^{2016} + (5x-1)^2 \cdot (6x-5)^2$ ko`phad koeffitsiyentlarining yig`indisini toping.
A) 16 B) 9 C) $2^{2017} + 1$ D) $2^{2017} + 3$

15. Moddiy nuqta to`g`ri chiziq bo`ylab $x(t) = \frac{1}{2}t^3 + 3t^2 + 2t + 3$ qonun bo`yicha harakatlanmoqda, bu yerda x –koordinatalar boshidan nuqtagacha bo`lgan masofa (metrlarda o`lchanadi), t –vaqt(sekundlarda o`lchanadi)
$t = 6$ sekund bo`lganda nuqtaning tezligini $\left(\frac{m}{s}\right)$ toping.
A) 12 B) 23 C) 20 D) 92

16. a, b manfiy butun sonlar uchun $a = b + 3$ va $a + b - c = 13$ bo`lsa, c ning qiymatini toping.
A) –18 B) -16 C) –17 D) –15

17. $\int_{-1}^{1}(x^5 - 3x^3 + 3x)dx$ aniq integralni hisoblang.
A) 0 B) $\frac{5}{24}$ C) $\frac{3}{4}$ D) $\frac{7}{3}$

18. Juft sondagi hadlardan tashkil topgan arifmetik progressiyaning ayirmasi 3 ga teng. Toq nomerli hadlar yig`indisi va juft nomerli hadlar yig`indisi mos ravishda 12 va 24 ga teng bo`lsa, uning barcha hadlari nechta?
A) 8 B) 6 C) 12 D) 10

19. $\frac{8ab-20b+2a-5}{a-8b^2+4ab-2b}$ kasrni qisqartiring.
A) $\frac{2a-5}{a-2b}$ B) $\frac{2a+5}{4b+1}$ C) $\frac{2a+5}{4b-1}$ D) $\frac{2a-5}{4b-1}$

20. To`g`ri prizma asosi teng yonli to`g`ri burchakli uchburchakdan iborat bo`lib, uning kateti 4 ga teng. Prizmaning bitta uchidan chiqqan katta yon yog`i dioganali va boshqa yon yog`i dioganali orasidagi burchak 30° ga teng. Prizmaning hajmini toping.
A) $32\sqrt{2}$ B) $30\sqrt{2}$ C) $26\sqrt{2}$ D) $28\sqrt{2}$

21. $\frac{5}{3-\frac{5+4x}{2+\frac{x-3}{8}}}=9$ tenglamani yeching.
A) $\frac{37}{133}$ B) $-\frac{34}{133}$ C) $\frac{34}{133}$ D) $-\frac{37}{133}$

22. $\{x|x\epsilon N, 2{,}5 \le x^2 \le 30\}$ to`plamni nechta usul bilan ikkita kesishmaydigan qism–to`plamlarga ajratish mumkin?
A) 30 B) 12 C) 16 D) 8

23. $5\cdot x^{log_5 4}-7\cdot 2^{log_5 x}-6=0$ tengalama ildizlari ko`paytmasini (agar ildizi bitta bo`lsa ildizini) toping.
A) 10 B) 5 C) 1 D) 25

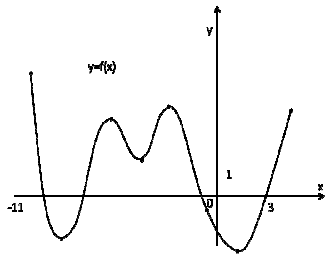
24. $x\cdot 6^{log_x 7}\le 42$ tengsizlikning butun sonlardan iborat yechimlari nechta?
A) 2 B) 1 C) 0 D) 4

25. $\frac{3^{x-1}-1}{3^{x+1}+1}<3$ tengsizlikni yeching.
A) $(-\infty;\infty)$ B) $\emptyset$ C) $(0;\infty)$ D) $(-\infty;0)$

26. Agar $f(x)=mx^2-(m-9)x-2$ parabolaning simmetriya o`qi tenglamasi $x=-1$ bo`lsa, m ning qiymatini toping.
A) 9 B) 5 C) 3 D) 2

27. ABCD teng yonli trapetsiyaning AC dioganali 6 ga teng va u AD katta asos bulan 30° li burchak tashkil etadi. Trapetsiya yuzini toping.
A) 9 B) 3 C) $3\sqrt{3}$ D) $9\sqrt{3}$

28. Chizmada $(-11;3)$ oraliqda aniqlangan $f(x)$ funksiya hosilasining grafigini tasvirlang. Nechta nuqtada $f(x)$ funksiya grafigiga urinma $y=-2x-4$ to`g`ri chiziqqa parallel bo`ladi yoki U bilan ustma–usttushadi?



A) 6 B) 4 C) 0 D) 1

29. $\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}}\left(sin2x-2sinx+\frac{3}{2\pi}\right)dx$ aniq integralni hisoblang.
A) $\frac{\sqrt{3}}{3}$ C) $\frac{3}{4}$ C) $\frac{\sqrt{3}}{3}-\frac{1}{2}$ D) 1,5

30. Agar $(x^2+2x+3)(y^2-4y+8)=8$ bo`lsa, $\frac{x+y}{y-x}$ ni toping.
A) $-\frac{1}{3}$ B) $\frac{1}{3}$ C) -3 D) 3

31. Quyidagihtml–hujjatkodiyozilishibo`yichakataklarketma–ketsanalgandanechanchikatakdaog`mashriftlimarketlanganro`yxatqo`llanilgan?
<table><tr><td colspan=2><a href><test> test</td><td rowspan=2><sup>
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A) Birinchi katakda B) ikkinchi katakda
C) Uchinchi katakda D) to`rtinchi katakda

32. Rost mulohaalardan mos sonlar yig`indisini rim sanoq sistemasida hisoblang.
CXLV–"Axborot ikki turga bo`linadi"
XCVII–"Insonga uzluksiz ta`sir etib turuvchi axborotlar analog axborotlar deb ataladi"
IV–"Insonga uzluksiz ta`sir etib turuvchi axborotlar raqamli axborotlar deb ataladi"
A) CXLIX B) CI C) CCXXLII D) CCXLVI

33. Boburxon sakkizlik sanoq sistemasida $(65;101)$ oraliqdagi barcha butun sonlarni yozib chiqdi. Sobirxon esa shu sonlardan 1 raqami qatnashgan barcha sonlarni o`chirib tashladi. Qolgan sonlar yig`indisini sakkizlik sanoq sistemasida aniqlang.
A) 1110110 B) 10000101 C) 1110111 D) 10000111

34. Paskal. Dastur natijasini aniqlang.
Var a,k: byte; s,N:stiring; A:array[1..11] of byfe;
Begin Randomire; S:='INFORMATIKA';N:='
M[1]:=1; M[2]:=truns(1+random+random(1));
For k:3 To 5 Do M[k]:=M[k–1]+[k–2];
For k:=1 To 5 Do N:=N+s, M[k];
Write(N);readin;End

chiqadi
C) IFOAA D) INFRT

35.A=””Mening kompyuterim” maxsus qobiq dasturdir”
B=”Fayl nomida*, \, /belgilarini ishlatish mumkin emas”
C=” Kompyuter ishiga zarar keltiruvchi dasturlar antivirus dasturlar deb ataladi,”Shu mulohazalar asosida quyidagi mantiqiy ifodaning natijasini toping:
(not A or B) and (C or not B) or not C
A) Ifodada xatolik bor
B) Yolg`on
C) Rost
D) Ba`zi mulohazalarning qiymatini aniqlab bo`lmaydi

36. MS Excel. =?(–23; 6)+ЗНАЧЕН(ЗАМЕНИТЬ(??(–23;6);2;2;6)) formulaning natijasi 67 bo`lishi uchun? va ?? belgilarning o`rniga qo`yish mumkin bo`lgan funksiyalar to`g`ri berilgan javobni aniqlang.
A) Остат, Заменить B) Остат, Степить
C) Мин, Мин D) Мин, Макс

Variant 126.

1. Oxirgi raqami 1 bo`lgan va [49; 350] kesmaga tegishli bo`lgan barcha natural sonlar yig`indisini toping.
A) 5539 B) 4877 C) 5880 D) 5208

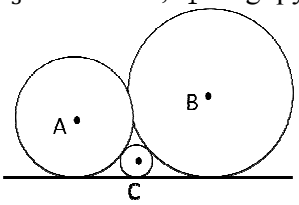
2. Agar $-3 < x < 2$ bo`lsa, $|x-2| + |x+3|$ ifodani soddalashtiring.
A) 1 B) 5 C) $-2x-2$ D) $2x+1$

3. $2,(99) : x = 5 : 4$ tenglamani yeching
A) 2,5 B) 2,4 C) 2,(5) D) 2,(4)

4. $\begin{cases} y - x = 3 \\ y - z = 4 \\ x^2 + y^2 + z^2 = 30 \end{cases}$ tenglamalar sistemasini yeching.
A) $(3; 1{,}4), \left(-\frac{2}{3}, -\frac{5}{3}, -\frac{1}{3}\right)$
B) $(-3{,}3;\ -0{,}3;\ -4{,}3), (2; 5; 1)$
C) $(1; 4; 0), (2; 5; 1)$
D) $\left(-3\frac{1}{3};\ -\frac{1}{3}; -4\frac{1}{3}\right), (2; 5; 1)$

5. Radiusi 5 ga teng bo`lgan aylanaga ichki chizilgan uchburchakning 45° li burchagi qarshisidagi tomon uzunligini toping.
A) 5 B) $2\sqrt{2}$ C) $5\sqrt{2}$ D) 10

6. Umumiy urinmaga ega bo`lgan A, B, C markazli aylanalar o`zaro tashqi urinadilar. Ularning radiuslari $r_3 = 3$ bo`lsa, r_1 ning qiymatini toping.



A) 36 B) 9 C) 12 D) 8

7. Dastlabki 10 ta tub son ketma–ket bir qatorga yozilib 6 ta raqam shunday o`chirildiki, natijada eng katta son hosil bo`ldi. Shu sonlarni birinchi raqamini toping.
A) 5 B) 7 C) 1 D) 3

8. $\vec{a}(1; 1)$ va $\vec{b}\left(2; \frac{1}{2}\right)$ vektorlar orasidagi burchak kosinusini toping.
A) $\frac{10}{\sqrt{17}}$ B) $\frac{5}{\sqrt{34}}$ C) $\frac{10}{\sqrt{34}}$ D) $\frac{5}{\sqrt{17}}$

9. To`g`ri tenglikni aniqlang. $\left(a \epsilon R, \frac{m}{n} \epsilon Q\right)$
A) $a^{\frac{m}{n}} = \sqrt[n]{m}$ B) $\sqrt[3]{(-a)^{\frac{1}{3}}} = -a$
C) $a^{-1} = \frac{1}{a}, a \neq 0$ D) $\sqrt{(-a)^2} = a$

10. Har qanday (x_1, x_2) oraliq uchun $y = f(x)$ funksiya hosilasi musbat bo`lsin. $(x_1; x_2)$ oraliqqa tegishli ixtiyoriy $a$ va $b (a > b)$ uchun qanday tengsizlik o`rinli?
A) $f(a) \leq f(b)$ B) $f(b) < f(a)$
C) $f(a) < f(b)$ D) $0 < f(a) < f(b)$

11. 10 nafar pochta xodimlaridan har biri 12 ta pochta qutisiga gazeta soldi. Ma`lumki, har bir pochta qutisiga 5 ta gazeta solindi. Jami bo`lib nechta pochta qutisi mavjud?
A) 22 B) 16 C) 12 D) 24

12. Ixtiyoriy x, y haqiqiy sonlar uchun $a = 6x^2 + \frac{21}{6}y^2$ va $b = 2|xy|$ bo`lsin. Qaysi tengsizlik har doim o`rinli?
A) $a \geq b$ B) $a < b$ C) $a > b$ D) $a \leq b$

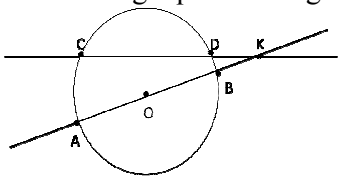
13. $y = \sin^2 x$ funksiyaning grafigi berilgan bo`lib, uni parallel ko`chirish yordamida $y = \sin^2(x - m) + n$ funksiya hosil qilingan. Bunday parallel ko`chirishda koordinata boshi qanday nuqtaga ko`chadi?
A) N(–m;n) B) N(–m;–n) C) N(m;–n) D) N(m;n)

14. Perimetri 58 ga teng bo`lgan to`g`ri burchakli uchburchak raiusi 5 ga teng bo`lgan aylanaga tashqi chizilgan. Gipotenuza uzunligini toping.
A) 21 B) 13 C) 25 D) 24

15. Agar $x = 2$ bo`lsa,

toping..
(Bu yerda $(a-b)(a-c)(b-c) \neq 0$)
A) 2 B)a, b, c ga bog`liq C) 1 D) 0

16.Chizmaga qarab noto`g`ri tasdiqni aniqlang.



A) AD kesma uzunligi AB kesma uzunligidan katta
B) AB −aylana diametri
C) AB va CD to`g`ri chiziqlar kesishish nuqtasi, markazi O nuqtada bo`lgan doira tashqarisida joylashgan.
D) AB kesma uzunligi Cd kesma uzunligidan katta

17. 8 nafar ishchilardan 3 ta ishchidan iborat brigada tuzish kerak. Bu ichni nechta usulda amalga oshirsa bo`ladi?
A) 56 B) 120 C) 84 D) 24

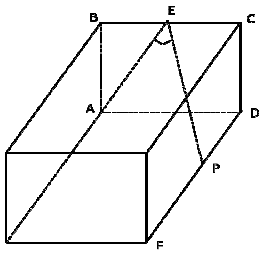
18. To`g`ri burchakli teng yonli uchburchakning $4\sqrt{3}$ ga teng gipotenuzasi orqali uchburchak tekisligi bilan $60°$ li burchak tashkil etuvchi P tekislik o`tkazilgan. Uchburchakning P tekislikdagi proyeksiyasi yuzini toping.
A) 6 B) 8 C) 3 D) 4

19. Agar $\vec{a}(3;\ -2; 4)$ va $\vec{b}(-1; 5;\ -2)$ bo`lib, $\vec{c} = 2\vec{a} - \vec{b}$ bo`lsa, $\vec{a}$ va $\vec{c}$ vektorlarning skalyer ko`paytmasini yozing.
A) 69 B) 67 C) 79 D) 63

20.Tomonlari 6, 10 va 12 ga teng bo`lgan uchburchakka aylana ichki chizilgan. Aylanaga urinma shunday o`tkazilganki, u uchburchakning ikkita katta tomonlarini kesib o`tadi. Bu Urinma ajratgan uchburchakning perimetrini toping.
A) 14 B) 16 C) $8\sqrt{2}$ D) $7\sqrt{3}$

21. O`tkir burchagi $45°$ ga, balandligi va katta asosining yig`indisi 8 ga teng bo`lgan teng yonli trapetsiyalar ichida eng katta yuzaga ega bo`lganining kichik asosini toping.
A) 4 B) 6 C) 2 D) 8

22. Shaklda berilgan kub uchun BE=EC, FP=PD bo`lsa, $cosx$ ni toping.



A) $\frac{\sqrt{10}}{30}$ B) $\frac{10\sqrt{3}}{33}$ C) $\frac{\sqrt{30}}{10}$ D) $\frac{\sqrt{30}}{30}$

23. Axborot– resurs markazida 20 ta kompyuter o`rnatilmoqda, bunda ayrimlari kabel bilan ulanmoqda. Har bir kompyuterdan 6 kabel chiqishi lozim bo`lsa, jami bo`lib nechta kabel kerak?
A) 56 B) 60 C) 120 D) 40

24. a va b natural sonlarning eng katta umumiy bo`luvchisi 4 ga teng bo`lsa, $2a + b$ va a sonlarning eng katta umumiy bo`luvchisi nechaga teng.
A) 2 B) 1 C) 4 D) bir qiymatli aniqlab bo`lmaydi

25. Manfiy x, y sonlar uchun $a = 8x + \frac{1}{8}y$ va $b=2\sqrt{xy}$ bo`lsin. Qaysi tengsizlik har doim o`rinli?
A) $a > b$ B) $a < b$ C) $a \geq b$ D) $a \leq b$

26. $y = f(x)$ funksiya D to`plamda no`qatiy kamayuvchi bo`lsin. D to`plamdan olingan ixtiyoriy a, b elementlari uchun $a < b$ quyidagi munosabatlardan qaysi biri o`rinli?
A) $f(a) \leq f(b)$ B) $f(b) < f(a)$
C) $f(a) = f(b)$ D) $f(b) \leq f(a)$

27. $(a + 2b)^5$ ko`phadni standart ko`rinishga keltiring va to`rtinchi hadini koeffitsiyentini toping.
A) 40 B) 80 C) 64 D) 32

28. $a + b + c = 4$ va $\frac{1}{a+b} + \frac{1}{b+c} + \frac{1}{c+a} = 1$ bo`lsa, $a + b + c - \left(\frac{a}{b+c} + \frac{b}{c+a} + \frac{c}{a+b}\right)$ ifodaning qiymatini toping.
A) 1 B) 3 C) 9 D) 6

29.$x^3 + x^2 + 180$ ko`phadni ko`paytuvchilarga ajrating.
A) $(x + 6) \cdot (x^2 - 6x + 30)$
B) $(x + 30) \cdot (x^2 + 5x + 6)$
C) $(x - 6) \cdot (x^2 - 5x + 30)$
D) $(x + 6) \cdot (x^2 - 5x + 30)$

30. $1\frac{3}{7} : 4\frac{2}{7} = 7\frac{1}{3}x : 3{,}3$ tenglamani yeching.
A) $\frac{1}{4}$ B) $\frac{13}{20}$ C) $\frac{3}{20}$ D) $\frac{1}{5}$

31. Faqat arxivlangan fayllar kengaytmasi kengaytmasi berilgan javobni ko`rsating.

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

32. Operatsion sistema (tizim) ni faollashtiruvchi dastur–….
A) BOIS B) Total Commander
C) Command. Com D) Boot Record

33. Paskal dasturi natijasini aniqlang.
Var a,k: longint; ss:arriy[1…11] of integer;
Begin Randomire; a:=0; k:=0;
Repeat k:=k+1 :ss[k]:=round((k+random)/(k+0,5));
a:=a+ss[k]; until k>=6;
Write(a):readin:End
A) 12 B) natijani aniqlab bo`lmaydi C) 0 D) 6

34. MS Excel dasturida. =ОСТАТ(–10;8)–ЗНАЧЕН(ЗАМЕНИТЬ(СЦЕПИТЬ(–23;6) qanday natija hosil bo`ladi?
A) 88 B) 72 C) 102 D) 68

35. MS Excel. A1=100; B1=120; A2=146 bo`lsa, =СУММ(A1–B2;A2–B1) funksiyaning javobi 46 ga teng bo`lishi uchun B2 katakda qanday son bo`lishi kerak?
A) 80 B) 90 C) 110 D) 40

36. Web brauzerda matnning ko`rinishi quyidagicha bo`lishi uchun uning HTML kodi qanday bo`lishi kerak?

6. Chala kvadrat tenglama $ax^4 + c = 0$ ko`rinishida bo`lmaydi.

A) <ul type=”circle”> Chala kvadrat tenglama <s>ax⁴+c=0 </s> ko`rinishida bo`lmaydi.
B) <ol start=”6”>
Chala kvadrat tenglama ax⁴+c=0</s> ko`rinishda bo`lmaydi.
C) <ol start=”6”>Chala kvadrat tenglama <s>ax⁴+c=0<s> ko`rinishda bo`lmaydi.
D) <s><site> Chala kvadrat tenglama ax²+c=0 ko`rinishda bo`lmaydi.</site></s>

Variant 127.

1. $3 \cdot x^{log_5 9} - 5 \cdot 3^{log_5 x} - 12 = 0$ tenglama ildizlari ko`paytmasini (Agar ildizi bitta bo`lsa ildizini) toping.
A) 25 B) 10 C) 5 D) 1

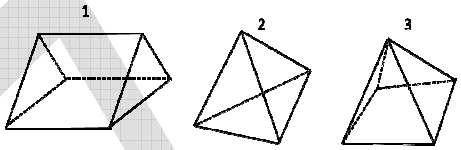
2. $y = \sqrt[4]{\frac{\sqrt[6]{17-15x-2x^2}}{x+3}}$ funksiyaning aniqlanish sohasini toping.
A) $[-3; 1]$ B) $[-8; 5\}\cup(-3; 1]$
C) $(-3; +\infty)$ D) $(-3; -1)$

3. Agar $F(x) = \int_4^{x^2}(t^2 - 4)dt$ bo`lsa, $F'(2)$ ni toping.
A) 54 B) 16 C) 24 D) 48

4. Arifmetik progressiyada
$a_2 + a_8 + a_{10} + a_{12} + a_{14} + a_{20} = 105$ bo`lsa,
$a_4 + a_{18}$ ni toping.
A) 15 B) 42 C) 35 D) 45

5. $x^2 + y^2 + z^2 = 6x + 8y + 10z - 50$ bo`lsa, x ni toping.
A) 27 B) cheksiz ko`p C) 1 D) 3

6. Rasmda ko`rsatilgan ko`pyoqlardan qaysi birida 5 ta yoq, 8 ta qirra bor.



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

7. ABCD teng yonli trapetsiyaning AD katta asosi 15 ga teng. Uning AC dioganali orqali ACD uchburchak hosil qilingan va unga aylana ichki chizilgan. Agar aylana CD yon tomoni D uchidan boshlab hisoblanganda 6 va 4 ga teng kesmalarga ajratgan holda urinsa, BD diogalali uzunligini toping.
A) 13 B) 14 C) 12 D) 10

8. Piramidaning asosi tomoni 6 va o`tkir burchagi 30° ga teng bo`lgan rombdan iborat. Ushbu piramidaga ichki chizilgan konusning yasovchisi asos tekisligi bilan 60° li burchak tashkil etadi. Konus hajmining piramida hajmiga nisbatini toping.
A) $\frac{\pi}{24}$ B) $\frac{\pi}{12}$ C) $\frac{\pi}{6}$ D) $\frac{\pi}{8}$

9. Balandligi 2 ga va asosining radiusi 1 ga teng bo`lgan konus sharga ichki chizilgan. Shar sirtining yuzini toping.
A) 6π B) $6{,}75\ \pi$ C) $6{,}25\ \pi$ D) $3\ \pi$

10. $\{x|x\epsilon N, -3{,}7 < x \leq 5{,}7\}$ to`plamni nechta usul bilan ikkita kesishmaydigan qism–to`plamlarga ajratish mumkin?
A) 10 B) 32 C) 16 D) 8

11. Hisoblang: $\frac{1}{sin10^\circ} - 4sin70^\circ$
A) 2 B) $sin5^\circ$ C) $sin10^\circ$ D) 1

12. $x < 4$ bo`lsa, $3x + 2y - 6 = 0$ tenglamadan y ning qiymatlarini toping.
A) $-1 < y < 1$ B) $y > -6$ C) $y < -6$ D) $y > -3$

13. $\begin{cases} |4 + x| \leq 7 \\ |2x + 3| \geq 9 \end{cases}$ tengsizliklar sistemasi nechta butun yechimga ega?

14. Taqqoslang: $a = 40^{15}$ va $b = 25^{15} + 15^{15}$
A) $a + 20 < b$ B) $a = b$ C) $a < b$ D) $a > b$

15. Uchbur chakning ikki tomoni 10 va 16 ga, ular orasidagi burchak 60° ga teng. Shu uchburchakka ichki chizilgan aylana radiusini toping.
A) $\sqrt{3}$ B) $2\sqrt{3}$ C) $4\sqrt{3}$ D) $3\sqrt{3}$

16. O`tkir burchakli uchburchakning ikkita uchidan tushirilgan balandliklari kesishish nuqtasida uning uchlaridan boshlab hisoblaganda 3:1 va 2:3 nisbatda bo`linadi. Ushbu balandliklar orasidagi o`tkir burchakni toping.
A) 60° B) 30° C) 75° D) 45°

17. $\left[15\frac{5}{8} - 2\frac{2}{8}\right]^2 - \left[23\frac{7}{9} - 12\frac{7}{8}\right]^2$ ni hisoblang. Bu yerda [a]–a sonning butun qismi.
A) 44 B) 69 C) 23 D) 48

18. Bir guruh bolalarning o`rtacha og`irligi 37 kg ga teng. Qiz bolalarning o`rtacha og`irligi 35 kg, o`g`il bolalarning o`rtacha og`irligi esa 40 kg ligi ma`lum bo`lsa, o`g`il bolalar sonini toping
A) 10 B) 13 C) 12 D) 11

19. Radiusi 4 ga teng bo`lgan sharga yasovchisi 5 ga teng bo`lgankonus ichki chizilgan. Konus yasovchisining asos tekisligi bilan teshkil etgan burchak sinusini toping.
A) $\frac{5}{16}$ B) $\frac{5}{12}$ C) $\frac{5}{8}$ D) $\frac{4}{5}$

20. Dastlabki 10 ta tub son ketma–ket bir qatorga yozilib 6 ta raqam shunday o`chirildiki, natijada eng katta son hosil bo`ldi. Shu sonning sakkizinchi raqamini toping.
A) 7 B) 2 C) 1 D) 3

21. Dastlabki 100 ta natural sonlar orasida nechtasi 4 yoki 6 ga karrali emas?
A) 67 ta B) 64 ta C) 63 ta D) 66 ta

22. Agar $tg\alpha = -2$ bo`lsa, $\frac{3cos2\alpha+2}{1-3\cos^2\alpha}$ ning qiymatini toping.
A) –0,5 B) –0,95 C) 0,5 D) –3,16

23. Agar $c = 4$ bo`lsa, $\frac{4c^2}{(c-2)^2} : \left(\frac{1}{(c+2)^2} + \frac{1}{(c-2)^2} - \frac{2}{c^2+4}\right)$ ifodaning qiymatini toping.
A) 6 B) 9 C) 12 D) 3

24. $\frac{3\cdot 2^{2x-1}}{4^x - 9^x} > 3 + \left(\frac{4}{9}\right)^x$ tengsizlikni yeching.
A) $(0; 1)$ B) $(-0{,}5; 0)$ C) $(-1; 0)$ D) $(0; 0{,}5)$

25. $y = -\frac{2}{x^2+2}$ funksiyaning qiymatlar sohasini toping.
A) $(0; \infty)$ B) $(0; 1)$ C) $(0; 1]$ D) $[1; \infty)$

26. ABC uchburchakda BD va CE medianalar o`zaro perpendikulyar. Agar $BD = 1{,}5, CE = 3$ bo`lsa, ABC uchburchak yuzini toping.
A) 1 B) 4 C) 2 D) 3

27. $\vec{a}(1; 1)$ va $\vec{b}(0; -1)$ vektorlar berilgan $2\vec{a} - 3\vec{b}$ vektorni toping.
A) $(2; -5)$ B) $(5; 2)$ C) $(2; 5)$ D) $(-2; 5)$

28. $[200; 1000]$ kesmada 2, 3, 5 va 7 sonlariga bo`lganda qoldiq 1 ga teng bo`ladigan natiral sonlar nechta?
A) 2 B) 3 C) 4 D) 1

29. $\sqrt{6-x} < x$ tengsizlikning butun yechimlari o`rta arifmetigini toping.
A) 4,5 B) 1 C) 2,5 D) 3,5

30. 1, 2, 3, …, 9 raqamlardan nechta har xil to`rt xonali sonlar tuzish mumkin (bu yerda to`rt xonali sonlar turli raqamlardan tashkil topgan)?
A) 15120 B) 3024 C) 1612 D) 504

31. MS Excel 2003 dasturida yozilgan quyidagi funksiyaning qiymatini toping.
=СРЗНАЧ(31;10; 12; 7)
A) 16 B) 15 C) 12 D) 14

32. 5074, 7672 butun sonlarni barchasini yozish mumkin eng kichik asosli sanoq sistemasida shu sonlar yig`indisini hisoblang va natijani o`nlik sanoq sistemasida tasvirlang.
A) 4684 B) 6646 C) 8266 D) 2446

33. Laylo sakkizlik sanoq sistemasida (55; 100) oraliqdagi barcha butun sonlarni yozib chiqdi. Shahlo esa shu sonlardan 5 raqami, so`ng 6 raqami, keyin 7 raqami qatnashgan barcha sonlarni o`chirib tashladi. Qolgan sonlar yig`indisini sakkizlik sanoq sistemasida aniqlang.
A) 141 B) 15 C) 0 D) 74

34. MS Excel dasturida. =ОСТАТ(220; 136)–ЗНАЧЕН(ЗАМЕНИТЬ(СЦЕПИТЬ(2;2);2;3;2)) buyrug`ining natijasini toping.
A) 66 B) 82 C) 62 D) 80

35. Informatika o`rganadigan asosiy ashyoni aniqlang.
A) algoritm B) dastur
C) kompyuter D) axborot

36. Ikkilik sanoq sistemasida amallarni bajaring:
$11100 \cdot (1 \cdot 2^5 + 1 \cdot 2^4 + 1 \cdot 2^2 + 1 \cdot 2^1)$

A) 1111101000 B) 10111101000
C) 10110101100 D) 10100101000

Variant–128.

1. Agar $f(x) = x^3 + 2ax^2 + 3bx + 11$ va $f''(-2)=4$ bo`lsa, a ni toping.
A) 3 B) 1 C) 2 D) 4

2.$(x^2 + x - 2)^2 + (x^2 + x - 2) - 2 = x$ tenglamaning irratsional ildizlari ko`paytmasini toping.
A) 2 B) –2 C) $-\sqrt{6}$ D) $\sqrt{6}$

3.Konus uchidan unga ichki chizilgan shar markazigacha masofa 2 ga, konus yasovchisi esa 4 ga teng. Konus yasovchisi va asos tekislik orasidagi burchakning tangensini toping.
A) $\frac{3}{4}$ B) $\frac{4}{3}$ C) 4 D) 3

4. Ushbu $\begin{cases} y = x^8 \\ y = x + 5 \end{cases}$ tenglamalar sistemasi nechta yechimga ega?
A) 2 B) 0 C) 4 D) 1

5. 10 nafar o`quvchilardan iborat guruhda 3 nafar a`zodan tashkil topgan qo`mitani tanlab olish kerak. Bu ishni nechta usulda amalga oshirsa bo`ladi?
A) 56 B) 120 C) 30 D) 84

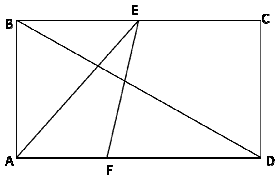
6. $f(x)$ funksiya berilgan $(a;b)$ intervalda differensiallanuvchi bo`lsin. $\big(f(x)\big)^4$ funksiyaning $(a;b)$ intervalda hosilasini toping.
A) $\big(f(x)\big)^3 \cdot f'(x)$ B) $3\big(f(x)\big)^3 \cdot f'(x)$
C) $3\big(f(x)\big)^3$ D) $4\big(f(x)\big)^3 \cdot f'(x)$

7. Ketma–ket x, y, z natural sonlar uchun $\frac{x}{y}+\frac{y}{z}+\frac{z}{x}+\frac{y}{x}+\frac{x}{z}+\frac{z}{y}$ son butun bo`lsa, $x + y - z$ ni toping.
A) 2 B) 3 C) 0 D) 1

8. Agar $|x - 6| = \frac{x}{2} + a$ tenglama bitta yechimga ega bo`lsa, a parametr nechta qiymat qabul qiladi?
A) 1 B) 2 C) 0 D) cheksiz ko`p

9. Agar $f(x) = asinx + bsin2x - 2$ funksiya uchun $f(-3) = -2$ shart bajarilsa, $f(3)$ qiymatni toping.
A) –2 B) –1 C) bir qiymatli aniqlanmaydi D) 1

10. Rasmda ABCD to`g`ri to`rtburchak. Agar BD dioganal 13 sm, AF= 5sm va FD=7 sm ga teng bo`lsa, AEF Uchburchakning yuzini (sm^2) toping.



A) 12,5 B) 15 C) 13,5 D) 10

11. $\frac{6x-1}{5} + 0{,}1 = \frac{8x+1}{2} - \frac{9x}{5}$ tenglamani yeching.
A) –1 B) 2 C) –0,6 D) 1

12. Piramidaning asosi tomoni $2\sqrt{3}$ va o`tkir burchagi $30°$ ga teng bo`lgan rombdan iborat. Ushbu piramidaga ichki chizilgan konusning yasovchisi asos tekisligi bilan $45°$ li burchak tashkil etuvchi konus ichki chizilgan. Konusning hajmini toping.
A) $\frac{\sqrt{3}\pi}{4}$ B) $\sqrt{3}$C) $\frac{\sqrt{3}\pi}{8}$ D) 2π

13. Konusning yasovchisi $2\sqrt{3}$ ga teng. Konusning uchidan unga ichki chizilgan shar markazigacha bo`lgan masofa 3 ga teng. Konus yasovchisi va asos tekisligi orasidagi burchakni toping.
A) $2arctg3$ B) $\frac{\pi}{4}$C) $2arctg\frac{1}{3}$D) $\frac{\pi}{3}$

14. $x^2 + ax + 3 = 0, x^2 - 3x - a = 0$ tenglamalar faqat bitta umumiy haqiqiy yechimga ega bo`lsa, a ni toping.
A) –3 B) 3 C) 5 D) 4

15. Teng yonli uchburchakning asosiga parallel o`rta chizig`i 7 ga, perimetri esa 30 ga teng. Uning yon tomonining asosiga nisbatini toping.
A) $\frac{4}{7}$ B) $\frac{2}{7}$ C) $\frac{3}{7}$ D) $\frac{1}{7}$

16. $\left(\left[\frac{218}{37}\right]^2 + [-12,(99)]\right)^2$ ni hisoblang. Bu yerda $[a] - a$ sonining butun qismi.
A) 196 B) 169 C) 144 D) 121

17. a ning qanday qiymatida $P(x) = 2x^{12} - ax^6 + 4x^3 - 3x^2 + 5x + 1$ ko`phadning koeffitsiyentlari yig`indisi 6 ga teng bo`ladi?
A) 2 B) 3 C) –1 D) –4

18.Dastlabki o`n uchta natural sonlar yig`indisining kvadrati 8281 ga teng bo`lsa, shu sonlar kublarining yig`indisini toping.
A) 1296 B) 753571 C) 46656 D) 8281

19. To`g`ri tenglikni aniqlang.
A) $(-124)^{\frac{7}{3}} = \sqrt[3]{124^7}$
B) $(5^{log_{25}9} - log_{\frac{1}{3}}27)^{((\sin^2 18+\sin^2 468^2)\sqrt[3]{2}-\sqrt{3})} = 0$

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

D) $\frac{4(2a^2-a-1)}{5(2a+1)} = \frac{4}{5}(a-1), a \epsilon R$

20. 2001 ta butun musbat sonning ko`paytmasi 105 ga, yig`indisi 2021 ga teng. Bu sonlarning eng kattasi nimaga teng?
A) 15 B) 105 C) 21 D) 35

21. To`g`ri burchakli uchburchak gipotenuzasiga tushirilgan balandligi 3 ga, to`g`ri burchak bissektrisasi 4 ga teng. Uchburchakning yuzini toping.
A) 36 B) 96 C) 64 D) 72

22. 9 nafar ishchidan 3 ta kishidan iborat brigada kerak. Bu ishni nechta usulda amalga oshirsa bo`ladi?
A) 27 B) 36 C) 84 D) 120

23. Kvadratning tomonlari koordinata o`qlariga parallel va 6 ga teng. Uning markazi (2; 1) nuqtada joylashgan. Kvadrat tomonlarining absissa o`qibilan kesishish nuqtalari koordinatalarini toping.
A) (1; 0), (5; 0) B) $(0; 0), (6; 0)$
C) $(-1; 0), (5; 0)$ D) $(-1; 0), (0; 5)$

24. “Ikkita irratsional sonlar ayirmasi irratsional son bo`ladi” tasdiqni qanday inkor etish mumkin?
A) Ikkita irratsional sonlar ayirmasi ratsional son ham bo`lishiga misol keltirish yetarli
B) “Ixtiyoriy irratsional son ikkita irratsional sonlar ayirmasidir” tasdig`ini isboti yetarli
C) Hech qanday. Keltirilgan tasdiq to`g`ri.
D) “Ixtiyoriy irratsional son ikkita ratsional sonlar ayirmasidir” tasdig`ini isboti yetarli

25. $x^2 + y^2 + z^2 = 6x + 8y + 10z - 50$ bo`lsa, $x + y + z$ ni toping.
A) 12 B) 10 C) 6 D) 0

26. Raqamlari yig`indisi 2001 ga teng bo`lgan eng kichik natural sonning birinchi raqami nimaga teng?
A) 4 B) 1 C) 3 D) 2

27. $2x - 3\sqrt{2x-1} + 1 = 0$ tenglamaning eng kichik ildizining katta ildizga nisbatini toping.
A) 1 B) 0,4 C) 0,5 D) 2,5

28. x_1 va x_2 sonlar $x^2 - 3x - 4 = 0$ tenglamaning ildizlari bo`lsa, $(x_1^2 x_2 + x_1 x_2^2)^2$ ni hisoblang.
A) 144 B) 196 C) 121 D) 169

29. $(x^2 - 8x + 18)^2 - 8(x^2 - 8x + 18) + 18 = 0$ tenglamaning butun yechimlari yig`indisini toping.
A) 0 B) 1 C) 9 D) 18

30. Natural n sonni kvadrati 10 ga bo`linganda qanday qoldiqlarga ega bo`lishi mumkin?
A) 0; 2; 3; 7; 6 B) 0; 1; 4; 5; 6; 9
C) 0; 2; 3; 5; 8 D) 0; 2; 3; 5; 9

31. Quyidagi html–hujjat kodi yozilishi bo`yicha kataklar ketma–ket sanalganda birinchi katakda qanday shriftdagi ro`yxat qo`llanilgan?
<table><tr><td>test
</td><td colspan=3>test
</td></tr><tr><td>colspan=2>
test</td><td>test
</td><td><storong>
test
</storong></td></tr></table>
A) Og`ma shriftli tartiblangan ro`yxat
B) Oddiy shriftli tartiblangan ro`yxat
C) O`g`ma shriftli marketlangan ro`yxat
D) Qalin shriftli marketlangan ro`yxat

32. Aniq bir predment sohasi bo`yicha masalalar yechishga mo`jjallangan dasturlar majmuasi bu–…
A) dasturlar yaratish vositalari
B) yordamchi dasturiy ta`minot
C) tizim(sistema) li dasturiy ta`minot
D) amaliy dasturiy ta`minot

33. Microsoft Excel 2003 dasturida A1=14, A2=6, A3=4, A4=СТЕПЕНЬ(СРЗНАЧ(A1;A3); СЧЕТЕСЛИ(A2:A3;”>2)) bo`lsa, A4 katakchadagi formula natijasini toping.
A) 0 B) 24 C) 36 D) 64

34. 102, 350, 162, 22 butun sonlar barchasini yozish mumkin bo`lgan eng kichik asosli sanoq sistemasida shu sonlar yig`indisini aniqlang.
A) 2210 B) 1406 C) 1024 D) 1156

35. Ma`murxon sakkizlik sanoq sitemasida (55;100) oraliqdagi barcha butun sonlarni yozib chiqdi. Ma`rufxon esa shu sonlardan avval 5 raqami, so`ng 6 raqami qatnashgan barcha sonlarni o`chirib tashladi. Qolgan sonlar yig`indisini sakkizlik sanoq sistemasida aniqlang.
A) 353 B) 423 C) 541 D) 644

36. Paskal tilida quyidagi dastur qismining bajarilishi natijasida ekranga chiqariladigan axborotni aniqlang:
a:=’Uzbekistan’; K:=Length(a); write (k; a);
A) 10Uzbekistan B) K=10
C) Uzbekistan10 D) 10 Uzbekistan

Variant 129.

1. ABC teng yonli (AB=AC) uchburchakning BD bissektrisasi AC tomoni AD=8 va DC=4 kesmalarga ajratilsa, BD bissektrisa uzunligini toping.
A) 10 B) $2\sqrt{5}$ C) 5 D) $2\sqrt{10}$

2. Teng yonli tyrapetsiyaning katta asosi 75, yon tomoni 20 va dioganali 65 bo`lsa, trapetsiyaning yuzini toping.
A) 1008 B) 2016 C) 908 D) 1108

3. M va N to`plamlarning kesishmasi qanday belgilanadi?
A) MN B) MUN C) M∩N D) M·N

4. Bir kunlik dars jadvalida turli fanlar bo`yicha 3 ta dars bor. 10 ta fandan iborat bo`lgan shunday jadvallar sonini toping.
A) 720 B) 990 C) 120 D) 210

5. $x^2-\sqrt{x^2-4x+4}=-4$ tenglamaning haqiqiy ildizlari sonini toping.
A) 1 B) 3 C) 4 D) 2

6. Agar $\frac{mn}{n^2+12m^2}=\frac{1}{7}$ ekanligi ma`lum bo`lsa, $\frac{3mn}{2n^2+5m^2}$ ni toping.
A) $\frac{4}{9}$ yoki $\frac{9}{13}$ B) $1\frac{5}{12}$ C) $\frac{12}{17}$ yoki $\frac{4}{9}$ D) $\frac{9}{13}$

7. Agar $a<0$ bo`lsa, $\frac{3}{x}<\frac{1}{a}$ tengsizlikni yeching.
A) $0<x<3a$ B) $x<3a$
C) $x>3a$ D) $2a<x<0$

8. $\begin{cases}|5x+4|\le 25\\ |x+6|\ge 11\end{cases}$ tengsizliklar sistemasi nechta butun musbat yechimga ega?
A) 3 B) 5 C) 4 D) ∅

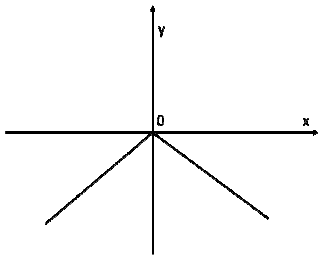
9. $f(x)=-3x^2+9x+t-3$ funksiyaning maksimumi 3 ga teng. t ning qiymatini toping.
A) –0,75 B) –1,75 C) –2 D) –1

10. Uchlari A(2;3) va B(–1;–1) nuqtalarda bo`lgan AB kesmaning uzunligini toping.
A) 5 B) 10 C) 12 D) 6

11. Asosi a ga, yon tomoni b ga teng bo`lgan teng yonli uchburchakning yon tomoniga tushurilgan balandlik uzunligini toping.
A) $h_b=\frac{a}{b}\sqrt{4b^2-2a^2}$ B) $h_b=\frac{b}{2a}\sqrt{4b^2-2a^2}$
C) $h_b=\frac{a}{2b}\sqrt{4b^2-2a^2}$ D) $h_b=\frac{b}{a}\sqrt{4b^2-2a^2}$

12. $y=\frac{\sqrt{x+1}+\sqrt{7x-6-x^2}}{|5x-x^2|}$ funksiyaning aniqlanish sohasini toping.
A) [1;5) B) (5;6] C) [1;6] D) $[1;5)\cup(5;6]$

13. Rasmda $y=a\cdot\sqrt{(x-b)^2+2c}+d$ funksiya grafigi tasvirlangan. Qauyidagi javoblardan qaysi biri o`rinli?



A) $a^2bc>0$ B) $\frac{b+a^2c}{a}=0$
C) $\frac{cb^2}{\sqrt{d-a}}<0$ D) $\frac{db^2}{\sqrt{c-a}}>0$

14. $y=f(x)$ funksiya grafigi berilgan bo`lib, uni parallel ko`chirish yordamida $y=f(x-m)-n$ funksiya grafigi hosil qilingan. Bunday parallel ko`chirishda koordinata boshi qanday nuqtaga ko`chadi?
A) N(m;n) B) N(–m;n)
C) N(–m;–n) D) N(m;–n)

15. a va b natural sonlarning EKUB i 30 ga, ko`paytmasi 36000 ga teng bo`lsa, shu sonlarni EKUK ini toping.
A) 1200 B) 900 C) 1800 D) 1000

16. To`g`ri burchakli ABC uchburchak CD balandlik bilan BCD va ACD uchburchaklarga bo`linadi. Shu uchburchaklar yarim perimetrlari mos ravishda 7 va 24 ga teng. ABC uchburchakning yarim perimetrini toping.
A) 26 B) 21 C) 25 D) $22\sqrt{2}$

17. $\overline{ab}$ va $\overline{ba}$ ikki xonali sonlar. Agar $\overline{ab}-\overline{ba}=45$ bo`lsa, a^2+b^2-2ab ning qiymatini toping.
A) 25 B) 36 C) 16 D) 49

18. ABC uchburchakning BC tomoniga AB ga teng AD kesma o`tkazilgan. Agar AC=10, DC=2 va BD=12 bo`lsa, AB ning uzunligini toping.
A) $3\sqrt{2}$ B) $6\sqrt{2}$ C) $2\sqrt{3}$ D) $6\sqrt{3}$

19. $x^2-2x-3=0$ tenglamaning haqiqiy ildizlari yig`indisini toping.
A) –2 B) 3 C) –3 D) 2

20. A(–5;–9), B(–3;0), C(–1;–9) nuqtalarni tutashtirishdan hosil bo`lgan uchburchak yuzini toping.
A) 18 B) 19 C) 20 D) 17

21. ABCD parallelogramm uchta uchining koordinatalari ma`lum: A(0;1), B(1;2), C(7;2) ABCD parallelogramm yuzini toping.
A) 3 B) 4 C) 12 D) 6

22. Agar $a>0$ bo`lsa, $y=\frac{a}{|x+a|}$ funksiyaning gorizontal asimtotasini toping.

23. $log_{\sqrt{6}-\sqrt{5}}(241+44\sqrt{30})$ ni hisoblang.
A) -4 B) -5 C) 4 D) 6

24. $\frac{16x^2}{(1+x^2)(9x^2+1)}$ ifodaning eng katta qiymatini toping.
A) 3 B) $\frac{4}{5}$ C) 1 D) 2

25. $\frac{x-2}{x+3}+\frac{3x+9}{x-2}=-4$ tenglama ildizlari yig`indisini toping.
A) –2,25 B) –3 C) –2 D) –0,5

26. Qaysi jism(lar)ning simmetriya tekisliklari chekli sonda?
1) shar; 2) prizma; 3) konus
A) 1 B) 2 C) 2, 3 D) 3

27. Agar $f(x)=mx^2-(m-10)x-2$ parabolaning simmetriya o`qi tenglamasi $x=-2$ bo`lsa, m ning qiymatini toping.
A) 1,2 B) 1,8 C) 2 D) 3

28. Agar $x\epsilon[-4;4]$ bo`lsa, $\sqrt{x^2+8x+16}+\sqrt{x^2-8x+16}$ ifodaning qiymatini hisoblang.
A) 8 B) –4 C) 6 D) $2x$

29. $y=\ln^3 x$ funksiya grafigi berilgan bo`lib, uni parallel ko`chirish yordamida $y=\ln^3(x-a)+b$ funksiya grafigi hosil qilingan. Bunday parallel ko`chirishda koordinata boshi qanday nuqtaga ko`chadi? Bunda $x>a, x>0$
A) $N(a;b)$ B) $N(b;a)$ C) $N(a;-b)$ D) $N(-a;b)$

30. Qaysi jism(lar)ning simmetriya o`qlari chekli sonda?
1) shar; 2) prizma; 3) konus; 4) kub
A) 2, 3 B) 3, 4 C) 2, 3, 4 D) 1

31. Faylga yo`l berilgan: C:\$My\ pictures\klass\ picture.bmp$ Bosh katalogni ko`rsating.
A) my pictures B) picture C) C: D) klass

33. MS Excel. A1=10; B1=14; B2=6 bo`lsa, =СУММ(A1–B2;A2–B1) funksiyaning javobi 5 ga teng bo`lishi uchun A2 katakda qanday son bo`lishi kerak?
A) 16 B) 15 C) 17 D) 14

34.Bir nechta bola 36 dona olmani yeyishmoqchi edi. Ali “Men olmalarni shunday taqsimlay olamanki, har birimizda 5 tadan ko`p olma bo`lmaydi” dedi. Vali esa “Men olmalarni shunday taqsimlay olamanki, xech birimiz olmasiz qolmaymiz va barchamizda olmalar soni turlicha bo`ladi”. Bolalar sonini aniqlang.
A) 11 ta B) 11 ta C) 8 ta D) 9 ta

35. Paskal. Quyidagi dastur natijasini aniqlang.
Var X, Y :Integer;
Begin X:=20; Y:=40; IF X<Y THEN
begin X:=(X+Y) div 2; Y:=X*Y; end ELSE begin
Y:=(X+Y) div2; X:=X*Y; end;
Write(‘X=’, X, ‘Y=’, Y); End
A) Kompilyatsiyada xatolik xabari chiqadi
B) X=20Y=40
C) X=800Y=80
D) X=60Y=1200

36. MSExcel = ОСТАТ(–20; 12)–ЗНАЧЕН(ЗАМЕНИТЬ(СЦЕПИТ(3; 2);2;3,2)) hisoblash amalga oshirilganda qiymatini toping.
A) 23 B) –28 C) –20 D) –26

Variant–130

1. Agar $\begin{cases}tg\alpha+ctg\beta=-3\\sin\beta\cdot cos\alpha=0{,}2\end{cases}$ bo`lsa, $\cos(\alpha-\beta)$ ning qiymatini toping.
A) 0,8 B) –0,4 C) 0,6 D) –0,6

2. $y=(x+8)\cdot e^{x-8}$ funkiyaning minimum nuqtasini toping.
A) –8 B) –10 C) –9 D) –7

3. Radiusi 3 ga teng bo`lgan aylananing markazi bo`lgan O nuqta ABC to`g`ri burchakli uchburchakning AC gipotenuzasida yotadi. Agar OC kesmaning uzunligi 5 ga teng bo`lsa, va aylana uchburchakning katetlariga urinsa, uchburchak yuzini toping.
A) $17\frac{3}{8}$ B) $18\frac{3}{8}$ C) $17\frac{1}{8}$ D) $18\frac{1}{8}$

4. $y=3-\sqrt{16-\sqrt{4x^2-4\sqrt{3}x+3}}$ funksiyaning qiymatlar sohasiga tegishli bo`lmagan eng kichik natural sonni toping.
A) 3 B) 5 C) 4 D) 1

5. ABCD parallelogramm uchta uchining koordinatalari ma`lum: A(–3;1), B(3;–6), C(5;–4). D uchining absissasini toping.
A) 12 B) 14 C) 11 D) 8

6. $\vec{a}(1;4) va\ \vec{b}(-3;2)$ vektorlar berilgan. $\vec{a}+\lambda\vec{b}$ vektori $\vec{a}$ vektoriga perpendikulyar bo`ladigan λ sonini toping.
A) $\frac{17}{5}$ B) $-\frac{5}{17}$ C) $\frac{5}{17}$ D) $-\frac{17}{5}$

9. $1-2+3-4+5-6+\cdots+2015-2016+2017$ ni hisoblang.
A) 1010 B) -1009 C) 1009 D) –1008

8.Biror ikki xonali son va uning raqamlari o`rnini almashtirib, ularni qo`shganda biror sonning kvadrati bo`ladigan barcha ikki xonali sonlarni toping.
A) 29, 38, 47, 56, 65, 74, 83, 92
B) 29, 35, 45, 56, 65, 74, 83, 92
C) 29, 32, 47, 56, 65, 74, 83, 92
D) 29, 38, 45, 56, 65, 74, 83, 92

9. $log_{\sqrt{3}+1}(28-16\sqrt{3})$ ni hisoblang.
A) 6 B) –4 C) 4 D) –5

10.Axborot– resurs markazida 15 ta kompyuter o`rnatilmoqda, bunda ayrimlari kabel bilan ulanmoqda. Har bir kompyuterdan 4 kabel chiqishi lozim bo`lsa, jami bo`lib nechta kabel kerak?
A) 24 B) 30 C) 40 D) 60

11. $\begin{cases}|6+x|\le 10,\\ |2x+7|\ge 15\end{cases}$ tengsizliklar sistemasi nechta butun yechimga ega?
A) 8 B) 4 C) 6 D) 7

12. Piramidaning asosi tomoni $6\sqrt{3}$ ga va o`tkir burchagi $30°$ ga teng bo`lgan rombdan iborat. Piramidaga yasovchisi asos tekisligi bilan $45°$ li burchak tashkil etuvchi konus ichki chizilgan. Konusning hajmini toping.
A) $\frac{27\sqrt{3}\pi}{8}$ B) $\frac{3\pi}{4}$ C) $\frac{9\sqrt{3}\pi}{16}$ D) $\frac{3\pi}{8}$

13. Muntazam o`noltiburchakli piramidaning yon qirrasi 10 ga, piramidaning balandligi 6 ga teng. Piramidaga tashqi chizilgan sferaning radiusini toping.
A) 7 B) 8 C) $8\frac{2}{3}$ D) $8\frac{1}{3}$

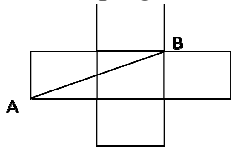
14. Piramidaning asos katetlari 5 va 12 ga teng bo`lgan to`g`ri burchakli uchburchakdan iborat. Piramidaning barcha yon qirralari asos tekisligi bilan $45°$ li burchak tashkil etsa piramidaning katta yon yog`I yuzini toping.
A) 36 B) 32,5 C) 45 D) 42,25

15. Muntazam to`rtburchakli prizma asosining yuzi 36 ga teng. Agar prizmaning dioganali yon qirrasi bilan $30°$ li burchak tashkil qilsa, prizmaning yon sirti nimaga teng.
A) $140\sqrt{6}$ B) $143\sqrt{6}$ C) $144\sqrt{6}$ D) $141\sqrt{6}$

16. Yuk tashish mashinasi 240 km yo`lni bosib o`tishi kerak edi. Mashina yo`lning o`rtasida 30 daqiqa to`xtab qolgach tyezligini 20 km/soatga oshirib, belgilangan joyga o`z vaqtida yetib keldi. Mashinaning boshlang`ich tezligini(km/soat) toping.
A) 45 B) 70 C) 20 D) 60

17. $\begin{cases}x-y=9\\ lgx+lgy=1\end{cases}$ tenglamalar sistemasining yechimlaridan iborat x va y larning yig`indisini toping.
A) 22 B) 14 C) 11 D) 28

18. Bechta bir xil kvadratlardan rasmdagidek shakl hosil qilingan. Agar $AB=3\sqrt{2}$ bo`lsa, shaklning yuzini toping.



A) 18 B) 24 C) 6 D) 9

19. Dastlabki 48 ta natural sonlar orasida nechtasi 3 yoki 4 ga karrali emas
A) 28 ta B) 23 ta C) 24 ta D) 16 ta

20. ABC uchburchakning BC va AC tomonlarida mos ravishda D va E nuqtalar shunday olindiki, bunda $\angle BAD=50°, \angle ABE=30°$ bo`lsa, $\angle BED$ ni toping.
A) $40°$ B) $80°$ C) $70°$ D) berilganlar yetarli emas

21. Qavariq ABCDEF oltiburchakda ichki burchaklari o`zaro teng. Agar $AB=3, BC=4, CD=5, EF=2$ bo`lsa, AF tomon uzunligini toping.
A) 7 B) 2 C) 6 D) bir qiymatli aniqlab bo`lmaydi

22. Teng yonli uchburchak asosidagi burchak tangensi $\sqrt{3}$ ga teng. Uning yon tomoniga o`tkazilgan medianasi va asosi orasidagi burchakni toping.
A) $60°$ B) $30°$ C) $15°$ D) $45°$

23. Agar $f'(x)=\frac{3}{e^x}, f(ln3)=0$ bo`lsa, $f(x)$ ni toping.
A) $-3e^{-x}-1$ B) $-3e^{-x}+1$
C) $3e^{-x}+1$ D) $3e^{-x}+2$

24. Ratsional sonlar to`plami qanday ko`rinishda yoziladi?
A) $Q=\{r|r=\frac{P}{q}, p\epsilon N, q\epsilon N\}$
B) $Q=\{r|r=\frac{P}{q}, p\epsilon Z, q\epsilon Q\}$
C) $Q=\{r|r=\frac{P}{q}, p\epsilon Z, q\epsilon Z\}$
D) $Q=\{r|r=\frac{P}{q}, p\epsilon Z, q\epsilon N\}$

25. Akvariumning bo`yi 150 sm, eni 110 sm, balandligi 80 sm. Suv sathi yuqoridan 10 sm pastda bo`lishi uchun akvariumga necha litr suv quyish kerak?
A) 1255 B) 115,5 C) 1455 D) 1155

26. $(m^2+n^2+9)x^2+2(m+n+3)x+3=0$ tenglamalar haqiqiy yechimlariga ega bo`lsa, $4m-n$

ni toping.
A) –3 B) –4 C) 8 D) 9

27. $x < 0$ da $|x - |x - 8| - 8|$ ifodani modul belgisiz yozing.
A) 0 B) $2x - 16$ C) $-2x$ D) $2x$

28. Ko`phadni ozod hadini toping.
$$f(x) = (2x + 1)^2 \cdot (3x + 2)^3 \cdot (x - 1)^{202} + (x - 1)^{2000} + 17$$
A) 26 B) 33 C) 20 D) 9

29. $y = \sqrt{4 - (x - 3)^2}$ va $y = 0$ funksiya grafiklari bilan chegaralangan soha yuzini toping.
A) 2π B) 3π C) 4π D) π

30. $\int \frac{dx}{\sqrt{9-x^2}}$ ni hisoblang.
A) $\arcsin\frac{x}{3} + C$ B) $arcsinx + C$
C) $\frac{1}{3}arcsinx + C$ D) $\frac{1}{3}\arcsin\frac{x}{3} + C$

31. Rim sanoq sistemasida to`g`ri tenglikni aniqlang.
A) CLXXXIII+XXIX=CCXIII
B) XXX·XXIX=DCCCLXVIII
C) CCIII:XXIX=VII
D) CCLXXVII–LXXXVIII=CXC

32. MSExcel =ОСТАТ(–100;40)–ЗНАЧЕН(ЗАМЕНИТЬ(СЦЕПИТЬ(–23;6);3; 3;10)) funksiyaning natijasini toping.
A) 230 B) 364 C) 210 D) 226

33. Axborotni uzatish o`lchov birligi sifatida … qabul qilingan.
A) 1 megabit B) 1bit C) 1 bot D) 1 bayt

34.Windows operatsion tizim (Sistema) ida fayl nomi noto`g`ri berilgan javobni toping.
A) (Informatika).doc B) [Informatika].doc
C) informatika.doc D) <Informatika>.doc

35. Nashriyot tizim(Sistema)larida qaysi dasturlar ishlatiladi?
A) Adobe Page Maker, MS Acces, MathCAD.
B) Adobe Page Maker, Latex, Tex, Quark Xpress
C) Adobe Page Maker, Latex, MS Word, MS Excel
D) Adobe Page Maker, Quark Xpress, MS Excel

36. Quyidagi mulohazalardan rost qiymatga egalarini aniqlang:
1) Axborot ikki turga bo`linadi
2) Web–sahifalarni hosil qilish vositasi–brauzerlar.
3) Plotter–chizmalarni qog`ozga chiqaruvchi qurilma.
4) www.uz–milliy qidiruv tizimi emas
A) 1, 3 B) 4, 2 C) 1, 4 D) 2, 3