Matematika

1. $2\frac{16}{17}\cdot 3\frac{2}{5} : \frac{11}{12}\cdot 2\frac{1}{5} : 2\frac{2}{3}$ ni hisoblang.

   A) $24\frac{3}{17}$ B) 9 C) $29\frac{1}{9}$ D) 27

2. $a(b+c-bc)-b(c+a-ac)-c(b+a)$ ni soddalashtiring.

   A) $2ac-2bc$ B) $-2abc$ C) $ab-ac$
   D) $-2bc$

3. Quyidagi nuqtalarning qaysi biri $f(x)=-2x+9$ funksiyaning grafigiga tegishli?

   A) $(2;5)$ B) $(-1;1)$ C) $(1;-1)$
   D) $(-5;2)$

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?

   1) $(x-e)\cdot(x+d)=x^2+(e-d)x-ed$;
   2) $12x^2+y^2-(8x^2-5y^2-(-10x^2+(5x^2-6y^2)))=-x^2$;
   3) $5a^2-3b^2-((a^2-2ab-b^2)-(5a^2-2ab-b^2))=9a^2-3b^2$;
   4) $3a-(2c-(6a-(c-b)+c+(a+8b)-6c))=10a+9b-8c$.

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

5. $\dfrac{0,4^2+2\cdot 0,04+0,1^2}{0,5-0,5^2}$ ning qiymatini hisoblang.

   A) -1 B) 1 C) 10 D) $-0,1$

6. $\begin{cases} x^2-y^2+2x-4=0 \\ x+y=0 \end{cases}$ tenglamalar sistemasini yeching.

   A) $(-2;-2)$ B) $(2;2)$ C) $(2;-2)$
   D) $(-1;-1)$

7. $f(x)=x^3$ funksiyaning $(2;3)$ nuqtadan o'tuvchi boshlang'ich funksiyasini toping.

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

8. Aylananing AB vatari o'zi ajratgan yoylardan birining ixtiyoriy nuqtasidan 40° li burchak ostida ko'rinadi. A va B nuqta chegarasi bo'lgan yoylar necha gradus?

   A) *80° va 280°* B) *160° va 200°*
   C) *110° va 250°* D) *100° va 260°*

9. $x^2+y^2+4x+6y-3=0$ tenglama bilan berilgan aylananing radiusini toping.

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

10. Tekislikka og'ma va perpendikulyar tushirilgan. Og'maning tekislikdagi proyeksiyasi 20 ga, perpendikulyarning uzunligi 21 ga teng. Og'ma va perpendikulyar orasidagi burchakni toping.

    A) $arccos\frac{20}{21}$ B) $arcsin\frac{20}{29}$ C) $arcsin\frac{20}{21}$
    D) $arctg\frac{21}{29}$

11. Quyidagilardan qaysi biri Oxy tekislikka nisbatan $M(7;-3;1)$ nuqtaga simmetrik bo'lgan nuqta?

    A) $(-7;3;-1)$ B) $(-7;3;1)$
    C) $(7;-3;-1)$ D) $(7;3;-1)$

12. Quyidagi formulalardan qaysilari to'g'ri?

    1) $cos(x-y)=cosx\cdot cosy+sinx\cdot siny$;
    2) $tg(x+y)=\dfrac{tgx+tgy}{1-tgx\cdot tgy}$,
    $x, y, x+y\neq\frac{\pi}{2}+\pi n, n\in Z$;
    3) $cosx+cosy=-2sin\dfrac{x+y}{2}sin\dfrac{x-y}{2}$;
    4) $tgx-tgy=\dfrac{sin(x-y)}{cosx\cdot cosy}$,
    $x, y\neq\frac{\pi}{2}+\pi n, n\in Z$.

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

13. $\dfrac{0,26}{0,00026}+\dfrac{0,24}{0,0015}-\dfrac{0,7}{0,0014}$ ni hisoblang.

    A) 340 B) 540 C) 1340 D) 660

14. Mahsulotning bahosi 30% ga oshirildi. Ma'lum vaqtdan keyin 20% ga arzonlashtirildi, shundan so'ng uning narxi 8944 so'm bo'ldi. Mahsulotning dastlabki bahosi necha so'm bo'lgan?

    A) 8400 B) 8600 C) 9300 D) 8500

15. $\dfrac{\sqrt[3]{\left(5+2\sqrt{6}\right)^2}}{\sqrt[3]{5-\sqrt{24}}}-6-\sqrt{24}$ ni hisoblang.

    A) -3 B) -1 C) -8 D) -7

16. $\sqrt{19-\sqrt{192}}$ ni soddalashtiring.

    A) $4-\sqrt{3}$ B) $4+\sqrt{3}$ C) $10-\sqrt{3}$
    D) $\sqrt{3}-4$

17. $\dfrac{x^4+1}{x^2-x\sqrt{2}+1}$ ni qisqartiring.

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

18. a ning qanday qiymatlarida $ax-3=a+4x$ tenglamaning yechimi bo'lmaydi?

    A) $a=2$ B) $a=4$ C) $a=-2$
    D) $a=-1$

19. p ning nechta natural qiymatida $x^2+px+30=0$ tenglama haqiqiy ildizga ega emas?
A) 14 B) 10 C) 15 D) 7

20. Geometrik progressiyaning maxraji 3 ga, dastlabki to'rtta hadlari yig'indisi 40 ga teng. Uning to'rtinchi hadini toping.
A) 32 B) 24 C) 27 D) 54

21. $y=2cos\frac{x}{3}$ funksiya grafigining $M(\frac{3\pi}{2};\ 0)$ nuqtasiga o'tkazilgan urinmaning tenglamasini yozing.
A) $y-1=0$ B) $y-2$ C) $y=x-\frac{3\pi}{2}$
D) $y=-\frac{2}{3}x+\pi$

22. Uchburchakning kichik tomoni 3 ga, unga tashqi chizilgan aylananing diametri esa $2\sqrt{3}$ ga teng. Uchburchakning kichik burchagini toping.
A) 45° B) 30° C) 75° D) 60°

23. Parallelogrammning diagonallari 7 va 24 ga teng. Uning barcha tomonlari kvadratlarining yig'indisini toping.
A) 1150 B) 1250 C) 625 D) 1350

24. k ning quyida ko'rsatilgan qiymatlaridan qaysi birida $sinkxcosx-sinxcoskx=0$ tenglamaning ildizlari $\frac{\pi n}{7}\left(n\in Z\right)$ bo'ladi?
A) 8 B) 5 C) 7 D) 6

25. 1 dan 120 gacha bo'lgan sonlar orasida 2 ga ham, 5 ga ham bo'linmaydiganlari nechta?
A) 40 B) 36 C) 48 D) 44

26. Agar kubning qirrasi 10% ga kamaytirilsa, uning hajmi necha foizga kamayadi?
A) 30 B) 27,1 C) 30,8 D) 26,1

27. $4y(5x-y)-(5x-2)(5x+2)+2$ ning eng katta qiymatini toping.
A) 5 B) 6 C) 2 D) 4

28. $\frac{729a+1}{81\sqrt[3]{a^2}-9a^{\frac{1}{3}}+1}-\frac{729a-1}{81a^{\frac{2}{3}}+9\sqrt[3]{a}+1}+4$ ni soddalashtiring.
A) 5 B) 4 C) 9 D) 6

29. a ning qanday qiymatida faqat bitta $(x;\ y)$ juftlik $\begin{cases}x+y=a\\xy=0,25\end{cases}$ tenglamalar sistemasini qanoatlantiradi?
A) $\frac{1}{2};-\frac{1}{2}$ B) $-1;1$ C) $-3;3$ D) -3

30. $\frac{(-x^2+x-1)(x^2-3x+2)}{x^2-7x+12}\geq 0$ tengsizlikning butun sonlardan iborat yechimlari nechta?
A) 1 B) 4 C) 3 D) 2

31. Ikkinchi hadi 6 ga teng, birinchi uchta hadining yig'indisi 26 ga teng o'suvchi geometrik progressiyaning to'rtinchi va ikkinchi hadlari ayirmasini toping.
A) 16 B) 32 C) 48 D) 36

32. $|x-14|\cdot log_2(x-4)=3(14-x)$ tenglama ildizlarining yig'indisini toping.
A) 26 B) 42 C) 24 D) $30\frac{1}{8}$

33. Aylananing radiusi 8 ga teng. Aylanaga ichki chizilgan muntazam uchburchakning yuzini toping.
A) $36\sqrt{2}$ B) 64 C) $48\sqrt{3}$ D) $27\sqrt{3}$

34. Uchburchakli muntazam piramida asosining tomoni 24 ga teng. Yon yog'i asos tekisligi bilan 30° li burchak hosil qiladi. Piramidaning balandligini toping.
A) 12 B) 4 C) 6 D) 8

35. Muntazam to'rt burchakli piramidaning balandligi 9 ga, diagonal kesimning yuzi 54 ga teng. Piramidaning hajmini toping.
A) 216 B) 206 C) 128 D) 648

36. $M=sin82°, N=ctg186°sin6°$ va $Q=cos220°$ sonlarni kamayish tartibida yozing.
A) $N>M>Q$ B) $N>Q>M$
C) $M>N>Q$ D) $Q>M>N$

Matematika

1. $(\frac{5}{9} - 1\frac{1}{6} \cdot \frac{1}{2}) : \frac{5}{9} + \frac{17}{60}$ ni hisoblang.
   A) $\frac{17}{60}$ B) $\frac{3}{20}$ C) $\frac{37}{60}$ D) $\frac{7}{30}$

2. $\frac{x^3-8}{x^2+2x+4} - \frac{x^3+8}{x^2-2x+4}$ ni soddalashtiring.
   A) $4x$ B) -4 C) 0 D) $-2x$

3. Agar $f(x) = (2x+3)(\frac{3}{x} - 3)$ bo'lsa, $f(-1)$ ni toping.
   A) 6 B) 0 C) -3 D) -6

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?
   1) $(x+a)\cdot(x-b) = x^2 - (a-b)x - ab$;
   2) $6ab + (2a^3 + b^3 - (3ab^2 - (a^3 + 2ab^2 - b^3))) = 3a^3 - ab^2 + 6ab$;
   3) $5a^2 - 3b^2 - ((a^2 - 2ab - b^2) - (5a^2 - 2ab - b^2)) = 9a^2 - 3b^2$;
   4) $3a - (2c - (6a - (c-b) + c + (a+8b) - 6c)) = 10a + 9b - 8c$.
   A) 1;3;4 B) 1;2;4 C) 2;3;4 D) 1;2;3

5. $(x^2 + xy + y^2)(x-y)$ ifodaning $x = \sqrt[3]{4}$ va $y = \sqrt[3]{2}$ bo'lgandagi qiymatini hisoblang.
   A) -6 B) 6 C) -2 D) 2

6. $\begin{cases} x^2 + y^2 + xy = 7 \\ x + y = 3, \quad 2 \cdot x \cdot y - ? \end{cases}$
   A) 1 B) 3 C) 4 D) 2

7. $f(x) = x^2$ funksiyaning (3; 5) nuqtadan o'tuvchi boshlang'ich funksiyasini toping.
   A) $\frac{x^3}{3} - 7$ B) $\frac{x^3}{3} + 7$ C) $2x + 4$
   D) $\frac{x^3}{3} - 4$

8. 130° li yoyga tiralgan vatar aylanani ikki qismga ajratadi. Katta yoyning ixtiyoriy nuqtasidan qaraganda, bu vatar qanday burchak ostida ko'rinadi?
   A) 115° B) 65° C) 70° D) 120°

9. Uchlari $A(3;-1)$ va $B(2;4)$ nuqtada bo'lgan AB kesmaning o'rtasidagi nuqtaning koordinatalarini toping.
   A) $(-2,5;\ 1,5)$ B) $(2,5;\ 1,5)$ C) $(2,5;\ 3)$
   D) $(2,5;\ -1,5)$

10. Tekislikka tushirilgan og'ma va perpendikulyar orasidagi burchak $arcsin\frac{5}{13}$ ga teng. Og'maning uzunligi 39 ga teng. Perpendikulyarning uzunligini toping.
    A) 72 B) $11\frac{7}{13}$ C) 36 D) $27\frac{9}{13}$

11. Agar kesmaning bir uchi $A(1;-5;4)$, o'rtasi $C(4;-2;3)$ nuqtada bo'lsa, ikkinchi uchining koordinatalari qanday bo'ladi?
    A) $(7;-1;2)$ B) $(6;5;3)$ C) $(5;4;6)$
    D) $(7;1;2)$

12. Quyidagi formulalardan qaysilari to'g'ri?
    1) $sin(x+y) = sinx \cdot cosy + cosx \cdot siny$;
    2) $sin^2\frac{x}{2} = \frac{1+cosx}{2}$;
    3) $cosx + cosy = 2cos\frac{x+y}{2}cos\frac{x-y}{2}$;
    4) $tgx - tgy = \frac{sin(x-y)}{cosx \cdot cosy}$,
    $x, y \neq \frac{\pi}{2} + \pi n, n \in Z$.
    A) 1;2;3 B) 2;3;4 C) 1;2;4 D) 1;3;4

13. 0,26·0,00015 ko'paytma quyidagi sonlardan qaysi biriga teng emas?
    A) $390 \cdot 10^{-7}$ B) $3,9 \cdot 10^{-5}$ C) $3,9 \cdot 10^{-6}$
    D) $39 \cdot 10^{-6}$

14. To'g'ri to'rtburchakning bo'yi 20% ga orttirildi. Uning yuzi o'zgarmasligi uchun enini necha foizga kamaytirish kerak?
    A) $16\frac{2}{3}$ B) 20 C) $18\frac{1}{3}$ D) 25

15. $a^2 + \frac{9}{a^2} = 31$ bo'lsa, $a - \frac{3}{a}$ nimaga teng?
    A) -3 B) 3 C) ± 4 D) ± 5

16. n ning qanday eng kichik natural qiymatida $2^{n-3} + 1$ soni 33 ga qoldiqsiz bo'linadi?
    A) 8 B) 7 C) 4 D) 6

17. $(a^3 - 3a^2b + 3ab^2 - b^3)(a+b) : \left(ab - \frac{a^3+b^3}{a+b}\right)$ ni soddalashtiring.
    A) $a^2 - b^2$ B) $b^2 - a^2$ C) $(a+b)^2$
    D) $(a-b)^2$

18. $2,5(ax - 5,2) = 2a - 5x - 9$ tenglama a ning qanday qiymatlarida yagona yechimga ega?
    A) $-\frac{1}{2}$ B) $(-\infty; -\frac{1}{2}) \cup (-\frac{1}{2}; \infty)$
    C) $(-\infty; -2) \cup (-2; \infty)$ D) $\frac{1}{5}$

19. $x^2 - 9x + q = 0$ tenglamaning ildizlaridan biri 2 ga teng. Bu tenglamaning barcha koeffitsiyentlari yig'indisini toping.
A) -6 B) 2 C) 6 D) 3

20. Maxraji 2 ga teng bo'lgan geometrik progressiyaning dastlabki beshta hadi yig'indisi 186 ga teng. Progressiyaning birinchi hadini toping.
A) 5 B) 3 C) 6 D) 4

21. Agar $f(x) = e^{1-2x} \cdot \cos(2x-1)$ bo'lsa, $f'(\frac{1}{2})$ ning qiymatini toping.
A) 0 B) $-2e$ C) $2e$ D) -2

22. Katetlari 7 va 24 bo'lgan to'g'ri burchakli uchburchakning gipotenuzasiga tushirilgan balandligini toping.
A) 6,62 B) 6,72 C) $6\frac{8}{25}$ D) 6,82

23. a va b ning qanday qiymatlarida $ax + by = -4$ va $3x - 3y = 4$ to'g'ri chiziqlar ustma-ust tushadi?
A) $a = -3; b = 3$ B) $a = 3; b = -3$
C) $a = 3; b = -1$ D) $a = b = 3$

24. $ctg(\frac{\pi}{2} - 3x) = tg2x + tgx$ tenglamani yeching.
A) $\frac{\pi n}{3},\ n \in Z$ B) $\frac{\pi n}{2},\ n \in Z$
C) $\frac{\pi n}{2}; \pi n,\ n \in Z$ D) $\pi n,\ n \in Z$

25. Barcha uch xonali sonlar ichida 44 ga qoldiqsiz bo'linadiganlari nechta?
A) 20 B) 19 C) 21 D) 22

26. x y ning 75% ini tashkil etadi, y esa z dan 300% ga ko'p. x z dan necha foiz ko'p?
A) 80 B) 100 C) 250 D) 200

27. Agar $x = (\sqrt{8} - 5)/2$ bo'lsa, $(x+1)(x+2)(x+3)(x+4)$ ning qiymatini hisoblang.
A) $-\frac{7}{16}$ B) $\frac{7}{16}$ C) -1 D) 1

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

29. Agar $\begin{cases} x + y - \sqrt{xy} = 13 \\ x^2 + y^2 + xy = 481 \end{cases}$ bo'lsa, $\sqrt{xy}$ ning qiymatini toping.
A) 42 B) 36 C) 52 D) 12

30. $\sqrt{x+6} > x + 4$ tengsizlikni qanoatlantiruvchi butun sonlar nechta?
A) 2 B) 3 C) 1 D) 4

31. Arifmetik progressiyaning birinchi va to'rtinchi hadi yig'indisi 26 ga teng, ikkinchi hadi esa beshinchi hadidan 6 ga ko'p. Shu progressiyaning to'rtinchi va sakkizinchi hadi yig'indisini toping.
A) 10 B) 20 C) 12 D) 22

32. $(x^2 - 12x + 32)\sqrt{\log_3(x-5)} \le 0$ tengsizlikni yeching.
A) [6; 8] B) (4; 8] C) (7; 8) D) [7; 8)

33. Ikki tomoni yig'indisi 1,8 ga va ular orasidagi burchagi 150° ga teng bo'lgan uchburchaklar ichida yuzasi eng katta bo'lgan uchburchakning yuzini toping.
A) $\frac{4}{25}$ B) $\frac{9}{10}$ C) $\frac{81}{400}$ D) $\frac{81}{100}$

34. Muntazam to'rtburchakli piramida asosining tomoni 5 ga, to'la sirti 65 ga teng. Piramida yon yog'ining asos tekisligiga og'ish burchagini toping.
A) $arcsin\frac{5}{8}$ B) $arccos\frac{5}{8}$ C) $arcsin\frac{5}{16}$
D) $arccos\frac{5}{16}$

35. Konusning yasovchisi 20 ga, asosining diametri 24 ga teng. Unga ichki chizilgan shar sirtining yuzini toping.
A) 156π B) 169π C) 289π D) 144π

36. $sin^4\frac{17\pi}{8} - cos^4\frac{15\pi}{8}$ ni hisoblang.
A) $\frac{1}{2}$ B) $\frac{\sqrt{3}}{2}$ C) $-\frac{\sqrt{2}}{2}$ D) $-\frac{\sqrt{3}}{2}$

Математика

1. Биринчи куни иш нормасининг $\frac{2}{5}$ қисми бажарилди. Иккинчи куни биринчи кунда бажарилган ишнинг $\frac{1}{8}$ қисмича кўп иш бажарилди. Шу икки кунда қанча иш нормаси бажарилди?
A) $\frac{9}{20}$ B) $\frac{17}{20}$ C) $\frac{13}{20}$ D) $\frac{4}{5}$

2. $a = 4b$ ва $c + 12b = 0$ $(b \neq 0)$ бўлса, $\frac{a}{c}$ни топинг.
A) $-\frac{1}{4}$ B) $-\frac{1}{3}$ C) -4 D) 3

3. Тоқ функцияни кўрсатинг.
A) $f(x) = \cos x + \sin x$
B) $f(x) = \cos^2 x - \cos x$ C) $f(x) = e^x + \operatorname{ctg} x$
D) $f(x) = (1 - cos2x) \cdot ctgx - 2x$

4. Қуйида келтирилган тенгликлардан қайсилари айният?
1) $(x - c) \cdot (x - d) = x^2 - (c + d)x + cd$;
2) $(x - e) \cdot (x + d) = x^2 - (e - d)x - ed$;
3) $12x^2 + y^2 - (8x^2 - 5y^2 - (-10x^2 + (5x^2 - 6y^2))) = -x^2 + 12y^2$;
4) $3a - (2c - (6a - (c - b) + c + (a + 8b) - 6c)) = 10a + 9b - 8c$.
A) 1; 3; 4 B) 2; 3; 4 C) 1; 2; 4 D) 1; 2; 3

5. a ва b нинг қандай қийматида $\frac{5}{x^2 + x - 6} = \frac{a}{x - 2} - \frac{b}{x + 3}$ тенглик айният бўлади$(x \neq 2, x \neq -3)$?
A) $a = \frac{2}{5}, b = -\frac{2}{5}$ B) $a = 1, b = 1$
C) $a = \frac{2}{5}, b = \frac{2}{5}$ D) $a = 5, b = -5$

6. $\begin{cases} y + 2 = 0 \\ x^2 y = 18 \end{cases}$ тенгламалар системасининг ечимини топинг.
A) $(-3;\ 2)$ B) $(-3;\ -2)$ C) $\emptyset$
D) $(-3;\ -2);\ (3;\ 2)$

7. $F(x) = -3ctgx - 2x + C$ функция қуйидаги функциялардан қайси бирининг бошланғич функцияси бўлади?
A) $f(x) = \frac{3}{cos^2 x} - 2$ B) $f(x) = -\frac{3}{sin^2 x} + 2$
C) $f(x) = -\frac{3}{cos^2 x} + 2$ D) $f(x) = \frac{3}{sin^2 x} - 2$

8. Икки қўшни бурчакнинг айирмаси 28° га тенг. Шу бурчаклардан кичигини топинг.
A) 78° B) 72° C) 76° D) 82°

9. $P(-3; 0)$ нуқтани координата боши атрофида 90° га бурганда ҳосил бўладиган нуқтанинг координаталарини топинг.
A) $(0;\ -3)$ B) $(3;\ 0)$ C) $(0;\ 3)$ D) $(3;\ 3)$

10. Текисликка оғма ва перпендикуляр туширилган. Оғма ва текислик орасидаги бурчак $arccos\frac{3}{5}$ га, оғманинг текисликдаги проекцияси 24 га тенг. Перпендикулярнинг узунлигини топинг.
A) $19\frac{1}{5}$ B) 32 C) 72 D) 16

11. Қуйидагилардан қайси бири Oxz текисликка нисбатан $K(2; 4; -5)$ нуқтага симметрик бўлган нуқта?
A) $(2; -4; 5)$ B) $(-2; 4; 5)$ C) $(-2; -4; 5)$
D) $(2; -4; -5)$

12. Қуйидаги формулалардан қайсилари тўғри?
1) $tg(x + y) = \frac{tgx + tgy}{1 - tgx \cdot tgy}$,
$x, y, x + y \neq \frac{\pi}{2} + \pi n, n \in Z$;
2) $sin^2\frac{x}{2} = \frac{1 + cosx}{2}$;
3) $sinx + siny = 2sin\frac{x + y}{2}cos\frac{x - y}{2}$;
4) $tgx + tgy = \frac{sin(x + y)}{cosx \cdot cosy}$,
$x, y \neq \frac{\pi}{2} + \pi n, n \in Z$.
A) 2; 3; 4 B) 1; 3; 4 C) 1; 2; 3 D) 1; 2; 4

13. $173 \cdot 3,6 + 2,7 \cdot 64 + 2,7 \cdot 36 + 17,3 \cdot 64$ нинг қийматини топинг.
A) 1800 B) 3000 C) 1600 D) 2000

14. Маҳсулотнинг нархи кетма-кет икки марта 20% дан оширилди. Кейинчалик бу маҳсулотга талабнинг камлиги туфайли унинг нархи 40% га камайтирилди. Маҳсулотнинг кейинги баҳоси дастлабки баҳосига қараганда қандай ўзгарган?
A) 1,2% га ортган B) ўзгармаган
C) 8,64% га камайган
D) 13,6% га камайган

15. $\left(\frac{1}{a(a+1)} + \frac{1}{(a+1)(a+2)}\right) \cdot \frac{a^2 + 2a}{8}$ ни соддалаштиринг.
A) $\frac{1}{8}$ B) $\frac{1}{6}$ C) $\frac{1}{4}$ D) $\frac{3}{4}$

16. $\frac{3^9 \cdot 2^{19} + 15 \cdot 4^9 \cdot 9^4}{6^9 \cdot 2^{10} + 12^{10}} \cdot \left(\frac{3}{4}\right)^{-1}$ ни ҳисобланг.
A) 2 B) 1 C) $\frac{2}{3}$ D) $\frac{1}{3}$

17. Агар $a=\sqrt{2}$ ва $b=\sqrt[3]{3}$ бўлса, $\sqrt{a^2-2ab+b^2}-\sqrt{a^2+2ab+b^2}$ нинг қийматини ҳисобланг.
A) $-\sqrt[3]{12}$ B) $\sqrt{8}$ C) $\sqrt[3]{24}$ D) $-\sqrt{8}$

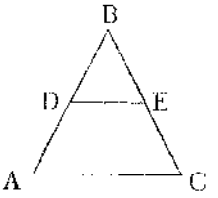
18. b нинг қандай қийматларида $b(2-x)=8$ тенгламанинг илдизи манфий бўлади?
A) $(0;\ 4)$ B) $(-\infty;\ 0)$ C) $[4;\ \infty)$
D) $(-4;\ 0)$

19. Илдизлари $3x^2+x-4=0$ тенгламанинг илдизларига қарама-қарши сонлардан иборат бўлган квадрат тенгламани тузинг.
A) $3x^2-x+4=0$ B) $3x^2-x-4=0$
C) $3x^2-4x-1=0$ D) $3x^2+x+4=0$

20. 160 дан катта бўлмаган 7 га каррали барча натурал сонларнинг йиғиндисини топинг.
A) 1617 B) 1470 C) 1624 D) 1771

21. $y=3x^4-4x^3+1$ функциянинг $[0;2]$ кесмадаги энг кичик қийматини топинг.
A) -16 B) 0 C) 1 D) -1

22. Чизмада $\angle DEB=60^\circ$, $BE=6$ ва $DE=4$ (учбурчакнинг ўрта чизиғи) бўлса, AB ни топинг.



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

23. Бир учи $(8;2)$ нуқтада, ўртаси $(4,5;\ 5,5)$ нуқтада бўлган кесманинг иккинчи учи координаталарини топинг.
A) $(0;-24)$ B) $(1;-13)$ C) $(0;26)$
D) $(0;-26)$

24. $4cos^2 2x-2,5=cos4x$ тенгламани ечинг.
A) $\pm\frac{\pi}{12}+\frac{\pi n}{2}, n\in Z$ B) $\frac{\pi}{4}+\frac{n\pi}{2}, n\in Z$
C) $\frac{\pi}{3}+\frac{n\pi}{2}, n\in Z$ D) $\frac{\pi}{6}+\frac{n\pi}{2}, n\in Z$

25. Агар x, y, z ва t кетма-кет келадиган натурал сонлар бўлса, қуйидагиларнинг қайси бири албатта жуфт сон бўлади?
A) $\frac{xyzt}{24}$ B) $\frac{x+y+z}{3}$ C) $\frac{yzt}{3}$ D) $\frac{xyz}{6}$

26. Корхонада маҳсулот ишлаб чиқариш биринчи йили 18% га, иккинчи йили 15% га ортди. Маҳсулот ишлаб чиқариш икки йил мобайнида неча фоизга ортган?
A) 34,7 B) 35,7 C) 33 D) 35

27. n нинг нечта бутун қийматида $\frac{n^2-5n-2}{n+1}$ каср бутун сон бўлади?
A) 2 B) 6 C) 4 D) 3

28. $\sqrt[3]{a}=\sqrt[3]{c}+\sqrt[3]{b}$ бўлса, $(a-b-c)^3$ ни топинг.
A) $81abc$ B) $-27abc$ C) $27abc$
D) $-81a^2b^2c^2$

29. Агар $x^2y+xy^2=12$ ва $x^2y-xy^2=84$ бўлса, $\frac{y}{x}$ нинг қийматини ҳисобланг.
A) $\frac{1}{4}$ B) 1 C) $-\frac{1}{2}$ D) $-\frac{3}{4}$

30. $\sqrt{6x-x^2-4}>x-4$ тенгсизликни қаноатлантирувчи бутун сонлар нечта?
A) 3 B) 5 C) 2 D) 4

31. Чексиз камаювчи геометрик прогрессиянинг йиғиндиси 9 га, махражи эса $\frac{1}{3}$ га тенг. Унинг биринчи ҳамда тўртинчи ҳадларининг айирмасини топинг.
A) $4\frac{2}{9}$ B) $5\frac{1}{3}$ C) $5\frac{7}{9}$ D) $5\frac{2}{3}$

32. Агар $\log_3 4=a$ ва $\log_5 4=b$ бўлса, $\log_4 135$ ни a ва b орқали ифодаланг.
A) $\frac{3a+b}{a+b}$ B) $\frac{a+2b}{ab}$ C) $\frac{a+3b}{a+b}$ D) $\frac{a+3b}{ab}$

33. Мунтазам олтибурчакка ташқи чизилган айлананинг радиуси $8\sqrt{3}$ га тенг. Унинг параллель томонлари орасидаги масофа топилсин.
A) 12 B) 18 C) 16 D) 24

34. Мунтазам тўртбурчакли кесик пирамида асосларининг томонлари 3 ва 7 см, диагонали $\sqrt{82}$ см. Кесик пирамиданинг баландлиги неча см?
A) $5\sqrt{2}$ B) 5 C) 4 D) $4\sqrt{2}$

35. Цилиндрнинг баландлиги ва асосининг радиуси 8 га тенг. Юзи цилиндрнинг тўла сиртига тенг бўлган доиранинг радиусини топинг.
A) 8 B) 16 C) 12 D) 9

36. $2sin43^\circ cos17^\circ+2sin^2 32^\circ-1$ ни ҳисобланг.
A) $\frac{\sqrt{2}}{2}$ B) $\frac{1}{2}$ C) 1 D) $\frac{\sqrt{3}}{2}$

Matematika

1. Chumoli 5 minutda $18\frac{1}{3}$ m yuradi. U 1 minutda necha metr yuradi?

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

2. $\left(\frac{\sqrt{2+\sqrt{3}}}{\sqrt{2-\sqrt{3}}}+\frac{\sqrt{2-\sqrt{3}}}{\sqrt{2+\sqrt{3}}}\right)^2-2$ ni hisoblang.

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

3. k ning qanday qiymatida $y=kx^2-2$ funksiyaning grafigi $A(-1;\ 0)$ nuqtadan o'tadi?

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

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?

1) $(x-c)\cdot(x-d)=x^2-(c+d)x+cd$;
2) $(x-e)\cdot(x+d)=x^2-(e-d)x-ed$;
3) $5a^2-3b^2-((a^2-2ab-b^2)-(5a^2-2ab-b^2))=9a^2-3b^2$;
4) $3a-(2c-(6a-(c-b)+c+(a+8b)-6c))=2a+7b-8c$.

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

5. $\frac{\sqrt[4]{2\sqrt{2}+3}}{\sqrt{\sqrt{2}+1}}$ ni hisoblang.

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

6. $\begin{cases} x+y=6, \\ x^2-y^2=12. \end{cases}$ $y-?$

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

7. $F(x)=5tyx+3x+C$ quyidagi funksiyalardan qaysi birining boshlang'ich funksiyasi?

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

8. Aylananing kesishuvchi ikki vatari orasidagi burchaklardan biri 100° ga teng. Shu burchakka qo'shni bo'lgan burchaklarning yig'indisini toping.

A) 90° B) 100° C) 160° D) 200°

9. $P(3;0)$ nuqtani koordinata boshi atrofida 90° ga burganda u qaysi nuqtaga o'tadi?

A) $(0;-3)$ B) $(-3;0)$ C) $(0;3)$ D) $(3;3)$

10. Tekislikka tushirilgan og'ma va perpendikulyar orasidagi burchak $arcsin\frac{24}{25}$ ga teng. Og'maning uzunligi 75 ga teng. Perpendikulyarning uzunligini toping.

A) 72 B) $10\frac{1}{2}$ C) $21\frac{7}{8}$ D) 21

11. Quyidagi nuqtalardan qaysi biri Oxz tekislikda yotadi?

A) $(0;-7;0)$ B) $(-4;3;0)$ C) $(2;-4;6)$
D) $(2;0;-8)$

12. Quyidagi formulalardan qaysilari to'g'ri?

1) $tg(x-y)=\frac{tgx-tgy}{1+tgx\cdot tgy}$,
$x, y, x-y\neq\frac{\pi}{2}+\pi n, n\in Z$;
2) $\sin^2\frac{x}{2}=\frac{1-\cos x}{2}$;
3) $\sin x+\sin y=2\cos\frac{x+y}{2}\sin\frac{x-y}{2}$;
4) $tgx-tgy=\frac{\sin(x-y)}{\cos x\cdot\cos y}$,
$x, y\neq\frac{\pi}{2}+\pi n, n\in Z$.

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

13. Ikki sonning ko'paytmasi 5,76 ga teng. Birinchi ko'paytuvchi 0,8 ga, ikkinchi ko'paytuvchi 1,6 ga bo'linsa, ko'paytma necha bo'ladi?

A) 10 B) 6 C) 4,5 D) 12

14. 32 dan 62,4 necha foiz ortiq?

A) 95 B) 90 C) 85 D) 89,5

15. $\frac{x^3-2x^2}{3x+3}:\frac{x^2-4}{3x^2+9x+6}$ ni soddalashtiring.

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

16. $(\frac{2}{3})^{-3}+2\cdot4^{-2}-(\frac{2}{3})^{-1}$ ni hisoblang.

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

17. $\frac{(32-16a^{\frac{1}{4}})\cdot(2a^{\frac{1}{4}}+a^{\frac{1}{2}})}{8a^{\frac{1}{4}}-2a^{\frac{3}{4}}}$ kasrni qisqartiring.

A) 4 B) 15 C) 8 D) 7,5

18. m ning qanday qiymatlarida $m(mx-1)=16x+4$ tenglama cheksiz ko'p ildizga ega?

A) $m=3$ B) $m=0$ C) $m=-1$
D) $m=-4$

19. k ning qanday qiymatlarida $(2k+5)x^2+7x-2k^2=0$ tenglama $x=1$ yechimga ega?
A) $1;-3$ B) $1;3$ C) $-2;3$ D) $-1;3$

20. Birinchi hadi 4 ga, o'n birinchi hadi 8 ga teng bo'lgan arifmetik progressiyaning oltinchi hadini toping.
A) 5 B) 4 C) 7 D) 6

21. $y=x^2-2x-2,75$ dagi qanday nuqtada o'tkazilgan urinma $y=-4(x-1)$ to'g'ri chiziqqa parallel bo'ladi?
A) $(-1;4)$ B) $(-1;\frac{1}{4})$ C) $(1;4)$ D) $(1;\frac{1}{4})$

22. To'g'ri burchakli uchburchakning kateti $6\sqrt{3}$ ga, bu katet qarshisidagi burchak $60°$ ga teng. Shu uchburchakning gipotenuzasini toping.
A) $4\sqrt{3}$ B) 12 C) $3\sqrt{3}$ D) $6\sqrt{3}$

23. To'rtburchakka diagonal o'tkazish natijasida u perimetrlari 25 va 27 ga teng bo'lgan ikkita uchburchakka ajratildi. Agar to'rtburchakning perimetri 36 ga teng bo'lsa, o'tkazilgan diagonalning uzunligini hisoblang.
A) 8 B) 6 C) 11 D) 10

24. $4cos5x=6+3cos(\frac{\pi}{2}+5x)$ tenglama $[-\pi;2\pi]$ kesmada nechta ildizga ega?
A) 1 B) $\emptyset$ C) 3 D) 2

25. 100 va 125 so'mlik daftarlardan hammasi bo'lib 1750 so'mlik xarid qilindi. Quyida keltirilgan sonlardan qaysi biri 100 so'mlik daftarlarning soniga teng bo'lishi mumkin?
A) 15 B) 14 C) 17 D) 16

26. x ning y ga nisbati 9:7 kabi, y ning z ga nisbati 14:15 kabi. z ning necha foizini x tashkil etadi?
A) 140 B) 120 C) 160 D) 80

27. Agar $a=39-\sqrt{432}$ bo'lsa, $\sqrt{a}+\sqrt{3}$ ifodaning qiymatini aniqlang.
A) 6 B) 4 C) $6+\sqrt{3}$ D) 5

28. $\left(\frac{a^{\frac{3}{2}}+b^{\frac{5}{2}}}{(a^{\frac{1}{2}}+b^{\frac{1}{2}})^2}-\frac{a^{\frac{1}{2}}b^{\frac{1}{2}}}{a^{\frac{1}{2}}+b^{\frac{1}{2}}}\right):(a-b)$ ning $a=0,36$ va $b=0,16$ bo'lgandagi qiymatini hisoblang.
A) $\frac{1}{5}$ B) $-\frac{1}{4}$ C) $-\frac{1}{5}$ D) $\frac{1}{125}$

29. $x^2+5x-\sqrt{x^2+5x+25}=17$ tenglamaning ildizlari ko'paytmasini toping.
A) 12 B) -24 C) -8 D) -16

30. $\frac{(x^2+x+1)(x^2+5x+4)}{x^2+5x+6}\le 0$ tengsizlikning butun sonlardan iborat yechimlari nechta?
A) 4 B) 5 C) 2 D) 3

31. Geometrik progressiyaning oltinchi va birinchi hadi ayirmasi 1210 ga, maxraji 3 ga teng. Shu progressiyaning dastlabki oltita hadi yig'indisini toping.
A) 1720 B) 1820 C) 605 D) 1520

32. $log_2log_{\frac{1}{3}}log_8x>0$ tengsizlikni yeching.
A) $(-\infty;0)\cup(0;2)$ B) $(1;2)$ C) $(-\infty;2)$ D) $(0;2)$

33. Teng yonli trapetsiyaning asoslari 21 va 27 ga, kichik asosidagi burchagi esa $135°$ ga teng. Trapetsiyaning yuzini toping.
A) 62 B) 72 C) 48 D) 96

34. Muntazam to'rtburchakli piramidaning hajmi 19200 ga, balandligi esa 9 ga teng. Piramida apofemasi uzunligini toping.
A) 27 B) 39 C) 41 D) 36

35. Sharga ichki chizilgan konusning asosi sharning katta doirasiga teng. Konus o'q kesimining yuzi 36 ga teng. Sharning hajmini toping.
A) 144π B) 432π C) 288π D) 334π

36. $\frac{3sin\alpha+2}{5+cos\beta}+\frac{3}{tg^2\gamma+ctg^2\gamma}$ ifodaning eng katta qiymatini toping.
A) 4,75 B) 6,25 C) 2,75 D) 3,45

Matematika

1. $(2\frac{17}{36} - 4\frac{7}{12}) : \frac{2}{9} - \frac{3}{26} \cdot 4\frac{1}{3}$ ni hisoblang.

   A) $8\frac{1}{2}$ B) -9 C) -10 D) 9

2. $\sqrt{\sqrt{56}+2\sqrt{5}} \cdot \sqrt{\sqrt{56}-2\sqrt{5}}$ ni hisoblang.

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

3. Quyidagi nuqtalarning qaysi biri $f(x) = -2x + 7$ funksiyaning grafigiga tegishli?

   A) $(2;1)$ B) $(1;2)$ C) $(2;4)$ D) $(3;1)$

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?

   1) $(x-e)\cdot(x+d) = x^2 - (e-d)x - ed$;
   2) $12x^2+y^2-(8x^2-5y^2-(-10x^2+(5x^2-6y^2))) = -x^2$;
   3) $6ab + (2a^3+b^3-(3ab^2-(a^3+2ab^2-b^3))) = 3a^3-ab^2+6ab$;
   4) $5a^2-3b^2-((a^2-2ab-b^2)-(5a^2-2ab-b^2)) = 9a^2+4ab-3b^2$.

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

5. $(m^2 - \frac{2+m^4}{m^2-1}) : \frac{m^2+2}{m-1}$ ni soddalashtiring.

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

6. $\begin{cases} x+y=3 \\ x^2-y^2=-6. \end{cases}$ $y-?$

   A) 2,5 B) 0,5 C) 1 D) 3

7. $f(x) = x^3 + 3x - 5$ funksiyaning $[-1;1]$ kesmadagi eng katta va eng kichik qiymatlari orasidagi ayirmani toping.

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

8. Qo'shni burchaklardan biri ikkinchisidan $52°$ ga katta. Shu burchaklardan kattasini toping.

   A) $118°$ B) $106°$ C) $114°$ D) $116°$

9. $x^2+y^2-4x-6y-3=0$ tenglama bilan berilgan aylananing radiusini toping.

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

10. Tekislikka og'ma va perpendikulyar tushirilgan. Og'ma va tekislik orasidagi burchak $arccos0,96$ ga, og'maning tekislikdagi proyeksiyasi 72 ga teng. Perpendikulyarning uzunligini toping.

    A) 42 B) $20\frac{4}{25}$ C) $10\frac{2}{25}$ D) 21

11. Oxy tekisligiga nisbatan (1;2;3) nuqtaga simmetrik bo'lgan nuqtani toping.

    A) $(-1;-2;3)$ B) $(-1;2;3)$ C) $(1;-2;3)$ D) $(1;2;-3)$

12. Quyidagi formulalardan qaysilari to'g'ri?

    1) $tg(x-y) = \frac{tgx-tgy}{1+tgx\cdot tgy}$;
    $x, y, x-y \neq \frac{\pi}{2}+\pi n, n \in Z$;
    2) $cos^2\frac{x}{2} = \frac{1-cosx}{2}$;
    3) $sinx - siny = 2cos\frac{x+y}{2}sin\frac{x-y}{2}$;
    4) $tgx - tgy = \frac{sin(x-y)}{cosx\cdot cosy}$,
    $x, y \neq \frac{\pi}{2}+\pi n, n \in Z$.

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

13. $25\frac{1}{2}$ sonini 6; 7; 4 sonlariga mutanosib bo'laklarga bo'lgandagi eng kichik sonni toping.

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

14. Yog'liligi 2% bo'lgan 80 l sut bilan yog'liligi 5% bo'lgan necha l sut aralashtirilsa, yog'liligi 2,6% bo'lgan sut olish mumkin?

    A) 30 B) 20 C) 50 D) 40

15. $\frac{y^2-4y-5}{y^2-1}$ ni qisqartiring.

    A) $\frac{5-y}{y-1}$ B) $\frac{y-5}{y-1}$ C) $\frac{y-5}{y+1}$ D) $\frac{y+5}{y-1}$

16. $2^{11} + 3^{12}$ yig'indining oxirgi raqamini toping.

    A) 7 B) 8 C) 5 D) 9

17. $\frac{3,6\cdot(1,7^3-1,5^3)}{5,1^2+5,1\cdot4,5+4,5^2}$ ni hisoblang.

    A) 0,08 B) 0,45 C) 0,06 D) 0,3

18. Velosipedchi bir soatda butun yo'lning 0,65 qismini o'tdi, bu esa yo'lning yarmidan 9,75 km ko'p. Butun yo'lning uzunligini (km) toping.

    A) 62,5 B) 47,5 C) 65 D) 50

19. $x^2+x+a=0$ tenglamaning x_1 va x_2 ildizlari orasida $\frac{1}{x_1}+\frac{1}{x_2}=\frac{2}{5}$ munosabat o'rinli. a ning qiymatini toping.

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

20. Ketma-ket kelgan oltita natural sonning yig'indisi 417 ga teng. Shu sonlarning eng kichigini toping.

    A) 67 B) 59 C) 48 D) 70

21. $f(x) = \frac{\sqrt{3}}{3}x^3 - 1$ funksiyaning grafigiga $x_0 = \frac{1}{\sqrt{3}}$ nuqtada o'tkazilgan urinmaning OX o'qi bilan tashkil qilgan burchagini toping.

    A) $30°$ B) $60°$ C) $120°$ D) $45°$

22. Uchburchakning tomonlari 4; 5 va 6 ga teng. 5 ga teng bo'lgan tomon qarshisidagi burchakning kosinusini toping.

A) $\frac{9}{16}$ B) $\frac{7}{16}$ C) $\frac{1}{8}$ D) $\frac{7}{8}$

23. ABCD parallelogramm C uchining koordinatalari (5; 8), O(3; 6) esa parallelogramm diagonallarining kesishish nuqtasi. Parallelogramm A uchining koordinatalarini toping.

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

24. $cos2x \geq -\frac{1}{2}$ tengsizlikning $[0; 1,5\pi]$ kesmadagi yechimini toping.

A) $[0; \frac{\pi}{3}] \cup [\frac{2\pi}{3}; \frac{4\pi}{3}]$ B) $[\frac{\pi}{3}; \frac{2\pi}{3}]$

C) $[\frac{4\pi}{3}; 2\pi]$ D) $[0; \frac{\pi}{3}] \cup [\frac{2\pi}{3}; \pi]$

25. 1 dan 126 gacha bo'lgan sonlar orasida 2 ga ham, 7 ga ham bo'linmaydiganlari nechta?

A) 64 B) 54 C) 45 D) 50

26. Daftarning narxi ketma-ket ikki marta bir xil foizga pasaytirilgandan keyin, 90 so'mdan 72,9 so'mga tushdi. Daftarning narxi har gal necha foizga pasaytirilgan?

A) 9 B) 20 C) 10 D) 15

27. $\frac{x^3+1}{x^4+x^2+1}$ kasrni qisqartiring.

A) $\frac{x}{x+2}$ B) $\frac{x-1}{x^2-x+1}$ C) $\frac{x-2}{x^2-x-1}$

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

28. $(\sqrt{10}-\sqrt{2})\cdot\sqrt{3-\sqrt{5}}\cdot(3+\sqrt{5})-2$ ni hisoblang.

A) 4 B) 8 C) 6 D) 10

29. $14-\sqrt{x^2-3x+6}=x^2-3x$ tenglama ildizlarining yig'indisini toping.

A) 6 B) 5 C) 3 D) 7

30. Quyidagilardan qaysi biri $(x-4)\cdot\sqrt{x^2+x-2}\leq 0$ tengsizlikning yechimi?

A) $(-\infty;-2]\cup[1;4]$ B) $(-\infty;4]$

C) $[-1;2]\cup[4;\infty)$ D) $[-2;4]$

31. 7, 10, 13, ... arifmetik progressiyaning nechta hadining har birini qiymati 99 dan katta, 212 dan kichik bo'ladi?

A) 34 B) 33 C) 38 D) 39

32. $y=\sqrt{\lg^2|2x-7|\cdot(5x-6-x^2)}$ funksiyaning aniqlanish sohasiga tegishli butun sonlarning yig'indisini toping.

A) 5 B) 14 C) 12 D) 9

33. Rombning yuzi 120 ga, diagonallaridan biri 24 ga teng. Uning tomonini toping.

A) 13 B) 10 C) 14 D) 8

34. Muntazam to'rtburchakli kesik piramidaning balandligi 8 ga, asoslarining tomonlari 12 va 20 ga teng. Kesik piramidaning diagonalini toping.

A) 24 B) 48 C) 40 D) 36

35. Radiusi 6 ga teng shar konusga ichki chizilgan. Konus yasovchisi va balandligi orasidagi burchak 30° ga teng. Konus yon sirtining yuzini toping.

A) 96π B) 48π C) 216π D) 72π

36. $sin(2arctg\frac{7}{24})$ ni hisoblang.

A) $\frac{336}{625}$ B) $\frac{226}{625}$ C) $\frac{326}{625}$ D) $\frac{236}{625}$

Matematika

1. Mototsiklchi va velosipedchi bir tomonga qarab harakat qilishmoqda. Velosipedchining tezligi 12 km/soat, mototsiklchiniki 30 km/soat va ular orasidagi masofa 72 km bo'lsa, necha soatdan keyin mototsiklchi velosipedchini quvib yetadi?
A) 4 B) 3 C) 2,5 D) 3,5

2. $\frac{x^3+y^3}{x^2-xy+y^2}-\frac{x^3-y^3}{x^2-xy+y^2}$ ni soddalashtiring.
A) $2y$ B) $2x$ C) $-2x$ D) $-2y$

3. Agar $f(x)=(3+\frac{1}{x})(11+4x)$ bo'lsa, $f(-\frac{1}{2})$ ni toping.
A) -3 B) 9 C) -5 D) 15

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?
1) $(x-c)\cdot(x-d)=x^2+(c-d)x+cd$;
2) $(x-e)\cdot(x+d)=x^2-(e-d)x-ed$;
3) $6ab+(2a^3+b^3-(3ab^2-(a^3+2ab^2-b^3)))=3a^3-ab^2+6ab$;
4) $5a^2-3b^2-((a^2-2ab-b^2)-(5a^2-2ab-b^2))=9a^2-3b^2$.
A) 1;2;4 B) 1;3;4 C) 2;3;4 D) 1;2;3

5. 1) $2a^2-4ab+2b^2=(b-a)^2\cdot 2$
2) $-\frac{x^3-y^3}{x^2+xy+y^2}=x-y$
3) $-(a-b-c)=-a+b+c$
4) $-\frac{a^2-1}{b}=\frac{a^2-1}{b}$. Ushbu tengliklarning qaysi biri ayniyat?
A) 2; 4 B) 1 C) 1; 3 D) 2

6. $\begin{cases}x+3=0\\xy^2=12\end{cases}$ tenglamalar sistemasining yechimini toping.
A) $(-3;-2)$ B) $(-3;2)$
C) $(-3;-2),(-3;2)$ D) $\emptyset$

7. $F(x)=2ctgx-x+C$ quyidagi funksiyalardan qaysi birining boshlang'ich funksiyasi?
A) $f(x)=\frac{2}{cos^2x}-1$ B) $f(x)=-\frac{2}{sin^2x}-1$
C) $f(x)=\frac{2}{sin^2x}+1$ D) $f(x)=-\frac{2}{cos^2x}-1$

8. Ikki to'g'ri chiziqning kesishishidan hosil bo'lgan burchaklarning biri 40° ga teng. Qolgan burchaklarni toping.
A) 110°, 110°, 110° B) 150°, 150°, 30°
C) 140°, 140°, 40° D) 60°, 60°, 30°

9. $\vec{a}(2;-3)$ va $\vec{b}(-2;-3)$ vektorlar berilgan. $\vec{m}=\vec{a}-2\vec{b}$ vektorning koordinatalarini ko'rsating.
A) $(-3;6)$ B) $(6;3)$ C) $(2;-3)$
D) $(-2;-9)$

10. Tekislikka tushirilgan og'maning uzunligi 75 ga, uning tekislikdagi proyeksiyasi esa 60 ga teng. Og'ma va tekislik orasidagi burchakni toping.
A) $arcsin\frac{3}{5}$ B) $arccos\frac{3}{10}$ C) $arcsin\frac{3}{4}$
D) $arcsin\frac{4}{5}$

11. Koordinatalar boshiga nisbatan (1;2;3) nuqtaga simmetrik bo'lgan nuqtani toping.
A) $(-1;-2;-3)$ B) $(-1;2;3)$ C) $(1;-2;3)$
D) $(1;2;-3)$

12. Quyidagi formulalardan qaysilari to'g'ri?
1) $sin(x+y)=sinx\cdot cosy+cosx\cdot siny$;
2) $tg(x+y)=\frac{tgx+tgy}{1-tgx\cdot tgy}$,
$x,y,x+y\neq\frac{\pi}{2}+\pi n, n\in Z$;
3) $cos^2\frac{x}{2}=\frac{1-cosx}{2}$;
4) $sinx+siny=2sin\frac{x+y}{2}cos\frac{x-y}{2}$.
A) 1;2;4 B) 2;3;4 C) 1;3;4 D) 1;2;3

13. Quyidagi oddiy kasr ko'rinishida berilgan sonlardan qaysilarini chekli o'nli kasr ko'rinishiga keltirib bo'lmaydi:
1) $\frac{2}{34}$; 2) $\frac{14}{625}$; 3) $\frac{4}{90}$; 4) $\frac{11}{125}$?
A) *2; 3* B) *1; 3* C) *4; 1* D) *3; 4*

14. 14% ga arzonlashtirilgandan keyin mahsulotning bahosi 2150 so'm bo'ldi. Mahsulotning dastlabki bahosini aniqlang.
A) 2500 B) 2250 C) 3000 D) 2750

15. $(\frac{4a}{4-a^2}-\frac{a-2}{4+2a})\cdot\frac{2}{a+2}+\frac{a+1}{2-a}$ ni soddalashtiring.
A) $\frac{2+a}{2-a}$ B) -1 C) 1 D) $\frac{3+a}{2-a}$

16. $(0,75)^3\cdot\left(-\frac{4}{6}\right)\cdot\left(\frac{8}{6}\right)^3\cdot 4\frac{1}{8}$ ni hisoblang.
A) $-1,75$ B) 1,5 C) -2 D) $-2,75$

17. $\frac{0,4^2-1}{2,8\cdot 0,4-2,8}$ ni hisoblang.
A) $-\frac{1}{2}$ B) $\frac{1}{2}$ C) 5 D) -5

18. k ning qanday qiymatida $\begin{cases} 3x+6y=k, \\ 9x+18y=k+1\frac{1}{3} \end{cases}$ tenglamalar sistemasi cheksiz ko'p yechimga ega?
A) 1 B) $\frac{1}{3}$ C) $\frac{2}{3}$ D) $\frac{1}{2}$

19. $x^2+2px+q^2=0$ $(q\neq 0)$ tenglama p/q ning qanday qiymatlarida haqiqiy ildizlarga ega emas?
A) $(0;2]$ B) $(-2;2)$
C) $(-\infty;-1)\cup(1;\infty)$ D) $(-1;1)$

20. Ikkinchi hadi 5 ga, sakkizinchi hadi 12 ga teng bo'lgan arifmetik progressiyaning beshinchi hadini toping.
A) 12,5 B) 7,5 C) 8,5 D) 10

21. $f(x)=-\frac{\sqrt{3}}{2}x^2+1$ funksiyaning grafigiga $x_0=-\frac{1}{3}$ nuqtada o'tkazilgan urinmaning OX o'qi bilan tashkil qilgan burchagini toping.
A) 60° B) 30° C) 150° D) 120°

22. To'g'ri burchakli uchburchakning o'tkir burchaklari uchidan tushirilgan balandliklari 7 va 24 ga teng. Shu uchburchakning yuzini toping.
A) 84 B) 168 C) 56 D) 175

23. Romb diagonallarining tomonlari bilan hosil qilgan burchaklari kattaliklarining nisbati 4:5 ga teng. Rombning kichik burchagini toping.
A) 50° B) 80° C) 60° D) 40°

24. k ning quyida ko'rsatilgan qiymatlaridan qaysi birida $cos kx\cdot cos 4x-sin kx\cdot sin 4x=\frac{\sqrt{3}}{2}$ tenglamaning ildizlari $\pm\frac{\pi}{30}+\frac{2\pi n}{5}$ $(n\in Z)$ bo'ladi?
A) 3 B) 2 C) 1 D) 4

25. 6 ni berilgan songa ko'paytirganda, hosil bo'lgan son ...14 ko'rinishda bo'lsa, berilgan son quyidagilardan qaysi biri ko'rinishida bo'lishi mumkin?
A) ...19 B) ...24 C) ...14 D) ...79

26. 1040 soni shunday ikki bo'lakka bo'linganki, ulardan birining 80% i ikkinchisining 24% ini tashkil qiladi. Bo'laklarning kichigini toping.
A) 240 B) 800 C) 460 D) 500

27. Agar $a(x-1)^2+b(x-1)+c=2x^2-5x+8$ ayniyat bo'lsa, $a+b+c$ yig'indi nechaga teng bo'ladi?
A) 8 B) 7 C) 4 D) 6

28. $\sqrt[3]{2001\cdot 1997-1998\cdot 2000+9}$ ni hisoblang.
A) $\sqrt[3]{13}$ B) 2 C) $\sqrt[3]{6}$ D) $\sqrt[3]{17}$

29. Ikki xonali son o'zining raqamlari yig'indisidan 4 marta katta. Raqamlari kvadratlarining yig'indisi 80 ga teng. Shu ikki xonali sonning kvadratini hisoblang.
A) 196 B) 7056 C) 169 D) 2304

30. $2|x+3|\leq|x-6|$ tengsizlikning butun sonlardan iborat yechimlari nechta?
A) 5 B) 13 C) 10 D) 6

31. Olti haddan iborat geometrik progressiyaning dastlabki uchta hadining yig'indisi 168 ga, keyingi uchtasiniki esa 21 ga teng. Shu progressiyaning birinchi hadini toping.
A) 96 B) 86 C) 126 D) $\frac{1}{2}$

32. $2log_8 x-log_8(x-1)>\frac{2}{3}$ tengsizlikni yeching.
A) $(2;\infty)$ B) $(3;5)$ C) $(3;\infty)$
D) $(1;2)\cup(2;\infty)$

33. Teng yonli trapetsiyaning asoslari 8 va 26 ga, yon tomoni esa 15 ga teng. Trapetsiyaning yuzini hisoblang.
A) 102 B) 184 C) 255 D) 204

34. Muntazam to'rtburchakli kesik piramida asoslarining tomonlari 14 va 10 sm, diagonali $4\sqrt{22}$ sm. Kesik piramidaning balandligi necha sm?
A) 7 B) 6 C) 5 D) 8

35. Balandligi $\sqrt{3}$ ga, yasovchisi $2\sqrt{3}$ ga teng bo'lgan konusga tashqi chizilgan sharning radiusini toping.
A) 2 B) $2\sqrt{3}$ C) $3\sqrt{3}$ D) $3\sqrt{2}$

36. $cos(2arccos\frac{1}{9})$ ning qiymatini toping.
A) $\frac{19}{81}$ B) $\frac{8}{9}$ C) $-\frac{19}{81}$ D) $-\frac{8}{9}$

Matematika

1. $3\frac{1}{3} : 5\frac{5}{7} = 2\frac{4}{5} : x$ proporsiyaning noma'lum hadini toping.

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

2. Agar $ab = 9$ va $3b = 8,1c$ bo'lsa, ac ni hisoblang.

   A) $2\frac{5}{8}$ B) $3\frac{1}{3}$ C) $2\frac{1}{2}$ D) $2\frac{4}{9}$

3. Quyidagilardan qaysilari o'suvchi funksiyalar?

   1) $y = 3^{-x}$; 2) $y = (\sqrt[3]{10})^x$; 3) $y = (\frac{11}{9})^x$;

   4) $y = (\frac{5}{3})^x$; 5) $y = (0,84)^x$.

   A) 1; 2; 3 B) 1; 2; 4 C) 2; 3; 4
   D) 3; 4; 5

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?

   1) $(x + a) \cdot (x - b) = x^2 + (a - b)x - ab$;
   2) $(x - c) \cdot (x - d) = x^2 - (c + d)x + cd$;
   3) $(x - e) \cdot (x + d) = x^2 + (e - d)x - ed$;
   4) $5a^2 - 3b^2 - ((a^2 - 2ab - b^2) - (5a^2 - 2ab - b^2)) = 9a^2 - 3b^2$.

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

5. $\frac{a^2 - 5ab}{-25b^2 + a^2}$ kasrni qisqartiring.

   A) $\frac{a}{a - 5b}$ B) $\frac{a}{a + 5b}$ C) $-\frac{a}{a - 5b}$
   D) $-\frac{a}{a + 5b}$

6. $\begin{cases} y + 4 = 2 \\ xy^2 = 4 \end{cases}$ tenglamalar sistemasini yeching.

   A) $(-1; -2)$ B) $(1; -2)$
   C) $(-1; -2)$; $(1; -2)$ D) $\emptyset$

7. $y = e^{2-3x}$ funksiyaning boshlang'ich funksiyasini ko'rsating.

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

8. Qo'shni burchaklardan biri ikinchisidan besh marta kichik bo'lsa, shu burchaklardan kattasini toping.

   A) 130° B) 150° C) 144° D) 140°

9. $x^2 + y^2 - 4x + 6y - 3 = 0$ tenglama bilan berilgan aylananing markazini toping.

   A) $(4; -4)$ B) $(-4; -3)$ C) $(2; -3)$
   D) $(-4; 6)$

10. Tekislikka tushirilgan og'maning uzunligi 75 ga, uning tekislikdagi proyeksiyasi esa 72 ga teng. Og'ma va tekislik orasidagi burchakni toping.

    A) $arccos\frac{7}{50}$ B) $arcsin\frac{24}{25}$ C) $arcsin\frac{7}{24}$
    D) $arcsin\frac{7}{25}$

11. Oxz tekisligiga nisbatan $(1; 2; 3)$ nuqtaga simmetrik bo'lgan nuqtani toping.

    A) $(-1; -2; 3)$ B) $(-1; 2; 3)$ C) $(1; -2; 3)$
    D) $(1; 2; -3)$

12. Quyidagi formulalardan qaysilari to'g'ri?

    1) $cos(x - y) = sinx \cdot cosy - cosx \cdot siny$;
    2) $cos^2\frac{x}{2} = \frac{1 + cosx}{2}$;
    3) $cosx + cosy = 2cos\frac{x + y}{2}cos\frac{x - y}{2}$;
    4) $tgx + tgy = \frac{sin(x + y)}{cosx \cdot cosy}$,
    $x, y \neq \frac{\pi}{2} + \pi n, n \in Z$.

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

13. Uchta sonning o'rta arifmetigi 13,9 ga teng. Agar sonlarning ikkitasi 20,2 va 21,7 bo'lsa, uchinchi sonni toping.

    A) $-0,2$ B) 12,1 C) 13 D) $-8,4$

14. Kvadratning perimetri 30% ga uzaytirilsa, uning yuzi necha foizga ko'payadi?

    A) 60 B) 69 C) 44 D) 59

15. $\frac{19}{\sqrt{20} - 1} - 2\sqrt{5} + 4$ ni soddalashtiring.

    A) 5 B) 6 C) 4 D) $2\sqrt{5} + 4$

16. $\frac{\sqrt{196} \cdot \sqrt{19,6}}{\sqrt{0,196} \cdot \sqrt{1,96}} \cdot \left(\frac{5}{7}\right)^{-2}$ ni hisoblang.

    A) 100 B) 19,6 C) 10 D) 196

17. $(\sqrt{7} + \sqrt{2} + 1)(\sqrt{7} - 1 - \sqrt{2})$ ni soddalashtiring.

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

18. $2,5(ax - 5,2) = 2a - 5x - 9$ tenglama a ning qanday qiymatlarida cheksiz ko'p yechimga ega?

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

19. $\frac{x^3 - 8}{x - 2} = 9 - 2x$ tenglamaning ildizlari yig'indisini toping.

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

20. Hadlari $b_n = 3n - 10,5$ $(n \in N)$ formula bilan berilgan ketma-ketlikning dastlabki 40 ta hadi yig'indisini toping.

    A) 2040 B) 4860 C) 5440 D) 5140

21. $y = lnx$ funksiyaning grafigiga abssissasi $x_0 = 1$ bo'lgan nuqtada urinma o'tkazilgan. Urinmaning abssissasi 14 ga teng nuqtasi ordinatasini toping.
A) 13 B) 12 C) 15 D) 14

22. To'g'ri burchakli uchburchakning gipoteuuzasi 75 sm, katetlari esa o'zaro 7:24 nisbatda. Shu uchburchakning katta katetini toping.
A) 36 B) 63 C) 42 D) 72

23. Qavariq to'rtburchakning burchaklaridan biri to'g'ri burchak, qolganlari esa o'zaro $6:5:4$ nisbatda. To'rtburchakning kichik burchagini toping.
A) 108° B) 60° C) 72° D) 90°

24. Agar $2sin6x(cos^4 3x - sin^4 3x) = sinkx$ tenglik hamma vaqt o'rinli bo'lsa, k ni toping.
A) 24 B) 12 C) 18 D) 6

25. 55 dan katta bo'lmagan barcha natural sonlarning ko'paytmasi nechta nol bilan tugaydi?
A) 12 B) 14 C) 11 D) 13

26. 15 kg eritmaning 40 foizi tuzdan iborat. Tuzning miqdori 25 foiz bo'lishi uchun eritmaga necha kg chuchuk suv qo'shish kerak?
A) 6 B) 9 C) 8 D) 10

27. Agar $\frac{4b+a}{5a-7b} = \frac{7}{8}$ bo'lsa, $\frac{3a^2-4ab+b^2}{5a^2+3b^2}$ ning qiymati nimaga teng bo'ladi?
A) $\frac{22}{47}$ B) $\frac{1}{3}$ C) $\frac{9}{22}$ D) 0,5

28. $\frac{\sqrt[4]{26-15\sqrt{3}}\cdot(2-\sqrt{3})}{28-16\sqrt{3}}$ ni soddalashtiring.
A) $\frac{1}{3}$ B) 1 C) $\frac{1}{4}$ D) $2-\sqrt{3}$

29. Agar $\begin{cases}(x-2)^2+|y-1|=4\\|x-2|+|y-1|=2\end{cases}$ bo'lsa, $x-y$ ning qiymatini toping.
A) 0 *yoki* 4 B) 3 *yoki* -1 C) 1 *yoki* 5
D) -2 *yoki* 4

30. $|3-x| \le 4$ tengsizlikning butun sonlardan iborat yechimlari nechta?
A) 9 B) 4 C) 7 D) 8

31. 7 ga bo'lganda, qoldig'i 3 ga teng bo'ladigan barcha ikki xonali sonlarning yig'indisini toping.
A) 776 B) 656 C) 676 D) 666

32. Agar $\log_4(\sqrt{3}-1)+\log_4(\sqrt{6}-2)=a$ bo'lsa, $\log_4(\sqrt{3}+1)+\log_4(\sqrt{6}+2)$ yig'indini toping.
A) $\sqrt{3}-a$ B) $\sqrt{6}-a$ C) $2-a$
D) $1-a$

33. Teng yonli trapetsiyaning asoslari 10 va 18 ga, asosidagi burchagi 60° ga teng. Shu trapetsiyaning yuzini hisoblang.
A) $56\sqrt{3}$ B) $36\sqrt{3}$ C) $28\sqrt{3}$ D) $46\sqrt{3}$

34. Muntazam to'rtburchakli prizmaning asosi 8 ga va balandligi 12 ga teng. Prizma parallel yon yoqlarining o'zaro ayqash diagonallari orasidagi o'tkir burchakni toping.
A) $arcsin\frac{2}{\sqrt{13}}$ B) $arcsin\frac{8}{13}$ C) $arcsin\frac{12}{13}$
D) $arccos\frac{3}{\sqrt{13}}$

35. Radiusi 15 ga teng bo'lgan sharga ichki chizilgan konusning balandligi 12 ga teng. Konusning hajmini toping.
A) 486π B) 756π C) 864π D) 672π

36. Agar $tg\alpha = 2$ bo'lsa, $\frac{2}{3+4cos2\alpha}$ ning qiymatini toping.
A) $-3\frac{1}{3}$ B) $-\frac{10}{27}$ C) $\frac{10}{27}$ D) $3\frac{1}{3}$

Matematika

1. $\frac{26}{15} \div 2 \cdot (0,63 : 0,6 - 1,6)$ ni hisoblang.

   A) $-1\frac{1}{6}$ B) $\frac{19}{30}$ C) $-1\frac{4}{15}$ D) $-\frac{4}{15}$

2. $\sqrt{a - 2a^{1/2}b^{1/2} + b} - \frac{a-b}{a^{1/2} - b^{1/2}}$
   ni soddalashtiring $(b > a > 0)$.

   A) $-2a^{1/2}$ B) $2a^{1/2} - 2b^{1/2}$ C) 0
   D) $-2b^{1/2}$

3. k ning qanday qiymatlarida $y = \frac{k}{x} - 1$
   funksiyaning grafigi $C(-2; -3)$ nuqtadan o'tadi?

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

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?
   1) $(x-c)\cdot(x-d) = x^2 + (c-d)x + cd$;
   2) $(x-e)\cdot(x+d) = x^2 - (e-d)x - ed$;
   3) $12x^2 + y^2 - (8x^2 - 5y^2 - (-10x^2 + (5x^2 - 6y^2))) = -x^2$;
   4) $5a^2 - 3b^2 - ((a^2 - 2ab - b^2) - (5a^2 - 2ab - b^2)) = 9a^2 - 3b^2$.

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

5. $(3a-b)^2 + (3a+b)^2$ ni soddalashtiring.

   A) $-2b^3$ B) $2b^2 + 18a^2$ C) $-6ab + 2b^2$
   D) $-12ab$

6. $\begin{cases} x^2 + y^2 = 5 \\ x - y = 1, \quad 2 \cdot x \cdot y = ? \end{cases}$

   A) 3 B) 2 C) 4 D) 1,5

7. $f(x) = -x + \frac{x^2}{2}$ funksiyaning (6;2) nuqtadan o'tuvchi boshlang'ich funksiyasini toping.

   A) $-\frac{x^2}{2} + \frac{x^3}{6} - 18$ B) $-\frac{x^2}{2} + \frac{x^3}{6} - 16$
   C) $-\frac{x^2}{2} + \frac{x^3}{6} + 18$ D) $-\frac{x^2}{2} + \frac{x^3}{6} + 16$

8. Quyidagi mulohazalardan qaysi biri to'g'ri?

   A) *Ikkita to'g'ri burchakli uchburchakning gipotenuzalari va bittadan o'tkir burchaklari bir- biriga teng bo'lsa, bunday uchburchaklar tengdir.*

   B) *Teng tomonli uchburchakning balandliklari kesishish nuqtasida 4:3 nisbatda bo'linadi.*

   C) *Ikkitadan tomoni, bittadan burchagi o'zaro teng bo'lgan uchburchaklar tengdir.*

   D) *Ikkita parallel to'g'ri chiziqni uchinchi to'g'ri chiziq bilan kesganda hosil bo'lgan ichki bir tomonli burchaklar yig'indisi 180° dan kichik.*

9. $\vec{m}(-3;1)$ va $\vec{n}(5;-6)$ vektorlar berilgan.
   $\vec{a} = \vec{n} - 3 \cdot \vec{m}$ vektorning koordinatalarini toping.

   A) $(4;-3)$ B) $(14;-9)$ C) $(9;3)$
   D) $(14;-3)$

10. Tekislikka og'ma va perpendikulyar tushirilgan. Og'ma va tekislik orasidagi burchak $arccos\frac{4}{5}$ ga, og'maning tekislikdagi proyeksiyasi 36 ga teng. Perpendikulyarning uzunligini toping.

    A) 27 B) $21\frac{3}{5}$ C) 48 D) $28\frac{4}{5}$

11. Oyz tekisligiga nisbatan (1;2;3) nuqtaga simmetrik bo'lgan nuqtani toping.

    A) $(-1;-2;3)$ B) $(-1;2;3)$ C) $(1;-2;3)$
    D) $(1;2;-3)$

12. Quyidagi formulalardan qaysilari to'g'ri?
    1) $tg(x-y) = \frac{tgx + tgy}{1 - tgx \cdot tgy}$,
    $x, y, x - y \neq \frac{\pi}{2} + \pi n, n \in Z$;
    2) $cos^2\frac{x}{2} = \frac{1 + cosx}{2}$;
    3) $sinx - siny = 2cos\frac{x+y}{2}sin\frac{x-y}{2}$;
    4) $tgx + tgy = \frac{sin(x+y)}{cosx \cdot cosy}$,
    $x, y \neq \frac{\pi}{2} + \pi n, n \in Z$.

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

13. Uchta sonning o'rta arifmetigi 8,1 ga, birinchi son esa 7,35 ga teng. Agar keyingi har bir son avvalgisidan ayni bir songa farq qilsa, keyingi sondan oldingisining ayirmasini toping.

    A) 0,1 B) 0,75 C) 0,2 D) $\frac{1}{4}$

14. Mahsulotning narxi ketma-ket ikki marta 20% ga oshirilgandan so'ng 516 so'm bo'ldi. Birinchi ko'tarilgandan so'ng mahsulotning narxi necha so'm bo'lgan?

    A) 430 B) 416 C) 486 D) 480

15. $4\sqrt{7\frac{1}{2}} - \frac{2\sqrt{10}}{2\sqrt{3} - \sqrt{10}} + 8 + 3\sqrt{10}$ ni soddalashtiring.

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

16. $\frac{4^{2/3} \cdot 40^{1/3}}{10^{-2/3}}$ ni hisoblang.

    A) 20 B) 15 C) 40 D) 60

17. $\frac{4,5^2 - 1,5^2}{0,3 \cdot 0,5 - 0,3}$ ni hisoblang.

    A) -120 B) -200 C) -2 D) 200

18. Bir son ikkinchisidan 15 ga kichik. Bu sonlarning o'rta arifmetigi 13,5 ga teng. Shu sonlardan kichigini toping.
A) 6 B) 3 C) 7 D) 4

19. $2x^2 - 26x + 32 = 0$ tenglama ildizlarining o'rta proporsionalini toping.
A) 5 B) 4 C) 6 D) 7

20. (x_n) $(n \in N)$ arifmetik progressiyaning dastlabki n ta hadi yig'indisi 120 ga teng. Agar $x_3 + x_{n-2}$=30 bo'lsa, yig'indida nechta had qatnashgan?
A) 10 B) 6 C) 12 D) 8

21. $y = 2x^3 + 3x^2 - 6x$ funksiyaning grafigiga o'tkazilgan urinma x ning qanday qiymatlarida $y = 30x + 1$ to'g'ri chiziqqa parallel bo'ladi?
A) 1 va 3 B) -3 va 2 C) 2 va -1
D) -2 va 1

22. Teng yonli uchburchakning asosi 40 ga, unga tushirilgan balandligi 21 ga teng. Uchburchakning yon tomonini toping.
A) 27 B) 29 C) 19 D) 31

23. Parallelogrammning diagonali tomonlari bilan 20° va 30° li burchaklar tashkil qiladi. Parallelogrammning katta burchagini toping.
A) 145° B) 100° C) 110° D) 130°

24. $sinx \cdot cosx < \frac{\sqrt{2}}{4}$ tengsizlikni yeching.
A) $\frac{\pi}{4} + \pi k < x < \frac{3\pi}{4} + \pi k,\ k \in Z$
B) $-\frac{5\pi}{8} + \pi k < x < \frac{\pi}{8} + \pi k,\ k \in Z$
C) $\frac{\pi}{8} + \pi k \le x \le \frac{3\pi}{8} + \pi k,\ k \in Z$
D) $\frac{\pi}{8} + \pi k < x < \frac{3\pi}{8} + \pi k,\ k \in Z$

25. $\frac{n^2 - 24}{n}$ ifoda natural son bo'ladigan n ning barcha natural qiymatlari yig'indisini toping.
A) 54 B) 44 C) 48 D) 50

26. Sexda 120 ta samovar va 25 ta patnis yasalgan. Sarf qilingan hamma materialning 0,96 qismi samovarga ketgan. Agar har bir samovarning og'irligi 3,6 kg dan bo'lsa, har bir patnis necha kg bo'lgan?
A) 0,04 B) 0,8 C) 0,9 D) 0,72

27. $\begin{cases} x^3 - y^3 = 152, \\ x - y = 2. \end{cases}$
$x \cdot y$ -?
A) 4 B) 12 C) 6 D) 24

28. Agar $a = 8\sqrt{2}$ va $b = 4\sqrt{2}$ bo'lsa, $\frac{a^{\frac{3}{2}} - b^{\frac{3}{2}}}{a^{\frac{1}{2}} - b^{\frac{1}{2}}} - \frac{a^{\frac{3}{2}} + b^{\frac{3}{2}}}{a^{\frac{1}{2}} + b^{\frac{1}{2}}}$ ning qiymati nechaga teng bo'ladi?
A) 6 B) 16 C) 12 D) 8

29. Ikki sonning o'rta arifmetigi 16 ga, kvadratlarining ayirmasi 192 ga teng. Shu ikki son kvadratlarining yig'indisini toping.
A) 520 B) 514 C) 544 D) 530

30. $|4 - x| < 5$ tengsizlikning butun sonlardan iborat yechimlari nechta?
A) 5 B) 10 C) 11 D) 9

31. Geometrik progressiyada $b_1 + b_5 = 51$ va $b_2 + b_6 = 102$. Shu progressiyaning dastlabki yettita hadi yig'indisini toping.
A) 765 B) 361 C) 399 D) 381

32. $a = 2log_2 5$, $b = 4\log_{\frac{1}{4}} \frac{5}{26}$, $c = 3\log_{\frac{1}{8}} \frac{1}{23}$ sonlarni o'sish tartibida joylashtiring.
A) $a < b < c$ B) $b < a < c$ C) $c < a < b$
D) $b < c < a$

33. Muntazam oltiburchakka tashqi chizilgan aylananing radiusi $4\sqrt{3}$ ga teng. Uning kichik diagonalini toping.
A) 12 B) $6\sqrt{6}$ C) $3\sqrt{6}$ D) 6

34. Muntazam to'rtburchakli piramidaning yon qirrasi $6\sqrt{2}$ ga, yon qirra va asos tekisligi orasidagi burchak 45° ga teng. Piramidaning hajmini toping.
A) 144 B) $96\sqrt{2}$ C) 192 D) 72

35. Qirrasi 12 ga teng bo'lgan kub yoqlarining markazlari tutashtirildi. Hosil bo'lgan jismning hajmini toping.
A) 144 B) 288 C) 216 D) 169

36. $tg(arccos\frac{4}{5} - arcsin\frac{7}{25})$ ni hisoblang.
A) $\frac{44}{75}$ B) $\frac{44}{117}$ C) $\frac{100}{117}$ D) $\frac{4}{3}$

Matematika

1. $-\frac{8}{9}\cdot 18,75\cdot 1\frac{1}{8}-(-4,25)$ ni hisoblang.
A) $-14,5$ B) -8 C) $14,5$ D) -10

2. $\frac{y^2-x^2}{2xy}:\frac{x+y}{2y}$ ni soddalashtiring.
A) $\frac{x-y}{y(1+y)}$ B) $\frac{x-y}{y}$ C) $\frac{y-x}{x}$
D) $1-\frac{x}{y}$

3. Agar $f(x)=(2x-\frac{1}{3})(4x+\frac{1}{4})$ bo'lsa, $f(\frac{1}{2})$ ni toping.
A) $\frac{7}{12}$ B) $-4,5$ C) $1,5$ D) $4,5$

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?
1) $(x+a)\cdot(x-b)=x^2-(a-b)x-ab$;
2) $(x-c)\cdot(x-d)=x^2-(c+d)x+cd$;
3) $(x-c)\cdot(x+d)=x^2-(c-d)x-cd$;
4) $6ab+(2a^3+b^3-(3ab^2-(a^3+2ab^2-b^3)))=3a^3-ab^2+6ab$.
A) 2;3;4 B) 1;2;3 C) 1;2;4 D) 1;3;4

5. Quyida keltirilgan tengliklardan qaysi biri ayniyat?
A) $2mn-n^2-m^2=(m+n)^2$
B) $\frac{m^3-n^3}{m-n}=m^2-mn+n^2$
C) $-\frac{m-n}{n}=\frac{-m-n}{n}$
D) $m-(m-n)-(m+n)=-m$

6. $\begin{cases}x^2+y^2-xy=1,\\ x+y=-2.\end{cases}$ $2xy=?$
A) -1 B) 1 C) -3 D) 2

7. $y=\frac{-3}{e^x}$ funksiyaning boshlang'ich funksiyasini toping.
A) $3lnx+C$ B) $\frac{3}{e^x}+C$ C) $\frac{1}{3e^x}+C$
D) $\frac{1}{3}e^{-x}+C$

8. Quyidagi mulohazalardan qaysi biri noto'g'ri?
A) *Agar ikkita teng yonli uchburchakning asoslari va asoslaridagi burchaklari teng bo'lsa, bunday uchburchaklar tengdir.*
B) *Teng tomonli uchburchakning balandliklari uchidan boshlab hisoblanganda kesishish nuqtasida 2:1 nisbatda bo'linadi.*
C) *Agar bir uchburchakning bir tomoni va shu tomon qarshisidagi burchagi, ikkinchi uchburchakning bir tomoni va shu tomon qarshisidagi burchagiga mos ravishda teng bo'lsa, bu uchburchaklar tengdir.*
D) *Qavariq beshburchak ichki burchaklarining yig'indisi 540° ga teng.*

9. $x^2+y^2+4x-6y-3=0$ tenglama bilan berilgan aylananing markazini toping.
A) $(2;-3)$ B) $(-2;3)$ C) $(-4;6)$
D) $(4;-3)$

10. Tekislikka og'ma va perpendikulyar tushirilgan. Og'maning tekislikdagi proyeksiyasi 11 ga, perpendikulyarning uzunligi 60 ga teng. Og'ma va perpendikulyar orasidagi burchakni toping.
A) $arccos\frac{11}{60}$ B) $arcsin\frac{11}{61}$ C) $arcsin\frac{11}{60}$
D) $arctg\frac{60}{61}$

11. Quyidagilardan qaysi biri Oyz tekislikka nisbatan $P(3;-2;4)$ nuqtaga simmetrik bo'lgan nuqta?
A) $(3;2;-4)$ B) $(3;2;4)$ C) $(-3;-2;4)$
D) $(-3;2;-4)$

12. Quyidagi formulalardan qaysilari to'g'ri?
1) $cos(x+y)=sinx\cdot cosy+cosx\cdot siny$;
2) $tg(x+y)=\frac{tgx+tgy}{1-tgx\cdot tgy}$,
$x,y,x+y\neq\frac{\pi}{2}+\pi n, n\in Z$;
3) $sin^2\frac{x}{2}=\frac{1-cosx}{2}$;
4) $sinx-siny=2cos\frac{x-y}{2}sin\frac{x-y}{2}$.
A) 1;2;4 B) 1;2;3 C) 1;3;4 D) 2;3;4

13. $(0,2\cdot 0,05-0,05):0,125+0,96$ ni hisoblang.
A) $-2,45$ B) $0,64$ C) $0,43$ D) $3,95$

14. Agar kvadratning perimetri 20% ga kamaytirilsa, uning yuzi necha foizga kamayadi?
A) 40 B) 20 C) 19 D) 36

15. $(a+b)(a-b+1)+(a-b)(a+b-1)-2b$ ni soddalashtiring.
A) $2a-2b$ B) $2b$ C) $2a^2-2b^2$ D) $2a$

16. $\dfrac{\left(\frac{1}{343}\right)^{-1/3}+\left(\frac{1}{8}\right)^{-1/3}}{\sqrt[3]{18\sqrt{144}}}$ ni hisoblang.

A) $\frac{5}{16}$ B) $\frac{3}{2}$ C) $\frac{4}{7}$ D) $\frac{2}{3}$

17. Agar $a^2-6a+10+b^2+2b=0$ bo'lsa, $(a+b)^3$ ning qiymatini toping.

A) 27 B) 64 C) 25 D) 8

18. Ikki sonning ayirmasi 5 ga teng. Agar shu sonlardan kattasining 20% i kichigining $\frac{7}{30}$ qismiga teng bo'lsa, shu sonlarni toping.

A) 36 va 41 B) 30 va 35 C) 63 va 68 D) 45 va 50

19. a ning qanday qiymatida $x^2-(a-1)x+32=0$ tenglamaning ildizlaridan biri 4 ga teng bo'ladi?

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

20. Arifmetik progressiyaning uchinchi va to'qqizinchi hadlari yig'indisi 4 ga teng. Shu progressiyaning dastlabki 11 ta hadlari yig'indisini toping.

A) 33 B) 22 C) 55 D) 44

21. $y=x^2-5$ egri chiziqqa o'tkazilgan urinma $y=2x+3$ to'g'ri chiziqqa parallel. Urinish nuqtasining ordinatasini toping.

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

22. ABC uchburchakda $AB=3, CB=4$ va $cosB=-\frac{11}{24}$ bo'lsa, AC ning qiymatini toping.

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

23. a ning qanday qiymatlarida $ax+3y=8$ va $y-x=4$ to'g'ri chiziqlar parallel bo'ladi ?

A) $a=2$ B) $a=1$ C) $a\in R$ D) $a=-3$

24. Nechta butun son $sin(16\pi/x)=0$ tenglamani qanoatlantiradi?

A) 8 B) 10 C) 24 D) 16

25. Tomoni 1000 dm ga teng bo'lgan kvadrat tomoni 5 sm ga teng bo'lgan kvadratchalarga ajratildi. Shu kvadratchalar kengligi 10 sm bo'lgan tasma shaklida joylashtirilsa, uning uzunligi qancha bo'ladi?

A) 200 km B) 100 km C) 1 km D) 20 km

26. Ishlab chiqarish samaradorligi birinchi yili 15% ga, ikkinchi yili 16% ga ortdi. Shu ikki yil ichida samaradorlik necha foizga ortgan?

A) 33,4 B) 32,4 C) 31 D) 34,4

27. Agar $\frac{4x^2-4xy+3y^2}{2y^2+2xy-5x^2}=1$ bo'lsa, $\frac{4x-y}{4x+y}$ ning qiymati nimaga teng?

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

28. $\dfrac{\sqrt{3+2\sqrt{2}}+\sqrt{3-2\sqrt{2}}+\sqrt{2}}{4\sqrt{2}}$ ni hisoblang.

A) 0,5 B) $\frac{\sqrt{2}}{4}$ C) 0,75 D) $\frac{\sqrt{2}}{2}$

29. Raqamlarining yig'indisidan 8 marta katta, raqamlari kvadratlarining yig'indisi esa 53 ga teng bo'lgan ikki xonali sonning kvadratini toping.

A) 729 B) 5184 C) 6561 D) 529

30. $(x-1)\cdot\sqrt{8-2x-x^2}\le 0$ tengsizlikning yechimini ko'rsating.

A) $[-2;\ 3]$ B) $[-4;\ 1]\cup\{2\}$ C) $[2;\ \infty)$ D) $[-2;\ 1]\cup\{3\}$

31. (b_n) geometrik progressiyada $b_4-b_2=24$ va $b_2+b_3=6$ bo'lsa, b_2 ning qiymatini toping.

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

32. $x^{log_2 x+2}<8$ tengsizlikni yeching.

A) $(2^{-2};\ 2)$ B) $(2^{-5};\ 2)$ C) $(2^{-4};\ 2)$ D) $(2^{-3};\ 2)$

33. Kichik diagonali $24\sqrt{3}$ bo'lgan muntazam oltiburchakka tashqi chizilgan aylananing radiusini toping.

A) $12\sqrt{3}$ B) $24\sqrt{3}$ C) 24 D) 12

34. Muntazam to'rtburchakli kesik piramida asoslarining tomonlari 3 va 5 sm, diagonali $2\sqrt{17}$ sm. Kesik piramidaning balandligi necha sm?

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

35. Yasovchisi 15 ga, asosining radiusi 9 ga teng bo'lgan konusga ichki chizilgan sharning radiusini toping.

A) 6 B) 4,5 C) $3\sqrt{2}$ D) $4,5\sqrt{3}$

36. $tg(\alpha+\beta)=4$, $tg(\alpha-\beta)=-2$ bo'lsa, $tg2\beta$ ni hisoblang.

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

Matematika

1. $6\frac{2}{3}\cdot 2\frac{1}{4}\cdot(-\frac{1}{2})\cdot\frac{2}{5}$ ni hisoblang.
A) -3 B) 3 C) $-2,5$ D) $2,5$

2. $2\frac{1}{3}\cdot(\frac{6}{7}m-3)-1\frac{2}{3}\cdot(\frac{6}{5}m-6)$ ni soddalashtiring.
A) 4 B) $m-2$ C) 3 D) $m+3$

3. k ning qanday qiymatida $y=kx^3+2$ funksiyaning grafigi $B(-2;\ -14)$ nuqtadan o'tadi?
A) 1 B) 2 C) -1 D) $-0,5$

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?
1) $(x-c)\cdot(x-d)=x^2+(c-d)x+cd$;
2) $(x-c)\cdot(x+d)=x^2-(c-d)x-ed$;
3) $12x^2+y^2-(8x^2-5y^2-(-10x^2+(5x^2-6y^2)))=-x^2$;
4) $3a-(2c-(6a-(c-b)+c+(a+8b)-6c))=10a+9b-8c$.
A) 1; 3; 4 B) 1; 2; 4 C) 1; 2; 3 D) 2; 3; 4

5. $\frac{x^2+4xy}{-16y^2+x^2}$ kasrni qisqartiring.
A) $-\frac{x}{x+4y}$ B) $\frac{x}{x+4y}$ C) $\frac{y}{4y-x}$
D) $\frac{x}{x-4y}$

6. $\begin{cases}x+2=0\\x^2y=8\end{cases}$ tenglamalar sistemasini yeching.
A) $(-2;2)$ B) $(-2;-2)$ C) $\emptyset$
D) $(-2;2),(-2;-2)$

7. $f(x)=x-\frac{x^2}{2}$ funksiyaning (6; 2) nuqtadan o'tuvchi boshlang'ich funksiyasini toping.
A) $\frac{x^2}{2}-\frac{x^3}{6}+20$ B) $\frac{x^2}{2}+\frac{x^3}{6}-56$
C) $\frac{x^2}{2}-\frac{x^3}{6}+18$ D) $\frac{x^2}{2}-\frac{x^3}{6}-18$

8. Aylananing MN vatari 120° li yoyni tortib turadi. MN vatar o'zi tortib turgan kichik yoyning ixtiyoriy nuqtasidan qanday burchak ostida ko'rinadi?
A) 120° B) 270° C) 110° D) 100°

9. P(0;3) nuqtani koordinata boshi atrofida 90° ga burganda hosil bo'ladigan nuqtaning koordinatalarini toping.
A) (0; -3) B) (3; 0) C) (3; 3)
D) (-3; 0)

10. Tekislikka tushirilgan og'ma va perpendikulyar orasidagi burchak $arcsin\frac{7}{25}$ ga teng. Og'maning uzunligi 75 ga teng. Perpendikulyarning uzunligini toping.
A) 21 B) 36 C) 72 D) $31\frac{1}{2}$

11. Quyidagi nuqtalardan qaysi biri Oyz tekislikda yotadi?
A) $(2;0;-5)$ B) $(2;-3;0)$ C) $(0;9;-7)$
D) $(1;0;-4)$

12. Quyidagi formulalardan qaysilari to'g'ri?
1) $sin(x-y)=sinx\cdot cosy-cosx\cdot siny$;
2) $sin^2\frac{x}{2}=\frac{1+cosx}{2}$;
3) $sinx+siny=2sin\frac{x+y}{2}cos\frac{x-y}{2}$;
4) $tgx+tgy=\frac{sin(x+y)}{cosx\cdot cosy}$,
$x,y\neq\frac{\pi}{2}+\pi n, n\in Z$.
A) 1; 2; 4 B) 2; 3; 4 C) 1; 3; 4 D) 1; 2; 3

13. Quyidagi oddiy kasr ko'rinishida berilgan sonlardan qaysilarini chekli o'nli kasr ko'rinishiga keltirib bo'lmaydi:
1) $\frac{15}{35}$; 2) $\frac{4}{125}$; 3) $\frac{11}{80}$; 4) $\frac{20}{55}$?
A) 3; 4 B) 1; 2 C) 1; 4 D) 1; 3

14. $x(x>0)$ ga teskari bo'lgan son x ning 16% ini tashkil etadi. x ning qiymatini toping.
A) $2\frac{3}{4}$ B) $2\frac{1}{2}$ C) $3\frac{1}{3}$ D) $2\frac{1}{4}$

15. $\frac{5x+6}{x^2-4}-\frac{x}{x^2-4}:\frac{x}{x-2}+1$ ifodani soddalashtiring.
A) -1 B) 1 C) $\frac{x+2}{x-2}$ D) $\frac{x-2}{x+2}$

16. $\sqrt[3]{1024\cdot 108}+0,5\cdot\sqrt[5]{32\cdot 243}$ ni hisoblang.
A) 48 B) 45 C) 51 D) 49

17. $a=2^5+2^{-5}$ va $b=2^5-2^{-5}$ bo'lsa, a^2-b^2-2 nimaga teng?
A) 2 B) 0 C) $\frac{1}{4}$ D) $\frac{1}{2}$

18. Bir son ikkinchi sondan 6 ta ortiq. Ularning o'rta arifmetigi 23 ga teng. Shu sonlardan kattasini toping.
A) 27 B) 23 C) 26 D) 33

19. k ning qanday qiymatlarida $kx^2-(k-9)x+3=0$ tenglama ikkita teng manfiy ildizga ega?
A) 1 B) 49; 1 C) 3 D) -49; -1

20. Arifmetik progressiya 26 haddan iborat. Agar $a_6 = -0,25$ va $a_{21} = -1,25$ bo'lsa, uning hadlari yig'indisini toping.
A) $-10,75$ B) $-9,75$ C) $-8,5$ D) $-19,5$

21. $y = \frac{1}{3}x^3 + \frac{1}{2}x^2 - 6x$ funksiyaning grafigiga o'tkazilgan urinma x ning qanday qiymatlarida $y = -4x - 1$ to'g'ri chiziqqa parallel bo'ladi?
A) -4 va 3 B) -3 va 2 C) -5 va 4 D) -2 va 1

22. To'g'ri burchakli uchburchak katetlaridan biri 15 sm, ikkinchisi esa gipotenuzadan 3 sm qisqa. Shu uchburchak gipotenuzasini toping.
A) 20 B) 36 C) 39 D) 25

23. a ning qanday qiymatlarida $ax + 2y = 3$ va $3x - y = -1$ to'g'ri chiziqlar kesishadi?
A) $a \neq 2$ B) $a = 0$ C) $a \neq -6$ D) $a \in R$

24. $cos^2\frac{x}{4} > \frac{\sqrt{2}}{2} + sin^2\frac{x}{4}$ tengsizlikni yeching.
A) $\frac{\pi}{8} + \pi n < x < \frac{7\pi}{8} + \pi n,\ n \in Z$
B) $\frac{\pi}{8} + 2\pi n < x < \frac{7\pi}{8} + 2\pi n,\ n \in Z$
C) $\frac{\pi}{4} + 2\pi n < x < \frac{7\pi}{4} + 2\pi n,\ n \in Z$
D) $-\frac{\pi}{2} + 4\pi n < x < \frac{\pi}{2} + 4\pi n,\ n \in Z$

25. 36455472363 ni 2, 4, 5, 9, 10 va 25 ga bo'lganda hosil bo'lgan qoldiqlar yig'indisini toping.
A) 16 B) 26 C) 14 D) 15

26. 11300 ning 36% i va 9000 ning 28% i yig'indisi shu sonlar yig'indisining 40% idan qanchaga kam?
A) 1432 B) 1532 C) 1528 D) 1632

27. Agar $(\sqrt{3}+2)a = 1$ va $(\sqrt{3}-2)b = -1$ bo'lsa, $(a+1)^{-1} - (b+1)^{-1}$ ning qiymatini hisoblang.
A) 0,5 B) $\frac{1}{\sqrt{3}}$ C) $\sqrt{3}$ D) $\frac{2}{\sqrt{3}}$

28. $\sqrt{11+6\sqrt{2}} - \sqrt{11-6\sqrt{2}}$ ni hisoblang.
A) 22 B) 6 C) $3\sqrt{2}$ D) $\sqrt{8}$

29. Agar $y - x = 2$ va $a > 0$ bo'lsa, $\begin{cases} y^2 - x^2 = 6a \\ y + x = 1,5a^2 \end{cases}$ tenglamalar sistemasini yeching.
A) (7; 9) B) (5; 7) C) (2; 4) D) (4; 6)

30. $a > c > b > 0$ bo'lsa, $\frac{1}{a}$, $\frac{1}{a+b}$ va $\frac{1}{a+c}$ larni taqqoslang.
A) $\frac{1}{a} < \frac{1}{a+b} < \frac{1}{a+c}$ B) $\frac{1}{a} < \frac{1}{a+c} < \frac{1}{a+b}$
C) $\frac{1}{a+c} < \frac{1}{a+b} < \frac{1}{a}$ D) $\frac{1}{a+b} < \frac{1}{a+c} < \frac{1}{a}$

31. Arifmetik progressiyaning oltinchi hadi 10 ga, dastlabki 16 ta hadining yig'indisi 200 ga teng. Bu progressiyaning 9-hadini toping.
A) 14 B) 16 C) 13 D) 18

32. $\frac{log_{\sqrt{6}}x - 2}{log_{\sqrt{6}}x - 4} \leq 0$ tengsizlikning yechimlaridan nechtasi tub sonlardan iborat?
A) 5 B) 6 C) 7 D) 8

33. Aylanaga ichki chizilgan muntazam olti burchakning tomoni 12 ga teng. Shu aylanaga kvadrat ham ichki chizilgan. Kvadratga ichki chizilgan doiraning yuzini toping.
A) 90π B) 72π C) 36π D) 48π

34. Muntazam uchburchakli piramidaning balandligi asosining tomonidan olti marta kichik. Piramidaning yon yog'i asos tekisligi bilan qanday burchak tashkil etadi?
A) 30° B) 60° C) 45° D) 15°

35. Balandligi 9 ga, yasovchisi 15 ga teng konusga ichki chizilgan sharning sirtining yuzini toping.
A) 72π B) 56π C) 48π D) 64π

36. $cos(2arcsin\frac{4}{5})$ ni hisoblang.
A) $\frac{7}{25}$ B) $\frac{24}{25}$ C) $-\frac{24}{25}$ D) $-\frac{7}{25}$

Matematika

1. $(1992\frac{3}{5} - 1990\frac{2}{3}) \cdot 1\frac{1}{29}$ ni hisoblang.

   A) $\frac{14}{435}$ B) 4 C) $2\frac{2}{29}$ D) 2

2. $a(b-c) - b(c-a) - c(a-b)$ ni soddalashtiring.

   A) $2ab - 2ac$ B) $-2ac$ C) $2ab - 2bc$
   D) 0

3. Quyidagilardan qaysilari o'suvchi funksiyalar?

   1) $y = 3^{-x}$; 2) $y = (\sqrt[4]{10})^x$; 3) $y = (\frac{11}{9})^x$;

   4) $y = (\frac{5}{3})^x$; 5) $y = (0,84)^x$.

   A) 1; 2; 3 B) 1; 2; 4 C) 2; 3; 4
   D) 3; 4; 5

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?

   1) $(x+a)\cdot(x-b) = x^2 - (a-b)x - ab$;
   2) $(x-c)\cdot(x-d) = x^2 - (c+d)x + cd$;
   3) $(x-e)\cdot(x+d) = x^2 - (e-d)x - ed$;
   4) $6ab + (2a^3 + b^3 - (3ab^2 - (a^3 + 2ab^2 - b^3))) = 3a^3 - ab^2 + 6ab$.

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

5. $(b^2 - \frac{4+b^4}{b^2+1}) : \frac{-2+b}{1+b^2}$ ni soddalashtiring.

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

6. $\begin{cases} x+3=0 \\ xy^2 = 12 \end{cases}$ tenglamalar sistemasining yechimini toping.

   A) $(-3;\ -2)$ B) $(-3;\ 2)$
   C) $(-3;\ -2),\ (-3;\ 2)$ D) $\emptyset$

7. $f(x) = x^3 + 3x - 5$ funksiyaning $[-1;1]$ kesmadagi eng katta va eng kichik qiymatlari orasidagi ayirmani toping.

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

8. Quyidagi mulohazalardan qaysi biri noto'g'ri?

   A) *Agar ikkita teng yonli uchburchakning asoslari va asoslaridagi burchaklari teng bo'lsa, bunday uchburchaklar tengdir.*

   B) *Teng tomonli uchburchakning balandliklari uchidan boshlab hisoblanganda kesishish nuqtasida 2:1 nisbatda bo'linadi.*

   C) *Agar bir uchburchakning bir tomoni va shu tomon qarshisidagi burchagi, ikkinchi uchburchakning bir tomoni va shu tomon qarshisidagi burchagiga mos ravishda teng bo'lsa, bu uchburchaklar tengdir.*

   D) *Qavariq beshburchak ichki burchaklarining yig'indisi* 540° *ga teng.*

9. $x^2 + y^2 + 4x + 6y - 3 = 0$ tenglama bilan berilgan aylananing radiusini toping.

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

10. Tekislikka og'ma va perpendikulyar tushirilgan. Og'maning tekislikdagi proyeksiyasi 60 ga, perpendikulyarning uzunligi 11 ga teng. Og'ma va perpendikulyar orasidagi burchakni toping.

    A) $arccos\frac{11}{60}$ B) $arcsin\frac{60}{61}$ C) $arcsin\frac{11}{60}$
    D) $arctg\frac{11}{61}$

11. Quyidagilardan qaysi biri Oxz tekislikka nisbatan $K(2;4;-5)$ nuqtaga simmetrik bo'lgan nuqta?

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

12. Quyidagi formulalardan qaysilari to'g'ri?

    1) $sin(x+y) = sinx \cdot cosy + cosx \cdot siny$;

    2) $tg(x+y) = \frac{tgx - tgy}{1 + tgx \cdot tgy}$,

    $x, y, x+y \neq \frac{\pi}{2} + \pi n, n \in Z$;

    3) $sin^2\frac{x}{2} = \frac{1-cosx}{2}$;

    4) $sinx + siny = 2sin\frac{x+y}{2}cos\frac{x-y}{2}$.

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

13. $\frac{0,28}{0,84} + \frac{0,23}{0,03} - \frac{0,9}{0,05}$ ifodaning qiymatini toping.

    A) -10 B) 25 C) 10 D) $\frac{32}{3}$

14. Go'sht qaynatilganda o'z vaznining 40% ini yo'qotadi. 25 kg go'sht qaynatilganda vazni necha kg kamayadi?

    A) 11 B) 12 C) 10 D) 9,5

15. $\frac{1-x^2}{1+x^2} \cdot (\frac{1}{(x-1)^2} - \frac{x}{1-x^2})$ ni soddalashtiring.

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

16. $20 \cdot 2^{4n-6} - 80 \cdot (4^{n-2})^2$ ifodani soddalashtiring.

    A) 4^{3n} B) 0 C) 2^{n-1} D) 4

17. $\frac{(8,7^2 - 11,3^2)(13^2 - 12,6^2)}{(4,2^2 - 5,8^2)(2,3^2 - 0,3^2)}$ ni hisoblang.

    A) 0,32 B) 32 C) 6,4 D) 3,2

18. Velosipedchi butun yo'lning 0,6 qismini o'tgach, qolgan yo'l, u bosib o'tgan yo'ldan 8 km ga kamligi ma'lum bo'ldi. Butun yo'lning uzunligini (km) toping.

    A) 24 B) 40 C) 36,6 D) 20

19. Agar y_1 va y_2 $y^2 - by + 2b - 3 = 0$ tenglamaning ildizlari bo'lsa, b ning qanday qiymatida $y_1^2 + y_2^2$ ifodaning qiymati eng kichik bo'ladi?
A) 2 B) 1,2 C) 1,5 D) 1

20. Geometrik progressiyaning maxraji 3 ga, dastlabki to'rtta hadining yig'indisi 120 ga teng. Birinchi hadining qiymatini toping.
A) 2 B) 1 C) 4 D) 3

21. $f(x) = -2x^3 + 18x^2 + 12$ funksiya o'sadigan kesmaning uzunligini aniqlang.
A) 4 B) 5 C) 4,5 D) 6

22. To'g'ri burchakli uchburchak katetlaridan biri 12 sm, gipotenuzasi esa ikkinchi katetdan 4 sm uzun. Gipotenuzaning uzunligini toping.
A) 22 B) 20 C) 18 D) 16

23. a ning qanday qiymatlarida $ax + 3y = 8$ va $y - x = 4$ to'g'ri chiziqlar parallel bo'ladi ?
A) $a = 2$ B) $a = 1$ C) $a \in R$ D) $a = -3$

24. $\sin^4 x - \cos^4 x = \frac{1}{2}$ tenglama $[-2\pi;\ 2\pi]$ kesmada nechta ildizga ega?
A) 9 B) 8 C) 7 D) 10

25. $\frac{n^3 - 2n^2 - 12}{n}$ $(n \in N)$ kasrning natural sonlardan iborat barcha qiymatlari yig'indisini toping.
A) 105 B) 102 C) 124 D) 146

26. Yil boshida o'g'il bolalar sinfdagi o'quvchilarning 30% ini, qizlar esa 21 nafarni tashkil etardi. Yilning o'rtasida sinfga 6 ta yangi o'g'il bola keldi va 11 ta qiz boshqa sinfga o'tdi. Shundan so'ng o'g'il bolalar sinfdagi o'quvchilarning necha foizini tashkil etadi?
A) 50 B) 70 C) 60 D) 55

27. Agar $a + a^{-1} = 6$ bo'lsa, $a^3 + a^{-3}$ ni hisoblang.
A) 198 B) 216 C) 210 D) 234

28. $\frac{4a^2 - 12ab + 9b^2}{-2a^2 + ab + 3b^2}$ ni soddalashtiring.
A) $\frac{3b - 2a}{a + b}$ B) $\frac{3a - 2b}{a + b}$ C) $\frac{2a - 3b}{a - b}$
D) $\frac{2a - 3b}{a + b}$

29. $(x - 2)x(x - 3)(x + 1) = 40$ tenglama haqiqiy ildizlarining yig'indisini toping.
A) 2 B) 5 C) -4 D) -1

30. Agar $a < 0 < b$ va $|a| < |b|$ bo'lsa, $\frac{1}{a^3 + b^3}$, $\frac{1}{a^4 + b^3}$ va $\frac{1}{a^3}$ larni taqqoslang.
A) $\frac{1}{a^4 + b^3} > \frac{1}{a^3} > \frac{1}{a^3 + b^3}$
B) $\frac{1}{a^3} < \frac{1}{a^3 + b^3} < \frac{1}{a^4 + b^3}$
C) $\frac{1}{a^3} < \frac{1}{a^4 + b^3} < \frac{1}{a^3 + b^3}$
D) $\frac{1}{a^4 + b^3} > \frac{1}{a^3 + b^3} > \frac{1}{a^3}$

31. Cheksiz kamayuvchi geometrik progressiyaning yig'indisi 9 ga, maxraji esa $\frac{1}{3}$ ga teng. Uning birinchi hamda to'rtinchi hadlarining ayirmasini toping.
A) $4\frac{2}{9}$ B) $5\frac{1}{3}$ C) $5\frac{7}{9}$ D) $5\frac{2}{3}$

32. $\log_{\frac{2}{3}} \frac{x}{4} \le \log_{\frac{4}{9}}(x - 3)$ tengsizlikni yeching.
A) $(3;\ 4] \cup [12;\ \infty)$ B) $(-\infty;\ 4] \cup [12;\ \infty)$
C) $(0;\ 3) \cup (3;\ 4]$ D) $(-\infty;\ 3) \cup (3;\ \infty)$

33. Ikki tomoni yig'indisi 1,8 ga va ular orasidagi burchagi 150° ga teng bo'lgan uchburchaklar ichida yuzasi eng katta bo'lgan uchburchakning yuzini toping.
A) $\frac{4}{25}$ B) $\frac{9}{10}$ C) $\frac{81}{400}$ D) $\frac{81}{100}$

34. Muntazam to'rtburchakli kesik piramida asoslarining tomonlari 4 va 8 sm, diagonali 12 sm. Kesik piramidaning balandligi necha sm?
A) $6\sqrt{2}$ B) 3 C) 4,5 D) $8\sqrt{2}$

35. Radiusi 15 ga teng bo'lgan sharga ichki chizilgan konusning balandligi 12 ga teng. Konusning hajmini toping.
A) 486π B) 756π C) 864π D) 672π

36. Agar $\sin(\alpha + \beta) = \frac{4}{5}$, $\sin(\alpha - \beta) = \frac{5}{13}$ va $0 < \beta < \alpha < \frac{\pi}{4}$ bo'lsa, $\cos\alpha + \cos\beta$ ning qiymatini hisoblang.
A) $\frac{10}{\sqrt{130}}$ B) $\sqrt{\frac{20}{13}}$ C) $\frac{5}{\sqrt{130}}$ D) $\sqrt{\frac{40}{13}}$

Matematika

1. Tiko avtomashinasida 100 km yo'lni o'tish uchun 5,8 l yonilg'i sarflanadi. 10,15 l yonilg'i bilan bu avtomashinada necha km yo'l yurish mumkin?
   A) 175 B) 160 C) 200 D) 150

2. $\frac{\sqrt[3]{-24}+\sqrt[4]{81}+\sqrt[4]{192}+3\sqrt[3]{-375}}{\sqrt[3]{-375}}-1$ ni hisoblang.
   A) 1 B) −1 C) 0 D) 3

3. Quyidagi nuqtalarning qaysi biri $f(x)=-2x+7$ funksiyaning grafigiga tegishli?
   A) (2;1) B) (1;2) C) (2;4) D) (3;1)

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?
   1) $(x+a)\cdot(x-b)=x^2+(a-b)x-ab$;
   2) $(x-c)\cdot(x-d)=x^2-(c+d)x+cd$;
   3) $(x-e)\cdot(x+d)=x^2+(e-d)x-ed$;
   4) $5a^2-3b^2-((a^2-2ab-b^2)-(5a^2-2ab-b^2))=9a^2-3b^2$.
   A) 2;3;4 B) 1;2;4 C) 1;2;3 D) 1;3;4

5. $(1-3a)^2-(1+3a)(3a-1)$ ni soddalashtiring.
   A) $-6a+2$ B) $18a^2-6a$ C) $9a^2-3a$ D) $-3a+2$

6. $\begin{cases}x^2+y^2=5\\x-y=1,\end{cases}\quad 2\cdot x\cdot y=?$
   A) 3 B) 2 C) 4 D) 1,5

7. $f(x)=-x+\frac{x^2}{2}$ funksiyaning (6;2) nuqtadan o'tuvchi boshlang'ich funksiyasini toping.
   A) $-\frac{x^2}{2}+\frac{x^3}{6}-18$ B) $-\frac{x^2}{2}+\frac{x^3}{6}-16$
   C) $-\frac{x^2}{2}+\frac{x^3}{6}+18$ D) $-\frac{x^2}{2}+\frac{x^3}{6}+16$

8. Ikki qo'shni burchakning ayirmasi 28° ga teng. Shu burchaklardan kichigini toping.
   A) 78° B) 72° C) 76° D) 82°

9. $P(3;0)$ nuqtani koordinata boshi atrofida 90° ga burganda u qaysi nuqtaga o'tadi?
   A) (0;−3) B) (−3;0) C) (0;3) D) (3;3)

10. Og'ma va tekislik orasidagi burchak $arccos0,28$ ga, og'maning tekislikdagi proyeksiyasi 21 ga teng. Perpendikulyarning uzunligini toping.
    A) 36 B) $5\frac{22}{25}$ C) 72 D) $20\frac{4}{25}$

11. Koordinatalar boshiga nisbatan (1;2;3) nuqtaga simmetrik bo'lgan nuqtani toping.
    A) (−1;−2;−3) B) (−1;2;3) C) (1;−2;3) D) (1;2;−3)

12. Quyidagi formulalardan qaysilari to'g'ri?
    1) $cos(x+y)=cosx\cdot cosy-sinx\cdot siny$;
    2) $tg(x+y)=\frac{tgx+tgy}{1-tgx\cdot tgy}$,
    $x,y,x+y\neq\frac{\pi}{2}+\pi n, n\in Z$;
    3) $sin^2\frac{x}{2}=\frac{1-cosx}{2}$;
    4) $sinx+siny=2cos\frac{x+y}{2}sin\frac{x-y}{2}$.
    A) 2;3;4 B) 1;2;4 C) 1;3;4 D) 1;2;3

13. Quyidagi oddiy kasr ko'rinishida berilgan sonlardan qaysilarini chekli o'nli kasr ko'rinishiga keltirib bo'lmaydi:
    1) $\frac{7}{32}$; 2) $\frac{10}{55}$; 3) $\frac{11}{160}$; 4) $\frac{20}{35}$?
    A) 3; 4 B) 2; 3 C) 2; 4 D) 4; 1

14. Mis va qo'rg'oshindan iborat qotishmaning 60% i mis bo'lib, mis qo'rg'oshindan $1\frac{5}{6}$ kg ko'p. Qotishmada qancha mis bor?
    A) 7 B) 5 C) 5,5 D) 6

15. $(\frac{1}{m^2-m}-\frac{1}{m-1})\cdot\frac{m}{m+2}+\frac{m+1}{m+2}$ ni soddalashtiring.
    A) $\frac{m}{m-2}$ B) $\frac{2m-2}{m^2-4}$ C) $\frac{m}{m+2}$ D) $\frac{2}{m^2-4}$

16. $\frac{(-3)^{17}\cdot(-4)-2\cdot(-3)^{16}}{9^7\cdot 15}$ sonining uchdan bir qismini toping.
    A) 3 B) 6 C) 9 D) 2

17. $\frac{0,2^2+2\cdot0,2\cdot0,3+0,3^2}{0,5\cdot0,4-0,5\cdot0,8}$ ni hisoblang.
    A) −2,5 B) −25 C) −1,25 D) −1

18. a ning qanday qiymatlarida $ax-2a=3$ tenglama birdan kichik ildizga ega bo'ladi?
    A) (−3; 0) B) (−2; 0) C) [1; 2] D) (0; 1)

19. $x^2=|6-5x|$ tenglamaning nechta ildizi bor?
    A) 1 B) 4 C) 3 D) 2

20. $a_n=4n-12$ $(n\in N)$ formula bilan berilgan ketma-ketlikning dastlabki 60 ta hadining yig'indisini toping.
    A) 6000 B) 4500 C) 7200 D) 6600

21. $f(x)=0,5x^2-x-1,5$ funksiya grafigining abssissasi 2 ga teng bo'lgan nuqtasiga o'tkazilgan urinmaning burchak koeffitsiyentini toping.
    A) 2 B) 1 C) 4 D) 3

22. ABC uchburchakning A burchagi $45°$ ga, BC tomoni $3\sqrt{2}$ ga teng. Shu uchburchakka tashqi chizilgan aylananing radiusini toping.
A) 2 B) 1 C) 6 D) 3

23. To'rtburchakka diagonal o'tkazish natijasida u perimetrlari 25 va 27 ga teng bo'lgan ikkita uchburchakka ajratildi. Agar to'rtburchakning perimetri 36 ga teng bo'lsa, o'tkazilgan diagonalning uzunligini hisoblang.
A) 8 B) 6 C) 11 D) 10

24. $cos^2\frac{x}{4} > \frac{\sqrt{2}}{2} + sin^2\frac{x}{4}$ tengsizlikni yeching.
A) $\frac{\pi}{8} + \pi n < x < \frac{7\pi}{8} + \pi n,\ n \in Z$
B) $\frac{\pi}{8} + 2\pi n < x < \frac{7\pi}{8} + 2\pi n,\ n \in Z$
C) $\frac{\pi}{4} + 2\pi n < x < \frac{7\pi}{4} + 2\pi n,\ n \in Z$
D) $-\frac{\pi}{2} + 4\pi n < x < \frac{\pi}{2} + 4\pi n,\ n \in Z$

25. M ta sonning o'rta arifmetigi 14 ga, boshqa N tasiniki - 28 ga teng. Shu $M + N$ ta sonning o'rta arifmetigini toping.
A) $\frac{M+N}{42}$ B) $\frac{N}{M}$ C) $\frac{14M+28N}{M+N}$
D) $\frac{14N+28M}{M+N}$

26. Birinchi son 80 ga teng. Ikkinchi son birinchi sonning 80% ini, uchinchisi esa birinchi va ikkinchi son yig'indisining 50% ini tashkil qiladi. Bu sonlarning o'rta arifmetigini toping.
A) 64 B) 80 C) 54 D) 72

27. $\frac{1}{2+\sqrt{3}} + \frac{2}{\sqrt{3}-1} - 1$ ni hisoblang.
A) 3 B) 2 C) $\sqrt{3}$ D) 4

28. $\sqrt{\frac{9+\sqrt{65}}{2}} + \sqrt{\frac{9-\sqrt{65}}{2}}$ ni hisoblang.
A) $9-\sqrt{10}$ B) $\sqrt{13}$ C) $7-\sqrt{2}$ D) $\sqrt{5}$

29. $\begin{cases} x^3+y^3=126 \\ x^2y+xy^2=30 \end{cases}$ tenglamalar sistemasining haqiqiy yechimlaridan iborat barcha x va y larning yig'indisini toping.
A) 2 B) 12 C) 10 D) 6

30. $3x^2 \le 16x - 5$ tengsizlikning butun yechimlari ko'paytmasini toping.
A) 120 B) 12 C) 24 D) 30

31. Olti haddan iborat geometrik progressiyaning dastlabki uchta hadining yig'indisi 168 ga, keyingi uchtasiniki esa 21 ga teng. Shu progressiyaning birinchi hadini toping.
A) 96 B) 86 C) 126 D) $\frac{1}{2}$

32. $4^{log_2 x} + x^2 < 50$ tengsizlikning barcha butun sonlardan iborat yechimlari yig'indisini toping.
A) 10 B) 6 C) 7 D) 15

33. Aylanaga ichki chizilgan muntazam olti burchakning tomoni 12 ga teng. Shu aylanaga kvadrat ham ichki chizilgan. Kvadratga ichki chizilgan doiraning yuzini toping.
A) 90π B) 72π C) 36π D) 48π

34. Teng yonli ABC uchburchakning $(AB = AC)$ A uchidan uchburchak tekisligiga uzunligi 32 ga teng bo'lgan AD perpendikulyar o'tkazildi. D nuqtadan BC tomongacha bo'lgan masofa 40 ga teng. ABC uchburchakning BC tomoniga o'tkazilgan balandligi qanchaga teng?
A) 12 B) 24 C) 20 D) 14

35. Konusning yasovchisi 20 ga, asosining diametri 24 ga teng. Unga ichki chizilgan shar sirtining yuzini toping.
A) 156π B) 169π C) 289π D) 144π

36. $cos^2 84° + cos^2 36° + cos84° \cdot cos36°$ ni soddalashtiring.
A) $\frac{1}{2}$ B) $\frac{3}{4}$ C) $\frac{2}{3}$ D) $\frac{1}{4}$

Matematika

1. Birinchi kuni ish normasining $\frac{2}{5}$ qismi bajarildi. Ikkinchi kuni birinchi kunda bajarilgan ishning $\frac{1}{6}$ qismicha ko'p ish bajarildi. Shu ikki kunda qancha ish normasi bajarildi?
A) $\frac{7}{15}$ B) $\frac{13}{15}$ C) $\frac{11}{15}$ D) $\frac{4}{5}$

2. $\frac{c-2\sqrt{c}+1}{1-\sqrt{c}}$ kasrni qisqartiring.
A) $c-1$ B) $\sqrt{c}-1$ C) $-\sqrt{c}+1$
D) $c+1$

3. Quyidagi nuqtalarning qaysi biri $f(x)=-2x+9$ funksiyaning grafigiga tegishli?
A) $(2;5)$ B) $(-1;1)$ C) $(1;-1)$
D) $(-5;2)$

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?
1) $(x-c)\cdot(x+d)=x^2-(c-d)x-cd$;
2) $12x^2+y^2-(8x^2-5y^2-(-10x^2+(5x^2-6y^2)))=-x^2$;
3) $6ab+(2a^3+b^3-(3ab^2-(a^3+2ab^2-b^3)))=3a^3-ab^2+6ab$;
4) $5a^2-3b^2-((a^2-2ab-b^2)-(5a^2-2ab-b^2))=9a^2+4ab-3b^2$.
A) 1;3;4 B) 1;2;3 C) 1;2;4 D) 2;3;4

5. $\frac{x^2-5xy}{-25y^2+x^2}$ kasrni qisqartiring.
A) $-\frac{x}{x+5y}$ B) $\frac{x}{x+5y}$ C) $-\frac{x}{x-5y}$
D) $\frac{x}{x-5y}$

6. $\begin{cases} x^2+y^2+xy=7 \\ x+y=3, \quad 2\cdot x\cdot y-? \end{cases}$
A) 1 B) 3 C) 4 D) 2

7. $y=\frac{-3}{e^x}$ funksiyaning boshlang'ich funksiyasini toping.
A) $3lnx+C$ B) $\frac{3}{e^x}+C$ C) $\frac{1}{3e^x}+C$
D) $\frac{1}{3}e^{-x}+C$

8. 130° li yoyga tiralgan vatar aylanani ikki qismga ajratadi. Katta yoyning ixtiyoriy nuqtasidan qaraganda, bu vatar qanday burchak ostida ko'rinadi?
A) 115° B) 65° C) 70° D) 120°

9. Uchlari $A(3;-1)$ va $B(2;4)$ nuqtada bo'lgan AB kesmaning o'rtasidagi nuqtaning koordinatalarini toping.
A) $(-2,5;\ 1,5)$ B) $(2,5;\ 1,5)$ C) $(2,5;\ 3)$
D) $(2,5;\ -1,5)$

10. Tekislikka og'ma va perpendikulyar tushirilgan. Og'maning tekislikdagi proyeksiyasi 21 ga, perpendikulyarning uzunligi 20 ga teng. Og'ma va perpendikulyar orasidagi burchakni toping.
A) $arccos\frac{20}{21}$ B) $arcsin\frac{21}{29}$ C) $arcsin\frac{20}{21}$
D) $arctg\frac{20}{29}$

11. Oxy tekisligiga nisbatan (1;2;3) nuqtaga simmetrik bo'lgan nuqtani toping.
A) $(-1;-2;3)$ B) $(-1;2;3)$ C) $(1;-2;3)$
D) $(1;2;-3)$

12. Quyidagi formulalardan qaysilari to'g'ri?
1) $sin(x-y)=sinx\cdot cosy-cosx\cdot siny$;
2) $cos^2\frac{x}{2}=\frac{1-cosx}{2}$;
3) $cosx+cosy=2cos\frac{x+y}{2}cos\frac{x-y}{2}$;
4) $tgx-tgy=\frac{sin(x-y)}{cosx\cdot cosy}$,
$x,y\neq\frac{\pi}{2}+\pi n, n\in Z$.
A) 2;3;4 B) 1;2;4 C) 1;3;4 D) 1;2;3

13. $\frac{0,005\cdot 0,081\cdot 3,2}{0,09\cdot 0,0025\cdot 6,4}$ ning qiymatini toping.
A) 0,3 B) 3 C) 0,9 D) 30

14. Umumiy daftarning bahosi oldin 15%, keyin 130 so'm arzonlashgach, 150 so'm bo'ldi. Daftarning dastlabki bahosi necha so'm bo'lgan?
A) 500 B) 400 C) 340 D) 350

15. $\frac{x^{-3}+8}{x^{-2}-2x^{-1}+4}$ ning $x=0.25$ dagi qiymatini hisoblang.
A) 3 B) 6 C) 5 D) 4

16. $\left(\frac{3}{7}\right)^{-1}+0,3^{-3}+(-0,5)^{-2}\cdot\frac{3}{4}-10\frac{19}{27}$ ni hisoblang.
A) $42\frac{4}{9}$ B) $31\frac{2}{3}$ C) $48\frac{10}{27}$ D) $34\frac{2}{3}$

17. $\frac{(5b^{1/4}+10)(b^{3/4}-2b^{1/2})}{4b-16b^{1/2}}$ ni soddalashtiring.
A) $\frac{1}{5}$ B) $1\frac{1}{4}$ C) 5 D) 1

18. a ning qanday qiymatlarida $3x + 2y = 3$ va $3x - 2ay = 5$ to'g'ri chiziqlarning kesishish nuqtasi musbat ordinataga ega?
A) $a = 2$ B) $a < 2$ C) $a < -1$ D) $a > 2$

19. Agar $x - \sqrt{x+3} - 27 = 0$ bo'lsa, $\sqrt{x+3}$ ning qiymatini hisoblang.
A) 4 B) 5 C) 7 D) 6

20. Arifmetik progressiyaning o'n uchinchi hadi 3 ga teng. Uning dastlabki 25 ta hadi yig'indisini toping.
A) 100 B) 125 C) 225 D) 75

21. $f(x) = -\frac{1}{3}x^3 - \frac{1}{6}x + \frac{1}{3}$ funksiyaning $[-1; 1]$ kesmadagi eng katta va eng kichik qiymatlari yig'indisini hisoblang.
A) 0 B) $-\frac{1}{3}$ C) $\frac{2}{3}$ D) $\frac{1}{3}$

22. Bir burchagi 150° bo'lgan uchburchakka tashqi chizilgan aylananing radiusi 2 ga teng. Uchburchak katta tomonining uzunligini toping.
A) 2 B) 1 C) 4 D) 3

23. Romb diagonallarining tomonlari bilan hosil qilgan burchaklari kattaliklarining nisbati 4:5 ga teng. Rombning kichik burchagini toping.
A) 50° B) 80° C) 60° D) 40°

24. k ning quyida ko'rsatilgan qiymatlaridan qaysi birida $cos kx \cdot cos 4x - sin kx \cdot sin 4x = \frac{\sqrt{3}}{2}$ tenglamaning ildizlari $\pm\frac{\pi}{30} + \frac{2\pi n}{5}$ $(n \in Z)$ bo'ladi?
A) 3 B) 2 C) 1 D) 4

25. $\frac{18n^2 - 162}{n^2}$ ifoda natural son bo'ladigan n ning barcha natural qiymatlari nechta?
A) 1 B) 3 C) 6 D) 2

26. Ikki sex 690 ta kir yuvish mashinasi ishlab chiqarishi kerak. Birinchi sex ishlab chiqargan mahsulotning $\frac{2}{9}$ qismi ikkinchi sex ishlab chiqargan mahsulotning 80% iga teng. Birinchi sex qancha mahsulot ishlab chiqargan?
A) 180 B) 150 C) 540 D) 240

27. Agar $\frac{4x^2 - 4xy + 3y^2}{2y^2 + 2xy - 5x^2} = 1$ bo'lsa, $\frac{2x - y}{2x + y}$ ning qiymati nimaga teng?
A) -2 B) $-\frac{1}{5}$ C) $-\frac{1}{2}$ D) $\frac{1}{2}$

28. $\frac{2,72^4 - 0,72^4}{3,44^2 - 2,72 \cdot 1,44}$ ni hisoblang.
A) 6.88 B) 5.68 C) 6,84 D) 5,28

29. Agar $\sqrt{3x^2 - 6x + 16} = 2x - 1$ bo'lsa, $x^2(4 - x)$ ning qiymatini toping.
A) 65 B) 9 C) 54 D) -65

30. $x^2 \le 2x + 15$ tengsizlikning butun sonlardan iborat yechimlari yig'indisini toping.
A) 9 B) 4 C) 5 D) 7

31. Geometrik progressiyaning oltinchi va birinchi hadi ayirmasi 1210 ga, maxraji 3 ga teng. Shu progressiyaning dastlabki oltita hadi yig'indisini toping.
A) 1720 B) 1820 C) 605 D) 1520

32. $log_{0,5}(x+3)^4 > log_{0,5}(3x-7)^4$ tengsizlikni yeching.
A) $(5; \infty)$ B) $(-\infty; -3) \cup (-3; 1) \cup (5; \infty)$
C) $(-\infty; 1) \cup (1; \infty)$ D) $(-3; 1) \cup (5; \infty)$

33. Muntazam oltiburchakka tashqi chizilgan aylananing radiusi $8\sqrt{3}$ ga teng. Uning parallel tomonlari orasidagi masofa topilsin.
A) 12 B) 18 C) 16 D) 24

34. Barcha qirralari teng bo'lgan muntazam uchburchakli prizma asosining medianasi $6\sqrt{3}$ ga teng. Shu prizmaning hajmini toping.
A) $144\sqrt{3}$ B) $432\sqrt{3}$ C) $864\sqrt{3}$
D) $288\sqrt{3}$

35. Balandligi 9 ga, yasovchisi 15 ga teng konusga ichki chizilgan sharning sirtining yuzini toping.
A) 72π B) 56π C) 48π D) 64π

36. $8 sin^2 \frac{25\pi}{24} \cdot cos^2 \frac{23\pi}{24} - 1$ ni hisoblang.
A) $\frac{\sqrt{3}}{2}$ B) $-\frac{\sqrt{3}}{2}$ C) $\frac{1}{2}$ D) $-\frac{1}{2}$

Matematika

1. $7\frac{1}{2} : 6\frac{2}{5} = 5\frac{5}{8} : x$ proporsiyaning noma'lum hadini toping.
A) $3\frac{2}{5}$ B) $4\frac{4}{5}$ C) $4\frac{1}{5}$ D) $5\frac{1}{8}$

2. $\frac{1-b^{-1}+b^{-2}}{1-b+b^2}$ ni soddalashtiring.
A) b^{-2} B) b^{-1} C) $b+1$ D) b^2

3. k ning qanday qiymatlarida $y = \frac{k}{x} - 1$ funksiyaning grafigi $C(-2; -3)$ nuqtadan o'tadi?
A) 4 B) 1 C) $\frac{1}{2}$ D) -1

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?
1) $(x-c)\cdot(x-d) = x^2-(c+d)x+cd$;
2) $(x-e)\cdot(x+d) = x^2-(e-d)x-ed$;
3) $(2x^2+y^2-(8x^2-5y^2-(-10x^2+(5x^2-6y^2))) = -x^2+12y^2$;
4) $3a-(2c-(6a-(c-b)+c+(a+8b)-6c)) = 10a+9b-8c$.
A) 1; 3; 4 B) 2; 3; 4 C) 1; 2; 4 D) 1; 2; 3

5. $(b-c)(b^2+bc+c^2)$ ifodaning $b = \sqrt[3]{5}$ va $c = \sqrt[3]{3}$ bo'lgandagi qiymatini hisoblang.
A) 8 B) 2 C) -8 D) -2

6. $\begin{cases} x-y=3 \\ x^2-y^2=-6, \end{cases}$ $y-?$
A) 2,5 B) 0,5 C) 1 D) 3

7. $F(x) = 5tgx + 3x + C$ quyidagi funksiyalardan qaysi birining boshlang'ich funksiyasi?
A) $y = \frac{5}{\sin^2 x} + 3$ B) $y = -\frac{5}{\sin^2 x} + 3$
C) $y = -\frac{5}{\cos^2 x} + 3$ D) $= \frac{5}{\cos^2 x} + 3$

8. Aylananing AB vatari o'zi ajratgan yoylardan birining ixtiyoriy nuqtasidan $40°$ li burchak ostida ko'rinadi. A va B nuqta chegarasi bo'lgan yoylar necha gradus?
A) $80°$ va $280°$ B) $160°$ va $200°$
C) $110°$ va $250°$ D) $100°$ va $260°$

9. $x^2+y^2-4x-6y-3=0$ tenglama bilan berilgan aylananing radiusini toping.
A) 5 B) 3 C) 4 D) 6

10. Tekislikka tushirilgan og'manning uzunligi 125 ga, uning tekislikdagi proyeksiyasi esa 35 ga teng. Og'ma va tekislik orasidagi burchakni toping.
A) $arccos\frac{12}{25}$ B) $arcsin\frac{24}{25}$ C) $arctg\frac{7}{48}$
D) $arcsin\frac{7}{25}$

11. Quyidagi nuqtalardan qaysi biri Oxz tekislikda yotadi?
A) $(0;-7;0)$ B) $(-4;3;0)$ C) $(2;-4;6)$
D) $(2;0;-8)$

12. Quyidagi formulalardan qaysilari to'g'ri?
1) $cos(x-y) = cosx\cdot cosy + sinx\cdot siny$;
2) $tg(x-y) = \frac{tgx-tgy}{1+tgx\cdot tgy}$;
$x, y, x-y \neq \frac{\pi}{2}+\pi n, n\in Z$;
3) $sin^2\frac{x}{2} = \frac{1+cosx}{2}$;
4) $tgx+tgy = \frac{sin(x+y)}{cosx\cdot cosy}$,
$x, y \neq \frac{\pi}{2}+\pi n, n\in Z$.
A) 1; 3; 4 B) 1; 2; 4 C) 2; 3; 4 D) 1; 2; 3

13. $0{,}34\cdot 0{,}00025$ ko'paytma quyidagi sonlardan qaysi biriga teng emas?
A) $850\cdot 10^{-7}$ B) $8{,}5\cdot 10^{-5}$ C) $8{,}5\cdot 10^{-6}$
D) $85\cdot 10^{-6}$

14. 40 dan 29,2 necha foiz kam?
A) 30 B) 27 C) 35 D) 22

15. $(a+b)(a+b+1)-(a-b)(a-b-1)$ ni ko'paytuvchilarga ajrating.
A) $4a(b+1)$ B) $2(a+b)(b+1)$
C) $2a(2b+1)$ D) $2a(b-1)$

16. $\sqrt[3]{2\sqrt[3]{2\sqrt{2}}} : 2^{\frac{1}{16}}$ ni hisoblang.
A) $\sqrt[3]{16}$ B) $\sqrt[3]{32}$ C) $\sqrt[3]{64}$ D) $\sqrt[3]{8}$

17. $\frac{a^{-3}+b^{-3}}{a^2-ab+b^2}\cdot a^3b^3 - \frac{a^2-b^2}{a-b}$ ni soddalashtiring.
A) 0 B) $(a+b)^2$ C) $a-b$ D) ab

18. $\begin{cases} 3x+by=6 \\ bx+ay=4 \end{cases}$ tenglamalar sistemasi $x=3, y=2$ yechimga ega bo'lsa, a ning qiymatini toping.
A) 5 B) 4 C) 2 D) 3

19. $x^2-3|x|-28=0$ tenglamaning ildizlari ko'paytmasini toping.
A) -36 B) -49 C) -64 D) -32

20. Arifmetik progressiyada $a_2-a_1=6$ bo'lsa, a_8-a_5 ning qiymati nechaga teng bo'ladi?
A) 12 B) 10 C) 18 D) 9

21. Qaysi to'g'ri chiziq $y = 4 - x^2$ funksiya grafigiga $x_0 = -\frac{1}{2}$ nuqtada o'tkazilgan urinmaga parallel bo'ladi?
A) $y = 2x + 8$ B) $y = 4 - 4x$
C) $y = 4x + 8$ D) $y = x + 8$

22. $\triangle ABC$ da $\angle B = 90°, \angle C = 60°$. BB_1 balandlik 3 ga teng. AB ni toping.
A) 12 B) 6 C) $6\sqrt{2}$ D) $6\sqrt{3}$

23. Parallelogrammning diagonali tomonlari bilan 20° va 30° li burchaklar tashkil qiladi. Parallelogrammning katta burchagini toping.
A) 145° B) 100° C) 110° D) 130°

24. $cos2x \geq -\frac{1}{2}$ tengsizlikning $[0; 1,5\pi]$ kesmadagi yechimini toping.
A) $[0; \frac{\pi}{3}] \cup [\frac{2\pi}{3}; \frac{4\pi}{3}]$ B) $[\frac{\pi}{3}; \frac{2\pi}{3}]$
C) $[\frac{4\pi}{3}; 2\pi]$ D) $[0; \frac{\pi}{3}] \cup [\frac{2\pi}{3}; \pi]$

25. 1 dan 120 gacha bo'lgan sonlar orasida 3 ga ham, 5 ga ham bo'linmaydiganlari nechta?
A) 64 B) 56 C) 61 D) 60

26. Birinchi son 0,75 ga, ikkinchi son 0,15 ga teng. Birinchi son ikkinchi sondan necha foiz ortiq?
A) 500 B) 400 C) 140 D) 300

27. $\sqrt{17 - 12\sqrt{2}} \cdot (9 + 6\sqrt{2})$ ning qiymatini hisoblang.
A) 3 B) $2\sqrt{2}$ C) 2 D) $\sqrt{3 + \sqrt{8}}$

28. $\frac{1}{\sqrt{2} + \sqrt{3} + \sqrt{5}}$ kasrning maxrajini irratsionallikdan qutqaring.
A) $\frac{2\sqrt{3} - 3\sqrt{2} + \sqrt{30}}{12}$ B) $\frac{2\sqrt{3} + 3\sqrt{2} - \sqrt{30}}{12}$
C) $\frac{3\sqrt{2} - 2\sqrt{3} + \sqrt{30}}{12}$ D) $\frac{3\sqrt{2} - 2\sqrt{3} - \sqrt{30}}{12}$

29. Agar $\begin{cases} x - y = 27, \\ \sqrt{x} - \sqrt{y} = 3 \end{cases}$ bo'lsa, $x + 2y$ ning qiymatini toping.
A) 72 B) 54 C) 45 D) 63

30. $4x^2 - 16x \leq -7$ tengsizlikning butun sonlardan iborat yechimlari yig'indisini toping.
A) 4 B) 3 C) 6 D) 5

31. 7, 10, 13, ... arifmetik progressiyaning nechta hadining har birini qiymati 99 dan katta, 212 dan kichik bo'ladi?
A) 34 B) 33 C) 38 D) 39

32. $\frac{2\log_4 x}{2 + \log_4 x} \leq 1$ tengsizlikning yechimlaridan iborat tub sonlarning yig'indisini toping.
A) 28 B) 17 C) 21 D) 41

33. Teng yonli trapetsiyaning asoslari 8 va 26 ga, yon tomoni esa 15 ga teng. Trapetsiyaning yuzini hisoblang.
A) 102 B) 184 C) 255 D) 204

34. Muntazam uchburchakli piramidaning yon qirrasi 20 ga, asosining tomoni $16\sqrt{3}$ ga teng. Piramidaning balandligini toping.
A) $8\sqrt{3}$ B) 12 C) 8 D) 16

35. Radiusi 6 ga teng shar konusga ichki chizilgan. Konus yasovchisi va balandligi orasidagi burchak 30° ga teng. Konus yon sirtining yuzini toping.
A) 96π B) 48π C) 216π D) 72π

36. $arccos(sin(-41°))$ necha gradus?
A) 41° B) −41° C) 139° D) 131°

Matematika

1. $\dfrac{0,202-0,004}{\frac{8}{9}\cdot 81\cdot 0,125}$ ni hisoblang.

A) 0,99 B) 0,099 C) 0,022 D) 0,0099

2. $\dfrac{\sqrt{32}+\sqrt{98}-\sqrt{50}}{\sqrt{72}}\cdot\dfrac{1}{\sqrt{2}}$ ni hisoblang.

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

3. Toq funksiyani ko'rsating.

A) $f(x)=\cos x+\sin x$
B) $f(x)=\cos^2 x-\cos x$
C) $f(x)=e^x+\operatorname{ctg} x$
D) $f(x)=(1-cos2x)\cdot ctgx-2x$

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?
1) $(x+a)\cdot(x-b)=x^2-(a-b)x-ab$;
2) $6ab-(2a^3+b^3-(3ab^2-(a^3+2cb^2-b^3)))=3a^3-ab^2+6ab$;
3) $5a^2-3b^2-((a^2-2ab-b^2)-(5a^2-2ab-b^2))=9a^2-3b^2$;
4) $3a-(2c-(6a-(c-b)+c+(a+8b)-6c))=10a+9b-8c$.

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

5. $\dfrac{0,05\cdot 0,9-0,05}{0,2^2-2\cdot 0,06+0,3^2}$ ning qiymatini hisoblang.

A) -2 B) 0,2 C) 0,25 D) $-0,5$

6. $\begin{cases} x+y=6,\\ x^2-y^2=12. \end{cases}$ $y-?$

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

7. $F(x)=2ctgx-x+C$ quyidagi funksiyalardan qaysi birining boshlang'ich funksiyasi?

A) $f(x)=\dfrac{2}{cos^2x}-1$ B) $f(x)=-\dfrac{2}{sin^2x}-1$
C) $f(x)=\dfrac{2}{sin^2x}+1$ D) $f(x)=-\dfrac{2}{cos^2x}-1$

8. Aylananing MN vatari 120° li yoyni tortib turadi. MN vatar o'zi tortib turgan kichik yoyning ixtiyoriy nuqtasidan qanday burchak ostida ko'rinadi?

A) 120° B) 270° C) 110° D) 100°

9. $x^2+y^2+4x-6y-3=0$ tenglama bilan berilgan aylananing markazini toping.

A) $(2;-3)$ B) $(-2;3)$ C) $(-4;6)$
D) $(4;-3)$

10. Tekislikka tushirilgan og'ma va perpendikulyar orasidagi burchak $arcsin\dfrac{12}{13}$ ga teng. Og'maning uzunligi 39 ga teng. Perpendikulyarning uzunligini toping.

A) 36 B) 15 C) 30 D) $16\frac{1}{4}$

11. Quyidagilardan qaysi biri Oyz tekislikka nisbatan $P(3;-2;4)$ nuqtaga simmetrik bo'lgan nuqta?

A) $(3;2;-4)$ B) $(3;2;4)$ C) $(-3;-2;4)$
D) $(-3;2;-4)$

12. Quyidagi formulalardan qaysilari to'g'ri?
1) $cos(x+y)=cosx\cdot cosy-sinx\cdot siny$;
2) $cos^2\dfrac{x}{2}=\dfrac{1+cosx}{2}$;
3) $sinx-siny=-2cos\dfrac{x+y}{2}sin\dfrac{x-y}{2}$;
4) $tgx-tgy=\dfrac{sin(x-y)}{cosx\cdot cosy}$,
$x,y\neq\dfrac{\pi}{2}+\pi n, n\in Z$.

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

13. $4,2\cdot 13,5-8,7\cdot 4,2-5,8\cdot 8,7+13,5\cdot 5,8$ ni hisoblang.

A) 52 B) 42 C) 48 D) 50

14. Agar A,B,C va D sonlarning nisbati $2:3:4:2\frac{3}{4}$ kabi bo'lsa, $\dfrac{A+B}{C+D}$ ning qiymatini aniqlang.

A) $\frac{3}{4}$ B) $\frac{20}{27}$ C) $\frac{9}{5}$ D) $\frac{5}{9}$

15. $\dfrac{n^2-8n+7}{n^2-1}$ ni qisqartiring.

A) $\dfrac{n-7}{n+1}$ B) $\dfrac{n+7}{n-1}$ C) $\dfrac{n-7}{n-1}$ D) $\dfrac{n+7}{n+1}$

16. $2^{10}+3^{12}$ yig'indining oxirgi raqamini toping.

A) 9 B) 5 C) 1 D) 4

17. Agar $x=2,5$ va $y=-1,5$ bo'lsa, $x^3-x^2y-xy^2+y^3$ ni hisoblang.

A) 16 B) 10 C) 25 D) 8

18. Ikki sonning yig'indisi 24 ga teng. Agar shu sonlardan birining 60% i ikkinchisining $\frac{3}{10}$ qismiga teng bo'lsa, shu sonlarni toping.

A) 20 va 4 B) 18 va 6 C) 8 va 16
D) 7 va 17

19. $x^2-\dfrac{a}{4}x+a=0$ tenglamaning ildizlaridan biri 1 ga teng. Tenglamaning ikkinchi ildizini toping.

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

20. Hadlari $x_n = 4n + 6$ $(n \in N)$ formula bilan berilgan ketma-ketlikning dastlabki o'ttizta hadi yig'indisini toping.
A) 1800 B) 2040 C) 1940 D) 2100

21. Abssissasi $x_0 = 2\sqrt{3}$ bo'lgan nuqtadan $f(x) = \sqrt{3}lnx$ funksiyaga o'tkazilgan urinma OY o'qi bilan qanday burchak tashkil etadi?
A) $60°$ B) $arctg\frac{1}{2}$ C) $arctg2$ D) $30°$

22. Teng yonli uchburchakning balandligi 7 ga, asosi 48 ga teng. Uning yon tomonini toping.
A) 31 B) 45 C) 55 D) 25

23. a va b ning qanday qiymatlarida $ax + by = -4$ va $3x - 3y = 4$ to'g'ri chiziqlar ustma-ust tushadi?
A) $a = -3; b = 3$ B) $a = 3; b = -3$
C) $a = 3; b = -1$ D) $a = b = 3$

24. $ctg(\frac{\pi}{2} - 3x) = tg2x + tgx$ tenglamani yeching.
A) $\frac{\pi n}{3}$, $n \in Z$ B) $\frac{\pi n}{2}$, $n \in Z$
C) $\frac{\pi n}{2}; \pi n$, $n \in Z$ D) πn, $n \in Z$

25. $3p - 3 \in N$ son 1; 2; 3; 6; 9; 18 va 21 ga qoldiqsiz bo'linadi. p ning eng kichik natural qiymatini toping.
A) 41 B) 42 C) 7 D) 43

26. Ikkita musbat sonning o'rta arifmetigi 6,5 ga teng. Ularning o'rta geometrigi esa shu sonlarning o'rta arifmetigini $\frac{12}{13}$ qismini tashkil etadi. Berilgan sonlarni toping.
A) 12 va 1 B) 12 va 3 C) 9 va 4
D) 7 va 6

27. $(x + 6)(x + 4)(x + 2)x$ ko'paytmaning eng kichik qiymatini toping
A) 9 B) -25 C) -16 D) -9

28. $a^3 - 9a^2 + 27a - 19$ ni ko'paytuvchilarga ajrating.
A) $(a + 1)(a^2 + 8a - 19)$
B) $(a - 1)(a^2 - 8a + 19)$
C) $(a - 1)(a^2 + 8a - 19)$
D) $(a + 1)(a^2 + 8a + 19)$

29. Agar $m - n = (4x + y)^2$ va $n - m = (4x - y - 24)^2$ bo'lsa, $y - x$ ning qiymatini hisoblang
A) -6 B) -9 C) 9 D) -15

30. $2 \mid x - 3 \mid \leq \mid x + 3 \mid$ tengsizlikning butun sonlardan iborat yechimlari nechta?
A) 5 B) 6 C) 0 D) 9

31. Arifmetik progressiyaning oltinchi hadi 10 ga, dastlabki 16 ta hadining yig'indisi 200 ga teng. Bu progressiyaning 9-hadini toping.
A) 14 B) 16 C) 13 D) 18

32. $a = 0,2^{-0,7} \cdot 0,3^{-0,6}$; $b = 0,8^{-1/3} \cdot 3^{0,4}$; $c = 1,2^{0,6} \cdot 1,1^{1,5}$ va $d = 2^{-0,7} \cdot 0,2^{0,1}$ sonlardan qaysi biri 1 dan kichik?
A) b B) a C) d D) c

33. Teng yonli trapetsiyaning asoslari 21 va 27 ga, kichik asosidagi burchagi esa $135°$ ga teng. Trapetsiyaning yuzini toping.
A) 62 B) 72 C) 48 D) 96

34. Uchburchakli muntazam prizmaning balandligi 32 ga, asosining yuzi $\frac{9\sqrt{3}}{16}$ ga teng. Prizma yon yog'ining yuzini toping.
A) 54 B) 48 C) 42 D) 36

35. Yasovchisi 15 ga, asosining radiusi 9 ga teng bo'lgan konusga ichki chizilgan sharning radiusini toping.
A) 6 B) 4,5 C) $3\sqrt{2}$ D) $4,5\sqrt{3}$

36. $\frac{2cos^2\frac{\alpha}{2}}{ctg\frac{\alpha}{4} - tg\frac{\alpha}{4}}$ ni soddalashtiring.
A) $cos\alpha$ B) $-sin\alpha$ C) $\frac{1}{2}sin\alpha$ D) $sin\alpha$

Matematika

1. $(0,98-0,312:0,3)\cdot 25+\frac{1}{9}$ ni hisoblang.

A) $-14\frac{8}{9}$ B) $-1\frac{5}{18}$ C) $-1\frac{7}{18}$
D) $-10\frac{7}{18}$

2. $25-(8a-3)^2$ ni ko'paytuvchilarga ajrating.

A) $(8a-2)(8+8a)$ B) $(8a+2)(8a-8)$
C) $(8a-2)(8-8a)$ D) $(8a+2)(8-8a)$

3. Agar $f(x)=(3+\frac{1}{x})(11+4x)$ bo'lsa, $f(-\frac{1}{2})$ ni toping.

A) -3 B) 9 C) -5 D) 15

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?
1) $(x-c)\cdot(x-d)=x^2+(c-d)x+cd$;
2) $(x-e)\cdot(x+d)=x^2-(e-d)x-ed$;
3) $6ab+(2a^3+b^3-(3ab^2-(a^3+2ab^2-b^3)))=3a^3-ab^2+6ab$;
4) $5a^2-3b^2-((a^2-2ab-b^2)-(5a^2-2ab-b^2))=9a^2-3b^2$.

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

5. $(a-3b)^2-(3a+b)^2$ ni soddalashtiring.

A) $-8a^2+12ab-8b^2$ B) $8a^2+12ab-8b^2$
C) $-8a^2-12ab+8b^2$ D) $8a^2-12ab+8b^2$

6. $\begin{cases} x^2-y^2+2x-4=0 \\ x+y=0 \end{cases}$ tenglamalar sistemasini yeching.

A) $(-2;-2)$ B) $(2;2)$ C) $(2;-2)$
D) $(-1;-1)$

7. $f(x)=x-\frac{x^2}{2}$ funksiyaning (6; 2) nuqtadan o'tuvchi boshlang'ich funksiyasini toping.

A) $\frac{x^2}{2}-\frac{x^3}{6}+20$ B) $\frac{x^2}{2}+\frac{x^3}{6}-56$
C) $\frac{x^2}{2}-\frac{x^3}{6}+18$ D) $\frac{x^2}{2}-\frac{x^3}{6}-18$

8. Quyidagi mulohazalardan qaysi biri to'g'ri?

A) *Ikkita to'g'ri burchakli uchburchakning gipotenuzalari va bittadan o'tkir burchaklari bir- biriga teng bo'lsa, bunday uchburchaklar tengdir.*

B) *Teng tomonli uchburchakning balandliklari kesishish nuqtasida 4:3 nisbatda bo'linadi.*

C) *Ikkitadan tomoni, bittadan burchagi o'zaro teng bo'lgan uchburchaklar tengdir.*

D) *Ikkita parallel to'g'ri chiziqni uchinchi to'g'ri chiziq bilan kesganda hosil bo'lgan ichki bir tomonli burchaklar yig'indisi 180° dan kichik.*

9. $\vec{m}(-3;1)$ va $\vec{n}(5;-6)$ vektorlar berilgan. $\vec{a}=\vec{n}-3\cdot\vec{m}$ vektorning koordinatalarini toping.

A) $(4;-3)$ B) $(14;-9)$ C) $(9;3)$
D) $(14;-3)$

10. Tekislikka og'ma va perpendikulyar tushirilgan. Og'ma va tekislik orasidagi burchak $arccos0,96$ ga, og'maning tekislikdagi proyeksiyasi 72 ga teng. Perpendikulyarning uzunligini toping.

A) 42 B) $20\frac{4}{25}$ C) $10\frac{2}{25}$ D) 21

11. Quyidagilardan qaysi biri Oxy tekislikka nisbatan $M(7;-3;1)$ nuqtaga simmetrik bo'lgan nuqta?

A) $(-7;3;-1)$ B) $(-7;3;1)$
C) $(7;-3;-1)$ D) $(7;3;-1)$

12. Quyidagi formulalardan qaysilari to'g'ri?
1) $sin(x-y)=sinx\cdot cosy-cosx\cdot siny$;
2) $cos^2\frac{x}{2}=\frac{1-cosx}{2}$;
3) $cosx+cosy=2cos\frac{x+y}{2}cos\frac{x-y}{2}$;
4) $tgx-tgy=\frac{sin(x-y)}{cosx\cdot cosy}$,
$x,y\neq\frac{\pi}{2}+\pi n, n\in Z$.

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

13. $\frac{0,8\cdot 0,06+1,2\cdot 0,06}{0,2^2-0,4^2}$ ni soddalashtiring.

A) 10 B) -10 C) -1 D) $-0,1$

14. Go'sht qaynatilganda o'z vaznining 40% ini yo'qotadi. 7,2 kg qaynatilgan go'sht hosil qilish uchun qozonga necha kg go'sht solish kerak?

A) 9 B) 12 C) 10,8 D) 18

15. $\frac{a^2+ab+b^2}{a^3-b^3}+\frac{a^2-ab+b^2}{a^3+b^3}$ ni soddalashtiring.

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

16. Agar $a=3$, $b=5$ bo'lsa, $\sqrt[3]{a^b+b^a-152}$ ni hisoblang.

A) $\sqrt[3]{200}$ B) $\sqrt[3]{150}$ C) 6 D) 5

17. Agar $a=6+\sqrt{3}$ va $b=6-\sqrt{3}$ bo'lsa, $\frac{a^3-b^3}{a^2-b^2}:\frac{a^2+ab+b^2}{a^3+3a^2b+3ab^2+b^3}$ ning qiymatini hisoblang.

A) 198 B) 144 C) 169 D) 196

18. a ning qanday qiymatlarida $a(3x-a)=12x-16$ tenglama bitta musbat yechimga ega?
A) $(-4;\infty)$ B) $(-4;4)$ C) $(4;\infty)$
D) $(-4;4)\cup(4;\infty)$

19. $x^2+px-12=0$ tenglamaning ildizlaridan biri 3 ga teng. Shu tenglamaning barcha koeffitsiyentlari yig'indisini toping.
A) -10 B) -13 C) -11 D) -12

20. Arifmetik progressiyaning beshinchi hadi $5\frac{1}{3}$ ga teng. Uning dastlabki to'qqizta hadi yig'indisini toping.
A) 48 B) 36 C) 45 D) 54

21. $f(x)=-2\sin x-\frac{(\sqrt{\pi})^3}{\sqrt{x}}+\frac{\pi}{2}$.
$f'(\pi)$ ni hisoblang.
A) $-1,5$ B) $\frac{\sqrt{\pi}}{2}$ C) 2,5 D) 0,5

22. To'g'ri burchakli uchburchakning bir kateti $4\sqrt{3}$ ga, bu katet qarshisidagi burchak 60° ga teng. Ikkinchi katetni toping.
A) 4 B) $2\sqrt{3}$ C) $\sqrt{2}$ D) $\frac{4\sqrt{3}}{3}$

23. ABCD parallelogramm C uchining koordinatalari (5; 8), O(3; 6) esa parallelogramm diagonallarining kesishish nuqtasi. Parallelogramm A uchining koordinatalarini toping.
A) (3;2) B) (2;3) C) (4;1) D) (1;4)

24. $\sin x\cdot\cos x<\frac{\sqrt{2}}{4}$ tengsizlikni yeching.
A) $\frac{\pi}{4}+\pi k<x<\frac{3\pi}{4}+\pi k,\ k\in Z$
B) $-\frac{5\pi}{8}+\pi k<x<\frac{\pi}{8}+\pi k,\ k\in Z$
C) $\frac{\pi}{8}+\pi k\le x\le\frac{3\pi}{8}+\pi k,\ k\in Z$
D) $\frac{\pi}{8}+\pi k<x<\frac{3\pi}{8}+\pi k,\ k\in Z$

25. 55 dan katta bo'lmagan barcha natural sonlarning ko'paytmasi nechta nol bilan tugaydi?
A) 12 B) 14 C) 11 D) 13

26. Ishlab chiqarish samaradorligi birinchi yili 15% ga, ikkinchi yili 16% ga ortdi. Shu ikki yil ichida samaradorlik necha foizga ortgan?
A) 33,4 B) 32,4 C) 31 D) 34,4

27. Agar $\sqrt{13+z^3}-\sqrt{z^3-14}=3,375$ bo'lsa, $\sqrt{13+z^3}+\sqrt{z^3-14}$ ning qiymati nechaga teng bo'ladi?
A) 6 B) 5 C) 8 D) 7

28. $\sqrt[3]{2001\cdot1997-1998\cdot2000+9}$ ni hisoblang.
A) $\sqrt[3]{13}$ B) 2 C) $\sqrt[3]{6}$ D) $\sqrt[3]{17}$

29. Ikki sonning o'rta arifmetigi 16 ga, kvadratlarining ayirmasi 192 ga teng. Shu ikki son kvadratlarining yig'indisini toping.
A) 520 B) 514 C) 544 D) 530

30. $\sqrt{6x-x^2-4}>x-4$ tengsizlikni qanoatlantiruvchi butun sonlar nechta?
A) 3 B) 5 C) 2 D) 4

31. Ikkinchi hadi 6 ga teng, birinchi uchta hadining yig'indisi 26 ga teng o'suvchi geometrik progressiyaning to'rtinchi va ikkinchi hadlari ayirmasini toping.
A) 16 B) 32 C) 48 D) 36

32. $y=\sqrt{\lg^2|2x-7|\cdot(5x-6-x^2)}$ funksiyaning aniqlanish sohasiga tegishli butun sonlarning yig'indisini toping.
A) 5 B) 14 C) 12 D) 9

33. Muntazam oltiburchakka tashqi chizilgan aylananing radiusi $4\sqrt{3}$ ga teng. Uning kichik diagonalini toping.
A) 12 B) $6\sqrt{6}$ C) $3\sqrt{6}$ D) 6

34. Muntazam to'rtburchakli kesik piramida asoslarining tomonlari 3 va 7 sm, diagonali $\sqrt{82}$ sm. Kesik piramidaning balandligi necha sm?
A) $5\sqrt{2}$ B) 5 C) 4 D) $4\sqrt{2}$

35. Sharga ichki chizilgan konusning asosi sharning katta doirasiga teng. Konus o'q kesimining yuzi 36 ga teng. Sharning hajmini toping.
A) 144π B) 432π C) 288π D) 334π

36. $tg(\frac{1}{2}\arcsin\frac{24}{25})$ ni hisoblang.
A) $\frac{1}{2}$ B) $\frac{1}{7}$ C) $\frac{3}{4}$ D) $\frac{1}{4}$

Matematika

1. $8\frac{3}{4}+\frac{5}{12}:\left(\frac{1}{3}\cdot 2\frac{1}{2}-\frac{7}{8}\right)$ ni hisoblang.
   A) $-1\frac{1}{4}$ B) $-6\frac{3}{4}$ C) $-8\frac{3}{4}$ D) $9\frac{1}{4}$

2. $\left(\frac{\sqrt{2+\sqrt{3}}}{\sqrt{2-\sqrt{3}}}+\frac{\sqrt{2-\sqrt{3}}}{\sqrt{2+\sqrt{3}}}\right)^2-2$ ni hisoblang.
   A) 14 B) 12 C) 16 D) 18

3. Agar $f(x)=(2x+3)(\frac{3}{x}-3)$ bo'lsa, $f(-1)$ ni toping.
   A) 6 B) 0 C) -3 D) -6

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?
   1) $(x-e)\cdot(x+d)=x^2+(e-d)x-ed$;
   2) $12x^2+y^2-(8x^2-5y^2-(-10x^2+(5x^2-6y^2)))=-x^2$;
   3) $5a^2-3b^2-((a^2-2ab-b^2)-(5a^2-2ab-b^2))=9a^2-3b^2$;
   4) $3a-(2c-(6a-(c-b)+c+(a+8b)-6c))=10a+9b-8c$.
   A) 1; 3; 4 B) 2; 3; 4 C) 1; 2; 3 D) 1; 2; 4

5. $(x-\frac{2+x^2}{x-1}):\frac{x^2+4x+4}{-x+1}$ ni soddalashtiring.
   A) $\frac{1}{x+2}$ B) -1 C) $-\frac{1}{x+2}$
   D) $\frac{x-2}{(x+2)^2}$

6. $\begin{cases}x^2+y^2-xy=1,\\ x+y=-2.\end{cases}$ $2xy=?$
   A) -1 B) 1 C) -3 D) 2

7. $f(x)=x^3$ funksiyaning (2; 3) nuqtadan o'tuvchi boshlang'ich funksiyasini toping.
   A) $\frac{x^2}{2}+1$ B) $\frac{x^4}{4}-1$ C) $\frac{x^4}{2}+3$
   D) $\frac{x^4}{4}-3$

8. Qo'shni burchaklardan biri ikinchisidan besh marta kichik bo'lsa, shu burchaklardan kattasini toping.
   A) 130° B) 150° C) 144° D) 140°

9. $P(-3;0)$ nuqtani koordinata boshi atrofida 90° ga burganda hosil bo'ladigan nuqtaning koordinatalarini toping.
   A) (0; -3) B) (3; 0) C) (0; 3)
   D) (3; 3)

10. Tekislikka og'ma va perpendikulyar tushirilgan. Og'maning tekislikdagi proyeksiyasi 11 ga, perpendikulyarning uzunligi 60 ga teng. Og'ma va perpendikulyar orasidagi burchakni toping.
    A) $arccos\frac{11}{60}$ B) $arcsin\frac{11}{61}$ C) $arcsin\frac{11}{60}$
    D) $arctg\frac{60}{61}$

11. Quyidagi nuqtalardan qaysi biri Oyz tekislikda yotadi?
    A) $(2;0;-5)$ B) $(2;-3;0)$ C) $(0;9;-7)$
    D) $(1;0;-4)$

12. Quyidagi formulalardan qaysilari to'g'ri?
    1) $cos(x+y)=cosx\cdot cosy-sinx\cdot siny$;
    2) $tg(x+y)=\frac{tgx+tgy}{1-tgx\cdot tgy}$,
    $x, y, x+y\neq\frac{\pi}{2}+\pi n, n\in Z$;
    3) $sin^2\frac{x}{2}=\frac{1-cosx}{2}$;
    4) $sinx+siny=2cos\frac{x+y}{2}sin\frac{x-y}{2}$.
    A) 2; 3; 4 B) 1; 2; 4 C) 1; 3; 4 D) 1; 2; 3

13. a; 4,2; 3,1 va 1,1 sonlarining o'rta arifmetigi 2,95 ga teng. a ning qiymatini toping.
    A) $-2,6$ B) 2,1 C) 2 D) 3,4

14. Mahsulotning narxi 25% ga oshirildi. Lekin mahsulotga talabning kamligi tufayli uning narxi 12% ga kamaytirildi. Mahsulotning oxirgi narxi dastlabkisiga qaraganda necha foiz ortdi?
    A) 13 B) 10 C) 12,5 D) 12

15. $\frac{19}{\sqrt{20}+1}+4-2\sqrt{5}$ ni soddalashtiring.
    A) 3 B) 6 C) $4\sqrt{5}-6$ D) $4\sqrt{5}-7$

16. $\frac{2^8\cdot 10^{16}\cdot 50^5}{(80+20)^{16}}$ ni hisoblang.
    A) 16 B) $\frac{1}{32}$ C) $\frac{1}{64}$ D) 8

17. Amallarni bajaring:
    $\frac{9}{5-\sqrt{7}}-\frac{22}{7+\sqrt{5}}+\frac{1}{\sqrt{7}+\sqrt{5}}$.
    A) 6 B) $\sqrt{7}-1$ C) 5 D) $\sqrt{7}-\sqrt{5}$

18. t ning qanday qiymatlarida $3x+2=2(x-t)$ tenglama musbat ildizga ega?
    A) $t<2$ B) $t>-2$ C) $t<-1$ D) $t\leq 1$

19. $y^2-ty+\frac{1}{2}t+2=0$ tenglama teng ildizlarga ega bo'ladigan t ning barcha qiymatlari yig'indisini toping.
    A) 1,5 B) 1 C) 2 D) -1

20. Dastlabki yettita hadining yig'indisi -280 ga va hadlarining ayirmasi -2 ga teng bo'lgan arifmetik progressiyaning birinchi hadini toping.
A) -42 B) -32 C) -36 D) -34

21. $y = \frac{1}{2}x^2 - \frac{3}{2}lnx$ funksiyaning grafigiga $x_0 = 2$ nuqtada o'tkazilgan urinmaning burchak koeffitsiyentini toping.
A) 2 B) $-2,5$ C) 1,25 D) 1,5

22. To'g'ri burchakli uchburchakning kateti $6\sqrt{3}$ ga, bu katet qarshisidagi burchak $60°$ ga teng. Shu uchburchakning gipotenuzasini toping.
A) $4\sqrt{3}$ B) 12 C) $3\sqrt{3}$ D) $6\sqrt{3}$

23. a ning qanday qiymatlarida $ax + 2y = 3$ va $3x - y = -1$ to'g'ri chiziqlar kesishadi?
A) $a \neq 2$ B) $a = 0$ C) $a \neq -6$ D) $a \in R$

24. Nechta butun son $sin(16\pi/x) = 0$ tenglamani qanoatlantiradi?
A) 8 B) 10 C) 24 D) 16

25. $\frac{n^2 - 24}{n}$ ifoda natural son bo'ladigan n ning barcha natural qiymatlari yig'indisini toping.
A) 54 B) 44 C) 48 D) 50

26. 1040 soni shunday ikki bo'lakka bo'linganki, ulardan birining 80% i ikkinchisining 24% ini tashkil qiladi. Bo'laklarning kichigini toping.
A) 240 B) 800 C) 460 D) 500

27. $\left(\frac{\sqrt{y} - \sqrt{x}}{y - \sqrt{xy} + x} + \frac{x}{x\sqrt{x} + y\sqrt{y}}\right) \cdot \frac{x\sqrt{x} + y\sqrt{y}}{y}$ ni soddalashtiring
A) $\sqrt{x} - \sqrt{y}$ B) $\sqrt{x} + \sqrt{y}$ C) $\sqrt{y}$ D) 1

28. $\frac{\sqrt[3]{26 - 15\sqrt{3}} \cdot (2 - \sqrt{3})}{28 - 16\sqrt{3}}$ ni soddalashtiring.
A) $\frac{1}{3}$ B) 1 C) $\frac{1}{4}$ D) $2 - \sqrt{3}$

29. Agar $\begin{cases} (x-2)^2 + |y-1| = 4 \\ |x-2| + |y-1| = 2 \end{cases}$ bo'lsa, $x - y$ ning qiymatini toping.
A) 0 *yoki* 4 B) 3 *yoki* -1 C) 1 *yoki* 5
D) -2 *yoki* 4

30. $\frac{(-x^2 + x - 1)(x^2 - 3x + 2)}{x^2 - 7x + 12} \geq 0$ tengsizlikning butun sonlardan iborat yechimlari nechta?
A) 1 B) 4 C) 3 D) 2

31. (b_n) geometrik progressiyada $b_4 - b_2 = 24$ va $b_2 + b_3 = 6$ bo'lsa, b_2 ning qiymatini toping.
A) 1 B) 0,4 C) 2,2 D) $1\frac{1}{5}$

32. $\frac{2\log_4 x}{2 + \log_4 x} \leq 1$ tengsizlikning yechimlaridan iborat tub sonlarning yig'indisini toping.
A) 28 B) 17 C) 21 D) 41

33. Aylananing radiusi 8 ga teng. Aylanaga ichki chizilgan muntazam uchburchakning yuzini toping.
A) $36\sqrt{2}$ B) 64 C) $48\sqrt{3}$ D) $27\sqrt{3}$

34. Muntazam to'rtburchakli kesik piramidaning balandligi 8 ga, asoslarining tomonlari 12 va 20 ga teng. Kesik piramidaning diagonalini toping.
A) 24 B) 48 C) 40 D) 36

35. Silindrning balandligi va asosining radiusi 8 ga teng. Yuzi silindrning to'la sirtiga teng bo'lgan doiraning radiusini toping.
A) 8 B) 16 C) 12 D) 9

36. $arccos(sin(-41°))$ necha gradus?
A) 41° B) $-41°$ C) 139° D) 131°

Matematika

1. $5,8-\frac{3}{7}\cdot 2,2\cdot(-2\frac{1}{3})$ ni hisoblang.
   A) -8 B) 6 C) $-3,6$ D) 8

2. $\frac{\sqrt[4]{-24}+\sqrt[4]{81}+\sqrt[4]{192}+3\sqrt[3]{-375}}{\sqrt[4]{-375}}-1$ ni hisoblang.
   A) 1 B) -1 C) 0 D) 3

3. Agar $f(x)=(2x-\frac{1}{3})(4x+\frac{1}{4})$ bo'lsa, $f(\frac{1}{2})$ ni toping.
   A) $\frac{7}{12}$ B) $-4,5$ C) $1,5$ D) $4,5$

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?
   1) $(x-c)\cdot(x-d)=x^2+(c-d)x+cd$;
   2) $(x-c)\cdot(x+d)=x^2-(c-d)x-cd$;
   3) $12x^2+y^2-(8x^2-5y^2-(-10x^2+(5x^2-6y^2)))=-x^2$;
   4) $3a-(2c-(6a-(c-b)+c+(a+8b)-6c))=10a+9b-8c$.
   A) 1;3;4 B) 1;2;4 C) 1;2;3 D) 2;3;4

5. $(b^2-\frac{4+b^4}{b^2+1}):\frac{-2+b}{1+b^2}$ ni soddalashtiring.
   A) $b+2$ B) 1 C) $\frac{1}{b+2}$ D) $b-2$

6. $\begin{cases}x+2=0\\x^2y=8\end{cases}$ tenglamalar sistemasini yeching.
   A) $(-2;2)$ B) $(-2;-2)$ C) $\emptyset$
   D) $(-2;2),(-2;-2)$

7. $F(x)=-3ctgx-2x+C$ funksiya quyidagi funksiyalardan qaysi birining boshlang'ich funksiyasi bo'ladi?
   A) $f(x)=\frac{3}{cos^2x}-2$ B) $f(x)=-\frac{3}{sin^2x}+2$
   C) $f(x)=-\frac{3}{cos^2x}+2$ D) $f(x)=\frac{3}{sin^2x}-2$

8. Aylananing kesishuvchi ikki vatari orasidagi burchaklardan biri 100° ga teng. Shu burchakka qo'shni bo'lgan burchaklarning yig'indisini toping.
   A) 90° B) 100° C) 160° D) 200°

9. $x^2+y^2-4x+6y-3=0$ tenglama bilan berilgan aylananing markazini toping.
   A) $(4;-4)$ B) $(-4;-3)$ C) $(2;-3)$
   D) $(-4;6)$

10. Tekislikka og'ma va perpendikulyar tushirilgan. Og'maning tekislikdagi proyeksiyasi 60 ga, perpendikulyarning uzunligi 11 ga teng. Og'ma va perpendikulyar orasidagi burchakni toping.
    A) $arccos\frac{11}{60}$ B) $arcsin\frac{60}{61}$ C) $arcsin\frac{11}{60}$
    D) $arctg\frac{11}{61}$

11. Oxz tekisligiga nisbatan $(1;2;3)$ nuqtaga simmetrik bo'lgan nuqtani toping.
    A) $(-1;-2;3)$ B) $(-1;2;3)$ C) $(1;-2;3)$
    D) $(1;2;-3)$

12. Quyidagi formulalardan qaysilari to'g'ri?
    1) $tg(x-y)=\frac{tgx+tgy}{1-tgx\cdot tgy}$;
    $x,y,x-y\neq\frac{\pi}{2}+\pi n,n\in Z$;
    2) $cos^2\frac{x}{2}=\frac{1+cosx}{2}$;
    3) $sinx-siny=2cos\frac{x+y}{2}sin\frac{x-y}{2}$;
    4) $tgx+tgy=\frac{sin(x+y)}{cosx\cdot cosy}$,
    $x,y\neq\frac{\pi}{2}+\pi n,n\in Z$.
    A) 1;3;4 B) 1;2;3 C) 1;2;4 D) 2;3;4

13. $\frac{0,1^2-0,6\cdot 0,2+0,6^2}{2,5-2,5^2}$ ni hisoblang.
    A) $-\frac{1}{3}$ B) $-\frac{1}{15}$ C) $-1\frac{2}{3}$ D) -3

14. 720 ning 50% i 18 ning 500% idan necha foiz ko'p?
    A) 200 B) 400 C) 320 D) 300

15. $(a+b-2)(a+b)-(a-b)^2+1$ ni ko'paytuvchilarga ajrating.
    A) $(2a+1)(2b+1)$ B) $(2a-1)(2b-1)$
    C) $(a+1)(2b-1)$ D) $2b(a+1)$

16. $4^{13}+4^{13}+4^{13}+4^{13}$ yig'indining yarmini hisoblang.
    A) 2^{24} B) 2^{25} C) $8\cdot 4^{12}$ D) 4^{48}

17. $\sqrt[6]{3-2\sqrt{2}}:\sqrt[3]{\sqrt{2}-1}+1$ ni hisoblang.
    A) 2 B) 3 C) -1 D) 1

18. Turist butun yo'lning 0,85 qismini o'tganda, ko'zlangan manzilgacha 9,66 km qolgani ma'lum bo'ldi. Butun yo'lning uzunligi necha km?
    A) 44 B) 52 C) 64,4 D) 36,6

19. $7x^2+(5k^2-6k-11)x-k^4=0$tenglamaning ildizlari qarama-qarshi sonlarbo'ladigan k ning barcha qiymatlari yig'indisini aniqlang.
    A) 1,4 B) 1,2 C) 1,8 D) 1,6

20. $-\frac{1}{4}; -\frac{5}{24}; \ldots$ arifmetik progressiyaning nechta hadi manfiy?
A) 6 B) 8 C) 7 D) 5

21. Agar $f(x) = 3x - 2e^{-x}$ bo'lsa, $f'(ln2)$ ni hisoblang.
A) 2 B) 1 C) 4 D) 5

22. To'g'ri burchakli uchburchakning o'tkir burchaklari uchidan tushirilgan balandliklari 7 va 24 ga teng. Shu uchburchakning yuzini toping.
A) 84 B) 168 C) 56 D) 175

23. Qavariq to'rtburchakning burchaklaridan biri to'g'ri burchak, qolganlari esa o'zaro 6 : 5 : 4 nisbatda. To'rtburchakning kichik burchagini toping.
A) 108° B) 60° C) 72° D) 90°

24. k ning quyida ko'rsatilgan qiymatlaridan qaysi birida $sinkxcosx \cdot sinxcoskx = 0$ tenglamaning ildizlari $\frac{\pi n}{7}\left(n \in Z\right)$ bo'ladi?
A) 8 B) 5 C) 7 D) 6

25. $\frac{n^3 - 2n^2 - 12}{n}$ $(n \subset N)$ kasrning natural sonlardan iborat barcha qiymatlari yig'indisini toping.
A) 105 B) 102 C) 124 D) 146

26. 15 kg eritmaning 40 foizi tuzdan iborat. Tuzning miqdori 25 foiz bo'lishi uchun eritmaga necha kg chuchuk suv qo'shish kerak?
A) 6 B) 9 C) 8 D) 10

27. Ifodani soddalashtiring:
$\left(\frac{20}{\sqrt{6}+1} + \frac{4}{\sqrt{6}-2} - \frac{12}{3-\sqrt{6}}\right) \cdot (2\sqrt{6}+12)$.
A) 127 B) −115 C) −116 D) −120

28. $\frac{4a^2 - 12ab + 9b^2}{-2a^2 + ab + 3b^2}$ ni soddalashtiring.
A) $\frac{3b-2a}{a+b}$ B) $\frac{3a-2b}{a+b}$ C) $\frac{2a-3b}{a-b}$
D) $\frac{2a-3b}{a+b}$

29. Agar $m - n = (4x+y)^2$ va $n \cdot m = (4x-y-24)^2$ bo'lsa, $y - x$ ning qiymatini hisoblang.
A) −6 B) −9 C) 9 D) −15

30. $|4 - x| < 5$ tongsizlikning butun sonlardan iborat yechimlari nechta?
A) 5 B) 10 C) 11 D) 9

31. Geometrik progressiyada $b_1 + b_5 = 51$ va $b_2 + b_6 = 102$. Shu progressiyaning dastlabki yettita hadi yig'indisini toping.
A) 765 B) 361 C) 399 D) 381

32. $|x - 14| \cdot log_2(x-4) = 3(14-x)$ tenglama ildizlarining yig'indisini toping.
A) 26 B) 42 C) 24 D) $30\frac{1}{8}$

33. Rombning yuzi 120 ga, diagonallaridan biri 24 ga teng. Uning tomonini toping.
A) 13 B) 10 C) 14 D) 8

34. Uchburchakli muntazam piramida asosining tomoni 24 ga teng. Yon yog'i asos tekisligi bilan 30° li burchak hosil qiladi. Piramidaning balandligini toping.
A) 12 B) 4 C) 6 D) 8

35. Balandligi $\sqrt{3}$ ga, yasovchisi $2\sqrt{3}$ ga teng bo'lgan konusga tashqi chizilgan sharning radiusini toping.
A) 2 B) $2\sqrt{3}$ C) $3\sqrt{3}$ D) $3\sqrt{2}$

36. $cos^2 84° + cos^2 36° + cos84° \cdot cos36°$ ni soddalashtiring.
A) $\frac{1}{2}$ B) $\frac{3}{4}$ C) $\frac{2}{3}$ D) $\frac{1}{4}$

Matematika

1. $\frac{15}{56}\cdot 1\frac{1}{7}:\frac{2}{15}\cdot 24\frac{1}{2}:7\frac{1}{2}$ ni hisoblang.

   A) 11 B) $10\frac{1}{2}$ C) $7\frac{1}{2}$ D) 21

2. $\frac{1-b^{-1}+b^{-2}}{1-b+b^2}$ ni soddalashtiring.

   A) b^{-2} B) b^{-1} C) $b+1$ D) b^2

3. k ning qanday qiymatida $y=kx^3+2$ funksiyaning grafigi $B(-2;\ -14)$ nuqtadan o'tadi?

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

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?
   1) $(x-c)\cdot(x-d)=x^2-(c+d)x+cd$;
   2) $(x-e)\cdot(x+d)=x^2-(e-d)x-ed$;
   3) $5a^2-3b^2-((a^2-2ab-b^2)-(5a^2-2ab-b^2))=9a^2-3b^2$;
   4) $3a-(2c-(6a-(c-b)+c+(a+8b)-6c))=2a+7b-8c$.

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

5. a va b ning qanday qiymatida $\frac{5}{x^2+x-6}=\frac{a}{x-2}-\frac{b}{x+3}$ tenglik ayniyat bo'ladi($x\neq 2, x\neq -3$)?

   A) $a=\frac{2}{5}, b=-\frac{2}{5}$ B) $a=1, b=1$

   C) $a=\frac{2}{5}, b=\frac{2}{5}$ D) $a=5, b=-5$

6. $\begin{cases} y+2=0 \\ x^2y=18 \end{cases}$ tenglamalar sistemasining yechimini toping.

   A) $(-3;\ 2)$ B) $(-3;\ -2)$ C) $\emptyset$
   D) $(-3;\ -2), (3;\ -2)$

7. $y=e^{2-3x}$ funksiyaning boshlang'ich funksiyasini ko'rsating.

   A) $e^{2-3x}+C$ B) $\frac{1}{3}e^{2-3x}+C$

   C) $-\frac{1}{3}e^{2-3x}+C$ D) $-3e^{2-3x}+C$

8. Ikki to'g'ri chiziqning kesishishidan hosil bo'lgan burchaklarning biri 40° ga teng. Qolgan burchaklarni toping.

   A) 110°, 110°, 110° B) 150°, 150°, 30°
   C) 140°, 140°, 40° D) 60°, 60°, 30°

9. $\vec{a}(2;-3)$ va $\vec{b}(-2;-3)$ vektorlar berilgan. $\vec{m}=\vec{a}-2\vec{b}$ vektorning koordinatalarini ko'rsating.

   A) $(-3;6)$ B) $(6;3)$ C) $(2;-3)$
   D) $(-2;-9)$

10. Tekislikka tushirilgan og'maning uzunligi 75 ga, uning tekislikdagi proyeksiyasi esa 72 ga teng. Og'ma va tekislik orasidagi burchakni toping.

    A) $arccos\frac{7}{50}$ B) $arcsin\frac{24}{25}$ C) $arcsin\frac{7}{24}$
    D) $arcsin\frac{7}{25}$

11. Agar kesmaning bir uchi $A(1;-5;4)$, o'rtasi $C(4;-2;3)$ nuqtada bo'lsa, ikkinchi uchining koordinatalari qanday bo'ladi?

    A) $(7;-1;2)$ B) $(6;5;3)$ C) $(5;4;6)$
    D) $(7;1;2)$

12. Quyidagi formulalardan qaysilari to'g'ri?
    1) $sin(x+y)=sinx\cdot cosy+cosx\cdot siny$;
    2) $sin^2\frac{x}{2}=\frac{1+cosx}{2}$;
    3) $cosx+cosy=2cos\frac{x+y}{2}cos\frac{x-y}{2}$;
    4) $tgx-tgy=\frac{sin(x-y)}{cosx\cdot cosy}$,
    $x, y\neq\frac{\pi}{2}+\pi n, n\in Z$.

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

13. Quyidagi oddiy kasr ko'rinishida berilgan sonlardan qaysilarini chekli o'nli kasr ko'rinishiga keltirib bo'lmaydi:
    1) $\frac{10}{65}$; 2) $\frac{7}{40}$; 3) $\frac{15}{85}$; 4) $\frac{18}{250}$?

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

14. A sonining 25% i B sonining 20% iga teng bo'lsa, A soni B sonining necha foizini tashkil etadi?

    A) 55 B) 80 C) 40 D) 60

15. $\frac{4+\sqrt{8}}{4-\sqrt{8}}-\frac{4-\sqrt{8}}{4+\sqrt{8}}$ ning qiymatini toping.

    A) $\frac{3\sqrt{8}}{8}$ B) $4\sqrt{2}$ C) $\frac{\sqrt{8}+8}{4}$ D) $4\frac{2}{5}$

16. $3^{10}+2^{11}$ yig'indining oxirgi raqamini toping.

    A) 3 B) 5 C) 1 D) 7

17. $\sqrt{2+\sqrt{3}}+\sqrt{2-\sqrt{3}}$ ni soddalashtiring.

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

18. n ning qanday qiymatida $n^2(y-1)=4y-2n$ tenglamaning ildizi yo'q?

    A) $n=1$ B) $n=-2$ C) $n=2$
    D) $n=-1$

19. $2x^2-14x+c=0$ tenglamaning ildizlaridan biri 0,5 ga teng. Shu tenglamaning ikkinchi ildizini toping.

    A) 3 B) 4 C) 6,5 D) 0

20. (b_n) $(n \in N)$ geometrik progressiyada $q = 2$ va $S_4 = 3$. b_2 ni toping.

A) 0,8 B) 0,4 C) $\frac{2}{3}$ D) $1\frac{1}{3}$

21. $f(x) = \sqrt{3} \cdot sinx + cos\frac{\pi}{3} - \frac{9x^2}{2\pi}$. $f'(\frac{\pi}{6}) = ?$

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

22. To'g'ri burchakli uchburchak katetlaridan biri 15 sm, ikkinchisi esa gipotenuzadan 3 sm qisqa. Shu uchburchak gipotenuzasini toping.

A) 20 B) 36 C) 39 D) 25

23. Parallelogrammning diagonallari 7 va 24 ga teng. Uning barcha tomonlari kvadratlarining yig'indisini toping.

A) 1150 B) 1250 C) 625 D) 1350

24. $4cos5x = 6 + 3cos(\frac{\pi}{2} + 5x)$ tenglama $[-\pi;\ 2\pi]$ kesmada nechta ildizga ega?

A) 1 B) $\emptyset$ C) 3 D) 2

25. 100 va 125 so'mlik daftarlardan hammasi bo'lib 1750 so'mlik xarid qilindi. Quyida keltirilgan sonlardan qaysi biri 100 so'mlik daftarlarning soniga teng bo'lishi mumkin?

A) 15 B) 14 C) 17 D) 16

26. Agar kubning qirrasi 10% ga kamaytirilsa, uning hajmi necha foizga kamayadi?

A) 30 B) 27,1 C) 30,8 D) 26,1

27. $\left(\frac{a^{\frac{1}{2}}+1}{a^{\frac{1}{2}}-1} + \frac{a^{\frac{1}{2}}-1}{a^{\frac{1}{2}}+1} - \frac{4}{a-1}\right)^{-3} - \frac{1}{4}$ ni soddalashtiring.

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

28. $\frac{1}{\sqrt{2}+\sqrt{3}+\sqrt{5}}$ kasrning maxrajini irratsionallikdan qutqaring.

A) $\frac{2\sqrt{3}-3\sqrt{2}+\sqrt{30}}{12}$ B) $\frac{2\sqrt{3}+3\sqrt{2}-\sqrt{30}}{12}$

C) $\frac{3\sqrt{2}-2\sqrt{3}+\sqrt{30}}{12}$ D) $\frac{3\sqrt{2}-2\sqrt{3}-\sqrt{30}}{12}$

29. a ning qanday qiymatida faqat bitta $(x;\ y)$ juftlik $\begin{cases} x+y=a \\ xy=0,25 \end{cases}$ tenglamalar sistemasini qanoatlantiradi?

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

30. $(x-1) \cdot \sqrt{8-2x-x^2} \le 0$ tengsizlikning yechimini ko'rsating.

A) $[-2;\ 3]$ B) $[-4;\ 1] \cup \{2\}$ C) $[2;\ \infty)$
D) $[-2;\ 1] \cup \{3\}$

31. Arifmetik progressiyaning birinchi va to'rtinchi hadi yig'indisi 26 ga teng, ikkinchi hadi esa beshinchi hadidan 6 ga ko'p. Shu progressiyaning to'rtinchi va sakkizinchi hadi yig'indisini toping.

A) 10 B) 20 C) 12 D) 22

32. Agar $\log_4(\sqrt{3}-1) + \log_4(\sqrt{6}-2) = a$ bo'lsa, $\log_4(\sqrt{3}+1) + \log_4(\sqrt{6}+2)$ yig'indini toping.

A) $\sqrt{3}-a$ B) $\sqrt{6}-a$ C) $2-a$
D) $1-a$

33. Kichik diagonali $24\sqrt{3}$ bo'lgan muntazam oltiburchakka tashqi chizilgan aylananing radiusini toping.

A) $12\sqrt{3}$ B) $24\sqrt{3}$ C) 24 D) 12

34. Muntazam to'rtburchakli prizmaning asosi 8 ga va balandligi 12 ga teng. Prizma parallel yon yoqlarining o'zaro ayqash diagonallari orasidagi o'tkir burchakni toping.

A) $arcsin\frac{2}{\sqrt{13}}$ B) $arcsin\frac{8}{13}$ C) $arcsin\frac{12}{13}$
D) $arccos\frac{3}{\sqrt{13}}$

35. Muntazam to'rt burchakli piramidaning balandligi 9 ga, diagonal kesimning yuzi 54 ga teng. Piramidaning hajmini toping.

A) 216 B) 206 C) 128 D) 648

36. $M = sin82°, N = ctg186°sin6°$ va $Q = cos220°$ sonlarni kamayish tartibida yozing.

A) $N > M > Q$ B) $N > Q > M$
C) $M > N > Q$ D) $Q > M > N$

Matematika

1. $\frac{84}{95}\cdot 1\frac{3}{14} : 1\frac{1}{5} : 4\cdot 4\frac{3}{4}$ ni hisoblang.
   A) $1\frac{3}{8}$ B) $1\frac{1}{16}$ C) $1\frac{5}{7}$ D) $2\frac{1}{8}$

2. $\frac{c-2\sqrt{c}+1}{1-\sqrt{c}}$ kasrni qisqartiring.
   A) $c-1$ B) $\sqrt{c}-1$ C) $-\sqrt{c}+1$
   D) $c+1$

3. k ning qanday qiymatida $y=kx^2-2$ funksiyaning grafigi $A(-1;\ 0)$ nuqtadan o'tadi?
   A) -3 B) 4 C) 2 D) 3

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?
   1) $(x-c)\cdot(x-d)=x^2+(c-d)x+cd$;
   2) $(x-e)\cdot(x+d)=x^2-(e-d)x-ed$;
   3) $12x^2+y^2-(8x^2-5y^2-(-10x^2+(5x^2-6y^2)))=-x^2$;
   4) $5a^2-3b^2-((a^2-2ab-b^2)-(5a^2-2ab-b^2))=9a^2-3b^2$.
   A) 2;3;4 B) 1;2;4 C) 1;2;3 D) 1;3;4

5. $(a-3b)^2-(3a+b)^2$ ni soddalashtiring.
   A) $-8a^2+12ab-8b^2$ B) $8a^2+12ab-8b^2$
   C) $-8a^2-12ab+8b^2$ D) $8a^2-12ab+8b^2$

6. $\begin{cases} y+4=2 \\ xy^2=4 \end{cases}$ tenglamalar sistemasini yeching.
   A) $(-1;-2)$ B) $(1;-2)$
   C) $(-1;-2);\ (1;-2)$ D) $\emptyset$

7. $f(x)=x^2$ funksiyaning (3; 5) nuqtadan o'tuvchi boshlang'ich funksiyasini toping.
   A) $\frac{x^3}{3}-7$ B) $\frac{x^3}{3}+7$ C) $2x+4$
   D) $\frac{x^3}{3}-4$

8. Qo'shni burchaklardan biri ikkinchisidan 52° ga katta. Shu burchaklardan kattasini toping.
   A) 118° B) 106° C) 114° D) 116°

9. P(0;3) nuqtani koordinata boshi atrofida 90° ga burganda hosil bo'ladigan nuqtaning koordinatalarini toping.
   A) (0; −3) B) (3; 0) C) (3; 3)
   D) (−3; 0)

10. Tekislikka og'ma va perpendikulyar tushirilgan. Og'ma va tekislik orasidagi burchak $arccos\frac{4}{5}$ ga, og'maning tekislikdagi proyeksiyasi 36 ga teng. Perpendikulyarning uzunligini toping.
    A) 27 B) $21\frac{3}{5}$ C) 48 D) $28\frac{4}{5}$

11. Oyz tekisligiga nisbatan (1;2;3) nuqtaga simmetrik bo'lgan nuqtani toping.
    A) $(-1;-2;3)$ B) $(-1;2;3)$ C) $(1;-2;3)$
    D) $(1;2;-3)$

12. Quyidagi formulalardan qaysilari to'g'ri?
    1) $sin(x+y)=sinx\cdot cosy+cosx\cdot siny$;
    2) $tg(x+y)=\frac{tgx+tgy}{1-tgx\cdot tgy}$,
    $x, y, x+y\neq\frac{\pi}{2}+\pi n, n\in Z$;
    3) $cos^2\frac{x}{2}=\frac{1-cosx}{2}$;
    4) $sinx+siny=2sin\frac{x+y}{2}cos\frac{x-y}{2}$.
    A) 1;2;4 B) 2;3;4 C) 1;3;4 D) 1;2;3

13. $\frac{0,4^2-1,6\cdot 0,8+1,6^2}{1,6^2-0,4^2}$ ni soddalashtiring.
    A) 0,375 B) 1,6 C) 0,6 D) 1,2

14. Massasi 400 g va konsentratsiyasi 16% bo'lgan eritma massasi 600 g va konsentratsiyasi 12% bo'lgan eritma bilan aralashtirildi. Hosil bo'lgan aralashmaning konsentratsiyasini (%) toping.
    A) 12 B) 11 C) 14,2 D) 13,6

15. $\sqrt{12\sqrt[3]{18}}\cdot\sqrt[6]{96}$ ni hisoblang.
    A) 18 B) 6 C) 12 D) 9

16. $\frac{\sqrt{196}\cdot\sqrt{19,6}}{\sqrt{0,196}\cdot\sqrt{1,96}}\cdot\left(\frac{5}{7}\right)^{-2}$ ni hisoblang.
    A) 100 B) 19,6 C) 10 D) 196

17. $\sqrt{a}-\sqrt{b}=3$ va $a-b=24$ bo'lsa, $\sqrt{a}+\sqrt{b}$ nimaga teng?
    A) 4 B) 6 C) 8 D) 5

18. k ning qanday qiymatlarida $k(x+1)=4$ tenglamaning ildizi musbat bo'ladi?
    A) $(0;4)$ B) $(0;\infty)$ C) $(4;\infty)$
    D) $(-4;0)$

19. a ning qanday qiymatlarida $ax^2-3x+3=0$ tenglama bitta ildizga ega bo'ladi?
    A) 0 va 1 B) $\frac{1}{3}$ C) $\frac{1}{3}$ va 0 D) $\frac{3}{4}$ va 0

20. Dastlabki beshta hadining yig'indisi -124 ga va maxraji 2 ga teng geometrik progressiyaning birinchi hadini toping.
    A) -3 B) -1 C) -2 D) -4

21. $f(x)=\frac{1}{3}x^3-5lnx$ funksiyaning grafigiga $x_0=2$ nuqtada o'tkazilgan urinmaning burchak koeffitsiyentini toping.
    A) 3 B) 3,5 C) 1,5 D) 2

22. Katetlari 7 va 24 bo'lgan to'g'ri burchakli uchburchakning gipotenuzasiga tushirilgan balandligini toping.

A) 6,62 B) 6,72 C) $6\frac{8}{25}$ D) 6,82

23. Bir uchi (8; 2) nuqtada, o'rtasi (4,5; −5,5) nuqtada bo'lgan kesmaning ikkinchi uchi koordinatalarini toping

A) (0; −24) B) (1; −13) C) (0; 26)
D) (0; −26)

24. $\sin^4 x - \cos^4 x = \frac{1}{2}$ tenglama $[-2\pi;\ 2\pi]$ kesmada nechta ildizga ega?

A) 9 B) 8 C) 7 D) 10

25. Barcha uch xonali sonlar ichida 44 ga qoldiqsiz bo'linadiganlari nechta?

A) 20 B) 19 C) 21 D) 22

26. Ikkita musbat sonning o'rta arifmetigi 6,5 ga teng. Ularning o'rta geometrigi esa shu sonlarning o'rta arifmetigini $\frac{12}{13}$ qismini tashkil etadi. Berilgan sonlarni toping.

A) 12 va 1 B) 12 va 3 C) 9 va 4
D) 7 va 6

27. Agar $\frac{5x+1}{x^2-x-12} = \frac{a}{x+3} + \frac{b}{x-4}$ ayniyat bo'lsa, $b - a$ ni toping.

A) −1 B) 6 C) 1 D) −6

28. $\frac{729a+1}{81\sqrt[3]{a^2}-9a^{\frac{1}{3}}+1} - \frac{729a-1}{81a^{\frac{2}{3}}+9\sqrt[3]{a}+1} + 4$ ni soddalashtiring.

A) 5 B) 4 C) 9 D) 6

29. $x^2+5x-\sqrt{x^2+5x+25} = 17$ tenglamaning ildizlari ko'paytmasini toping.

A) 12 B) −24 C) −8 D) −16

30. Quyidagilardan qaysi biri $(x-4)\cdot\sqrt{x^2+x-2} \le 0$ tengsizlikning yechimi?

A) $(-\infty;-2]\cup[1;4]$ B) $(-\infty;4]$
C) $[-1;2]\cup[4;\infty)$ D) $[-2;4]$

31. 7 ga bo'lganda, qoldig'i 3 ga teng bo'ladigan barcha ikki xonali sonlarning yig'indisini toping.

A) 776 B) 656 C) 676 D) 666

32. $a = 2log_2 5$, $b = 4\log_{\frac{1}{4}}\frac{5}{26}$, $c = 3\log_{\frac{1}{8}}\frac{1}{23}$ sonlarni o'sish tartibida joylashtiring.

A) $a<b<c$ B) $b<a<c$ C) $c<a<b$
D) $b<c<a$

33. Teng yonli trapetsiyaning asoslari 10 va 18 ga, asosidagi burchagi 60° ga teng. Shu trapetsiyaning yuzini hisoblang.

A) $56\sqrt{3}$ B) $36\sqrt{3}$ C) $28\sqrt{3}$ D) $46\sqrt{3}$

34. Muntazam uchburchakli piramidaning balandligi asosining tomonidan olti marta kichik. Piramidaning yon yog'i asos tekisligi bilan qanday burchak tashkil etadi?

A) 30° B) 60° C) 45° D) 15°

35. Qirrasi 12 ga teng bo'lgan kub yoqlarining markazlari tutashtirildi. Hosil bo'lgan jismning hajmini toping.

A) 144 B) 288 C) 216 D) 169

36. $\frac{3\sin\alpha+2}{5+\cos\beta} + \frac{3}{tg^2\gamma+ctg^2\gamma}$ ifodaning eng katta qiymatini toping.

A) 4,75 B) 6,25 C) 2,75 D) 3,45

Matematika

1. Harakat boshlangandan 0,6 soat o'tgach, mototsiklchi velosipedchini quvib yetdi. Mototsiklchining tezligi 42, velosipedchiniki 12 km/soat bo'lsa, harakat boshlanishidan oldin ular orasidagi masofa qancha (km) bo'lgan?
A) 18 B) 24 C) 16 D) 27

2. $\frac{x^3+y^3}{x^2-xy+y^2}-\frac{x^3-y^3}{x^2+xy+y^2}$ ni soddalashtiring.
A) $2y$ B) $2x$ C) $-2x$ D) $-2y$

3. Toq funksiyani ko'rsating.
A) $f(x)=\cos x+\sin x$
B) $f(x)=\cos^2 x-\cos x$
C) $f(x)=e^x+\operatorname{ctg} x$
D) $f(x)=(1-cos2x)\cdot ctgx-2x$

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?
1) $(x-c)\cdot(x-d)=x^2-(c+d)x+cd$;
2) $(x-e)\cdot(x+d)=x^2-(e-d)x-ed$;
3) $12x^2+y^2-(8x^2-5y^2-(-10x^2+(5x^2-6y^2)))=-x^2+12y^2$;
4) $3a-(2c-(6a-(c-b)+c+(a+8b)-6c))=10a+9b-8c$.
A) 1; 3; 4 B) 2; 3; 4 C) 1; 2; 4 D) 1; 2; 3

5. $\frac{x^2-5xy}{-25y^2+x^2}$ kasrni qisqartiring.
A) $-\frac{x}{x+5y}$ B) $\frac{x}{x+5y}$ C) $-\frac{x}{x-5y}$
D) $\frac{x}{x-5y}$

6. $\begin{cases} x+2=0 \\ x^2y=8 \end{cases}$ tenglamalar sistemasini yeching.
A) $(-2;2)$ B) $(-2;-2)$ C) $\emptyset$
D) $(-2;2),(-2;-2)$

7. $y=\frac{-3}{e^x}$ funksiyaning boshlang'ich funksiyasini toping.
A) $3lnx+C$ B) $\frac{3}{e^x}+C$ C) $-\frac{1}{3e^x}+C$
D) $\frac{1}{3}e^{-x}+C$

8. Ikki to'g'ri chiziqning kesishishidan hosil bo'lgan burchaklarning biri 40° ga teng. Qolgan burchaklarni toping.
A) 110°, 110°, 110° B) 150°, 150°, 30°
C) 140°, 140°, 40° D) 60°, 60°, 30°

9. $x^2+y^2+4x+6y-3=0$ tenglama bilan berilgan aylananing radiusini toping.
A) 6 B) 3 C) 5 D) 4

10. Tekislikka tushirilgan og'maning uzunligi 125 ga, uning tekislikdagi proyeksiyasi esa 35 ga teng. Og'ma va tekislik orasidagi burchakni toping.
A) $arccos\frac{12}{25}$ B) $arcsin\frac{24}{25}$ C) $arctg\frac{7}{48}$
D) $arcsin\frac{7}{25}$

11. Quyidagilardan qaysi biri Oxz tekislikka nisbatan $K(2;4;-5)$ nuqtaga simmetrik bo'lgan nuqta?
A) $(2;-4;5)$ B) $(-2;4;5)$ C) $(-2;-4;5)$
D) $(2;-4;-5)$

12. Quyidagi formulalardan qaysilari to'g'ri?
1) $sin(x-y)=sinx\cdot cosy-cosx\cdot siny$;
2) $sin^2\frac{x}{2}=\frac{1+cosx}{2}$;
3) $sinx+siny=2sin\frac{x+y}{2}cos\frac{x-y}{2}$;
4) $tgx+tgy=\frac{sin(x+y)}{cosx\cdot cosy}$,
$x,y\neq\frac{\pi}{2}+\pi n, n\in Z$.
A) 1; 2; 4 B) 2; 3; 4 C) 1; 3; 4 D) 1; 2; 3

13. $\frac{0,26}{0,00026}+\frac{0,24}{0,0015}-\frac{0,7}{0,0014}$ ni hisoblang.
A) 340 B) 540 C) 1340 D) 660

14. 40 dan 29,2 necha foiz kam?
A) 30 B) 27 C) 35 D) 22

15. $\frac{y^2-4y-5}{y^2-1}$ ni qisqartiring.
A) $\frac{5-y}{y-1}$ B) $\frac{y-5}{y-1}$ C) $\frac{y-5}{y+1}$ D) $\frac{y+5}{y-1}$

16. $20\cdot 2^{4n-6}-80\cdot(4^{n-2})^2$ ifodani soddalashtiring.
A) 4^{2n} B) 0 C) 2^{n-1} D) 4

17. $\frac{a^{-3}+b^{-3}}{a^2-ab+b^2}\cdot a^3b^3-\frac{a^2-b^2}{a-b}$ ni soddalashtiring.
A) 0 B) $(a+b)^2$ C) $a-b$ D) ab

18. Velosipedchi bir soatda butun yo'lning 0,65 qismini o'tdi, bu esa yo'lning yarmidan 9,75 km ko'p. Butun yo'lning uzunligini (km) toping.
A) 62,5 B) 47,5 C) 65 D) 50

19. $\frac{x^3-8}{x-2}=9-2x$ tenglamaning ildizlari yig'indisini toping.
A) 4 B) 6 C) 3 D) -4

20. Maxraji 2 ga teng bo'lgan geometrik progressiyaning dastlabki beshta hadi yig'indisi 186 ga teng. Progressiyaning birinchi hadini toping.
A) 5 B) 3 C) 6 D) 4

21. Qaysi nuqtada $y = x^2 + 2x - 8$ funksiyaning grafigiga o'tkazilgan urinma $y + 2x - 8 = 0$ to'g'ri chiziqqa parallel bo'ladi?
A) $(2;8)$ B) $(-2;8)$ C) $(2;-8)$ D) $(-2;-8)$

22. ABC uchburchakda $AB = 3, CB = 4$ va $cosB = -\frac{11}{24}$ bo'lsa, AC ning qiymatini toping.
A) 6 B) 2 C) 4 D) 3

23. Romb diagonallarining tomonlari bilan hosil qilgan burchaklari kattaliklarining nisbati 4:5 ga teng. Rombning kichik burchagini toping.
A) 50° B) 80° C) 60° D) 40°

24. Agar $2sin6x(cos^3 3x - sin^4 3x) = sinkx$ tenglik hamma vaqt o'rinli bo'lsa, k ni toping.
A) 24 B) 12 C) 18 D) 6

25. Agar x, y, z va t ketma-ket keladigan natural sonlar bo'lsa, quyidagilarning qaysi biri albatta juft son bo'ladi?
A) $\frac{xyzt}{24}$ B) $\frac{x+y-z}{3}$ C) $\frac{yzt}{3}$ D) $\frac{xyz}{6}$

26. 11300 ning 36% i va 9000 ning 28% i yig'indisi shu sonlar yig'indisining 40% idan qanchaga kam?
A) 1432 B) 1532 C) 1528 D) 1632

27. Agar $\sqrt{t^5+3} - \sqrt{t^5-2} = 2$ bo'lsa, $\sqrt{t^5+3} + \sqrt{t^5-2}$ ning qiymati nechaga teng bo'ladi?
A) 3,5 B) 2 C) 2,5 D) 1

28. $\sqrt[3]{a} = \sqrt[3]{c} + \sqrt[3]{b}$ bo'lsa, $(a-b-c)^3$ ni toping.
A) $81abc$ B) $-27abc$ C) $27abc$ D) $-81a^2b^2c^2$

29. Agar $\begin{cases} x - y = 27, \\ \sqrt{x} - \sqrt{y} = 3 \end{cases}$ bo'lsa, $x + 2y$ ning qiymatini toping.
A) 72 B) 54 C) 45 D) 63

30. $2|x+3| \le |x-6|$ tengsizlikning butun sonlardan iborat yechimlari nechta?
A) 5 B) 13 C) 10 D) 6

31. (b_n) geometrik progressiyada $b_4 - b_2 = 24$ va $b_2 + b_3 = 6$ bo'lsa, b_2 ning qiymatini toping.
A) 1 B) 0,4 C) 2,2 D) $1\frac{1}{5}$

32. $x^{log_2 x + 2} < 8$ tengsizlikni yeching.
A) $(2^{-2};\ 2)$ B) $(2^{-5};\ 2)$ C) $(2^{-4};\ 2)$ D) $(2^{-3};\ 2)$

33. Muntazam oltiburchakka tashqi chizilgan aylananing radiusi $4\sqrt{3}$ ga teng. Uning kichik diagonalini toping.
A) 12 B) $6\sqrt{6}$ C) $3\sqrt{6}$ D) 6

34. Barcha qirralari teng bo'lgan muntazam uchburchakli prizma asosining medianasi $6\sqrt{3}$ ga teng. Shu prizmaning hajmini toping.
A) $144\sqrt{3}$ B) $432\sqrt{3}$ C) $864\sqrt{3}$ D) $288\sqrt{3}$

35. Muntazam to'rt burchakli piramidaning balandligi 9 ga, diagonal kesimning yuzi 54 ga teng. Piramidaning hajmini toping.
A) 216 B) 206 C) 128 D) 648

36. Agar $tg\alpha = 2$ bo'lsa, $\frac{2}{3 + 4cos2\alpha}$ ning qiymatini toping.
A) $-3\frac{1}{3}$ B) $-\frac{10}{27}$ C) $\frac{10}{27}$ D) $3\frac{1}{3}$

Matematika

1. $(11\frac{2}{3}-7,4):5\frac{1}{3}+1\frac{2}{5}$ ni hisoblang.

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

2. $\frac{y^2-x^2}{2xy}:\frac{x+y}{2y}$ ni soddalashtiring.

   A) $\frac{x-y}{y(1+y)}$ B) $\frac{x-y}{y}$ C) $\frac{y-x}{x}$
   D) $1-\frac{x}{y}$

3. k ning qanday qiymatida $y=kx^2-2$ funksiyaning grafigi $A(-1;\ 0)$ nuqtadan o'tadi?

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

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?
   1) $(x-c)\cdot(x+d)=x^2-(c-d)x-cd$;
   2) $12x^2+y^2-(8x^2-5y^2-(-10x^2+(5x^2-6y^2)))=-x^2$;
   3) $6ab+(2a^3+b^3-(3ab^2-(a^3+2ab^2-b^3)))=3a^3-ab^2+6ab$;
   4) $5a^2-3b^2-((a^2-2ab-b^2)-(5a^2-2ab-b^2))=9a^2+4ab-3b^2$.

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

5. $\frac{\sqrt[4]{2\sqrt{2}+3}}{\sqrt{\sqrt{2}+1}}$ ni hisoblang.

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

6. $\begin{cases} y+4=2 \\ xy^2=4 \end{cases}$ tenglamalar sistemasini yeching.

   A) $(-1;-2)$ B) $(1;-2)$
   C) $(-1;-2);\ (1;-2)$ D) $\emptyset$

7. $F(x)=5tgx-3x+C$ quyidagi funksiyalardan qaysi birining boshlang'ich funksiyasi?

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

8. 130° li yoyga tiralgan vatar aylanani ikki qismga ajratadi. Katta yoyning ixtiyoriy nuqtasidan qaraganda, bu vatar qanday burchak ostida ko'rinadi?

   A) 115° B) 65° C) 70° D) 120°

9. $\vec{m}(-3;1)$ va $\vec{n}(5;-6)$ vektorlar berilgan. $\vec{a}=\vec{n}-3\cdot\vec{m}$ vektorning koordinatalarini toping.

   A) $(4;-3)$ B) $(14;-9)$ C) $(9;3)$
   D) $(14;-3)$

10. Tekislikka og'ma va perpendikulyar tushirilgan. Og'ma va tekislik orasidagi burchak $arccos\frac{3}{5}$ ga, og'maning tekislikdagi proyeksiyasi 24 ga teng. Perpendikulyarning uzunligini toping.

    A) $19\frac{1}{5}$ B) 32 C) 72 D) 16

11. Koordinatalar boshiga nisbatan (1;2;3) nuqtaga simmetrik bo'lgan nuqtani toping.

    A) $(-1;-2;-3)$ B) $(-1;2;3)$ C) $(1;-2;3)$
    D) $(1;2;-3)$

12. Quyidagi formulalardan qaysilari to'g'ri?
    1) $sin(x+y)=sinx\cdot cosy+cosx\cdot siny$;
    2) $tg(x+y)=\frac{tgx-tgy}{1+tgx\cdot tgy}$,
    $x,y,x+y\neq\frac{\pi}{2}+\pi n, n\in Z$;
    3) $sin^2\frac{x}{2}=\frac{1-cosx}{2}$;
    4) $sinx+siny=2sin\frac{x+y}{2}cos\frac{x-y}{2}$.

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

13. $(0,2\cdot0,05-0,05):0,125-0,96$ ni hisoblang.

    A) $-2,45$ B) 0,64 C) 0,43 D) 3,95

14. Go'sht qaynatilganda o'z vaznining 40% ini yo'qotadi. 7,2 kg qaynatilgan go'sht hosil qilish uchun qozonga necha kg go'sht solish kerak?

    A) 9 B) 12 C) 10,8 D) 18

15. $(a+b)(a-b+1)+(a-b)(a+b-1)-2b$ ni soddalashtiring.

    A) $2a-2b$ B) $2b$ C) $2a^2-2b^2$ D) $2a$

16. $(0,75)^3\cdot\left(-\frac{4}{6}\right)\cdot\left(\frac{8}{6}\right)^3\cdot4\frac{1}{8}$ ni hisoblang.

    A) $-1,75$ B) 1,5 C) -2 D) $-2,75$

17. $\frac{(5b^{1/4}+10)(b^{3/4}-2b^{1/2})}{4b-16b^{1/2}}$ ni soddalashtiring.

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

18. t ning qanday qiymatlarida $3x+2=2(x-t)$ tenglama musbat ildizga ega?

    A) $t<2$ B) $t>-2$ C) $t<-1$ D) $t\leq1$

19. k ning qanday qiymatlarida $(2k+5)x^2+7x-2k^2=0$ tenglama $x=1$ yechimga ega?

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

20. Arifmetik progressiyaning uchinchi va to'qqizinchi hadlari yig'indisi 4 ga teng. Shu progressiyaning dastlabki 11 ta hadlari yig'indisini toping.
A) 33 B) 22 C) 55 D) 44

21. Agar $f(x) = e^{1-2x} \cdot \cos(2x-1)$ bo'lsa, $f'(\frac{1}{2})$ ning qiymatini toping.
A) 0 B) $-2e$ C) $2e$ D) -2

22. Uchburchakning kichik tomoni 3 ga, unga tashqi chizilgan aylananing diametri esa $2\sqrt{3}$ ga teng. Uchburchakning kichik burchagini toping.
A) 45° B) 30° C) 75° D) 60°

23. Parallelogrammning diagonali tomonlari bilan 20° va 30° li burchaklar tashkil qiladi. Parallelogrammning katta burchagini toping.
A) 145° B) 100° C) 110° D) 130°

24. $4cos^2 2x - 2,5 = cos4x$ tenglamani yeching.
A) $\pm\frac{\pi}{12} + \frac{\pi n}{2}, n \in Z$ B) $\frac{\pi}{4} + \frac{n\pi}{2}, n \in Z$
C) $\frac{\pi}{3} + \frac{n\pi}{2}, n \in Z$ D) $\frac{\pi}{6} + \frac{n\pi}{2}, n \in Z$

25. $3p - 3 \in N$ son 1; 2; 3; 6; 9; 18 va 21 ga qoldiqsiz bo'linadi. p ning eng kichik natural qiymatini toping.
A) 41 B) 42 C) 7 D) 43

26. x y ning 75% ini tashkil etadi, y esa z dan 300% ga ko'p. x z dan necha foiz ko'p?
A) 80 B) 100 C) 250 D) 200

27. Agar $\frac{4x^2 - 4xy + 3y^2}{2y^2 + 2xy - 5x^2} = 1$ bo'lsa, $\frac{2x-y}{2x+y}$ ning qiymati nimaga teng?
A) -2 B) $-\frac{1}{5}$ C) $-\frac{1}{2}$ D) $\frac{1}{2}$

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

29. Agar $x^2y + xy^2 = 12$ va $x^2y - xy^2 = 84$ bo'lsa, $\frac{y}{x}$ ning qiymatini hisoblang.
A) $\frac{1}{4}$ B) 1 C) $-\frac{1}{2}$ D) $-\frac{3}{4}$

30. $2 \mid x-3 \mid \leq \mid x+3 \mid$ tengsizlikning butun sonlardan iborat yechimlari nechta?
A) 5 B) 6 C) 0 D) 9

31. 7, 10, 13, ... arifmetik progressiyaning nechta hadining har birini qiymati 99 dan katta, 212 dan kichik bo'ladi?
A) 34 B) 33 C) 38 D) 39

32. $log_{0,5}(x+3)^4 > log_{0,5}(3x-7)^4$ tengsizlikni yeching.
A) $(5;\infty)$ B) $(-\infty;-3) \cup (-3;1) \cup (5;\infty)$
C) $(-\infty;1) \cup (1;\infty)$ D) $(-3;1) \cup (5;\infty)$

33. Muntazam oltiburchakka tashqi chizilgan aylananing radiusi $8\sqrt{3}$ ga teng. Uning parallel tomonlari orasidagi masofa topilsin.
A) 12 B) 18 C) 16 D) 24

34. Muntazam to'rtburchakli piramidaning hajmi 19200 ga, balandligi esa 9 ga teng. Piramida apofemasi uzunligini toping.
A) 27 B) 39 C) 41 D) 36

35. Silindrning balandligi va asosining radiusi 8 ga teng. Yuzi silindrning to'la sirtiga teng bo'lgan doiraning radiusini toping.
A) 8 B) 16 C) 12 D) 9

36. $cos(2arcsin\frac{1}{5})$ ni hisoblang.
A) $\frac{7}{25}$ B) $\frac{24}{25}$ C) $-\frac{24}{25}$ D) $-\frac{7}{25}$

Matematika

1. $2\frac{2}{3} : 1\frac{1}{7} \cdot 3\frac{3}{7} \cdot (-\frac{1}{2})$ ni hisoblang.

   A) 3 B) -4 C) $\frac{2}{7}$ D) -2

2. $25 - (8a - 3)^2$ ni ko'paytuvchilarga ajrating.

   A) $(8a - 2)(8 + 8a)$ B) $(8a + 2)(8a - 8)$
   C) $(8a - 2)(8 - 8a)$ D) $(8a + 2)(8 - 8a)$

3. Agar $f(x) = (2x - \frac{1}{3})(4x + \frac{1}{4})$ bo'lsa, $f(\frac{1}{2})$ ni toping.

   A) $\frac{7}{12}$ B) $-4,5$ C) $1,5$ D) $4,5$

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?
   1) $(x - c) \cdot (x - d) = x^2 - (c + d)x + cd$;
   2) $(x - e) \cdot (x + d) = x^2 - (e - d)x - ed$;
   3) $5a^2 - 3b^2 - ((a^2 - 2ab - b^2) - (5a^2 - 2ab - b^2)) = 9a^2 - 3b^2$;
   4) $3a - (2c - (6a - (c - b) + c + (a + 8b) - 6c)) = 2a + 7b - 8c$.

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

5. $(x - \frac{2 + x^2}{x - 1}) : \frac{x^2 + 4x + 4}{-x + 1}$ ni soddalashtiring.

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

6. $\begin{cases} x^2 - y^2 + 2x - 4 = 0 \\ x + y = 0 \end{cases}$ tenglamalar sistemasini yeching.

   A) $(-2; -2)$ B) $(2; 2)$ C) $(2; -2)$
   D) $(-1; -1)$

7. $F(x) = 2ctgx - x + C$ quyidagi funksiyalardan qaysi birining boshlang'ich funksiyasi?

   A) $f(x) = \frac{2}{cos^2 x} - 1$ B) $f(x) = -\frac{2}{sin^2 x} - 1$
   C) $f(x) = \frac{2}{sin^2 x} + 1$ D) $f(x) = -\frac{2}{cos^2 x} - 1$

8. Qo'shni burchaklardan biri ikkinchisidan $52°$ ga katta. Shu burchaklardan kattasini toping.

   A) $118°$ B) $106°$ C) $114°$ D) $116°$

9. $P(3; 0)$ nuqtani koordinata boshi atrofida $90°$ ga burganda u qaysi nuqtaga o'tadi?

   A) $(0; -3)$ B) $(-3; 0)$ C) $(0; 3)$ D) $(3; 3)$

10. Tekislikka tushirilgan og'ma va perpendikulyar orasidagi burchak $arcsin\frac{12}{13}$ ga teng. Og'maning uzunligi 39 ga teng. Perpendikulyarning uzunligini toping.

    A) 36 B) 15 C) 30 D) $16\frac{1}{4}$

11. Oxz tekisligiga nisbatan $(1; 2; 3)$ nuqtaga simmetrik bo'lgan nuqtani toping.

    A) $(-1; -2; 3)$ B) $(-1; 2; 3)$ C) $(1; -2; 3)$
    D) $(1; 2; -3)$

12. Quyidagi formulalardan qaysilari to'g'ri?
    1) $cos(x + y) = sinx \cdot cosy + cosx \cdot siny$;
    2) $tg(x + y) = \frac{tgx + tgy}{1 - tgx \cdot tgy}$,
    $x, y, x + y \neq \frac{\pi}{2} + \pi n, n \in Z$;
    3) $sin^2\frac{x}{2} = \frac{1 - cosx}{2}$;
    4) $sinx - siny = 2cos\frac{x + y}{2} sin\frac{x - y}{2}$.

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

13. $\frac{0,4^2 - 1,6 \cdot 0,8 + 1,6^2}{1,6^2 - 0,4^2}$ ni soddalashtiring.

    A) 0,375 B) 1,6 C) 0,6 D) 1,2

14. Agar A, B, C va D sonlarning nisbati $2:3:4:2\frac{3}{4}$ kabi bo'lsa, $\frac{A + B}{C + D}$ ning qiymatini aniqlang.

    A) $\frac{3}{4}$ B) $\frac{20}{27}$ C) $\frac{9}{5}$ D) $\frac{5}{9}$

15. $a^2 + \frac{9}{a^2} = 31$ bo'lsa, $a - \frac{3}{a}$ nimaga teng?

    A) -3 B) 3 C) ± 4 D) ± 5

16. $2^{11} + 3^{12}$ yig'indining oxirgi raqamini toping.

    A) 7 B) 8 C) 5 D) 9

17. $\sqrt[6]{3 - 2\sqrt{2}} : \sqrt[3]{\sqrt{2} - 1} + 1$ ni hisoblang.

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

18. a ning qanday qiymatlarida $ax - 2a = 3$ tenglama birdan kichik ildizga ega bo'ladi?

    A) $(-3; 0)$ B) $(-2; 0)$ C) $[1; 2]$
    D) $(0; 1)$

19. $x^2 + 2px + q^2 = 0$ $(q \neq 0)$ tenglama p/q ning qanday qiymatlarida haqiqiy ildizlarga ega emas?

    A) $(0; 2]$ B) $(-2; 2)$
    C) $(-\infty; -1) \cup (1; \infty)$ D) $(-1; 1)$

20. Dastlabki beshta hadining yig'indisi -124 ga va maxraji 2 ga teng geometrik progressiyaning birinchi hadini toping.

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

21. $y = 2x^3 + 3x^2 - 6x$ funksiyaning grafigiga o'tkazilgan urinma x ning qanday qiymatlarida $y = 30x + 1$ to'g'ri chiziqqa parallel bo'ladi?
A) 1 va 3 B) -3 va 2 C) 2 va -1
D) -2 va 1

22. ABC uchburchakning A burchagi $45°$ ga, BC tomoni $3\sqrt{2}$ ga teng. Shu uchburchakka tashqi chizilgan aylananing radiusini toping.
A) 2 B) 1 C) 6 D) 3

23. a ning qanday qiymatlarida $ax + 2y = 3$ va $3x - y = -1$ to'g'ri chiziqlar kesishadi?
A) $a \neq 2$ B) $a = 0$ C) $a \neq -6$ D) $a \in R$

24. $sinx \cdot cosx < \frac{\sqrt{2}}{4}$ tengsizlikni yeching.
A) $\frac{\pi}{4} + \pi k < x < \frac{3\pi}{4} + \pi k,\ k \in Z$
B) $-\frac{5\pi}{8} + \pi k < x < \frac{\pi}{8} + \pi k,\ k \in Z$
C) $\frac{\pi}{8} + \pi k \leq x \leq \frac{3\pi}{8} + \pi k,\ k \in Z$
D) $\frac{\pi}{8} + \pi k < x < \frac{3\pi}{8} + \pi k,\ k \in Z$

25. 1 dan 120 gacha bo'lgan sonlar orasida 2 ga ham, 5 ga ham bo'linmaydiganlari nechta?
A) 40 B) 36 C) 48 D) 44

26. Daftarning narxi ketma-ket ikki marta bir xil foizga pasaytirilgandan keyin, 90 so'mdan 72,9 so'mga tushdi. Daftarning narxi har gal necha foizga pasaytirilgan?
A) 9 B) 20 C) 10 D) 15

27. Ifodani soddalashtiring:
$\left(\frac{20}{\sqrt{6}+1} + \frac{4}{\sqrt{6}-2} - \frac{12}{3-\sqrt{6}}\right) \cdot (2\sqrt{6}+12)$.
A) 127 B) -115 C) -116 D) -120

28. Agar $a = 8\sqrt{2}$ va $b = 4\sqrt{2}$ bo'lsa, $\frac{a^{\frac{3}{2}} - b^{\frac{3}{2}}}{a^{\frac{1}{2}} \cdot b^{\frac{1}{2}}} - \frac{a^{\frac{3}{2}} + b^{\frac{3}{2}}}{a^{\frac{1}{2}} + b^{\frac{1}{2}}}$ ning qiymati nechaga teng bo'ladi?
A) 6 B) 16 C) 12 D) 8

29. $(x-2)x(x-3)(x+1) = 40$ tenglama haqiqiy ildizlarining yig'indisini toping.
A) 2 B) 5 C) -4 D) -1

30. Agar $a < 0 < b$ va $|a| < |b|$ bo'lsa, $\frac{1}{a^3+b^3}$, $\frac{1}{a^4+b^3}$ va $\frac{1}{a^3}$ larni taqqoslang.
A) $\frac{1}{a^4+b^3} > \frac{1}{a^3} > \frac{1}{a^3+b^3}$
B) $\frac{1}{a^3} < \frac{1}{a^3+b^3} < \frac{1}{a^4+b^3}$
C) $\frac{1}{a^3} < \frac{1}{a^4+b^3} < \frac{1}{a^3+b^3}$
D) $\frac{1}{a^4+b^3} > \frac{1}{a^3+b^3} > \frac{1}{a^3}$

31. Cheksiz kamayuvchi geometrik progressiyaning yig'indisi 9 ga, maxraji esa $\frac{1}{3}$ ga teng. Uning birinchi hamda to'rtinchi hadlarining ayirmasini toping.
A) $4\frac{2}{9}$ B) $5\frac{1}{3}$ C) $5\frac{7}{9}$ D) $5\frac{2}{3}$

32. $\log_{\frac{2}{3}} \frac{x}{4} \leq \log_{\frac{4}{3}}(x-3)$ tengsizlikni yeching.
A) $(3;\ 4] \cup [12;\ \infty)$ B) $(-\infty;\ 4] \cup [12;\ \infty)$
C) $(0;\ 3) \cup (3;\ 4]$ D) $(-\infty;\ 3) \cup (3;\ \infty)$

33. Aylananing radiusi 8 ga teng. Aylanaga ichki chizilgan muntazam uchburchakning yuzini toping.
A) $36\sqrt{2}$ B) 64 C) $48\sqrt{3}$ D) $27\sqrt{3}$

34. Muntazam to'rtburchakli piramida asosining tomoni 5 ga, to'la sirti 65 ga teng. Piramida yon yog'ining asos tekisligiga og'ish burchagini toping.
A) $arcsin\frac{5}{8}$ B) $arccos\frac{5}{8}$ C) $arcsin\frac{5}{16}$
D) $arccos\frac{5}{16}$

35. Sharga ichki chizilgan konusning asosi sharning katta doirasiga teng. Konus o'q kesimining yuzi 36 ga teng. Sharning hajmini toping.
A) 144π B) 432π C) 288π D) 334π

36. $\frac{2cos^2\frac{\alpha}{2}}{ctg\frac{\alpha}{4} - tg\frac{\alpha}{4}}$ ni soddalashtiring.
A) $cos\alpha$ B) $-sin\alpha$ C) $\frac{1}{2}sin\alpha$ D) $sin\alpha$

Matematika

1. $3\frac{3}{5} : 2\frac{7}{10} = 3\frac{3}{4} : x$ proporsiyaning noma'lum hadini toping.

   A) $2\frac{3}{10}$ B) $2\frac{13}{16}$ C) $1\frac{15}{16}$ D) $3\frac{1}{3}$

2. $a = 4b$ va $c + 12b = 0$ $(b \neq 0)$ bo'lsa, $\frac{a}{c}$ni toping.

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

3. Agar $f(x) = (2x+3)(\frac{3}{x} - 3)$ bo'lsa, $f(-1)$ ni toping.

   A) 6 B) 0 C) -3 D) -6

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?
   1) $(x+a)\cdot(x-b) = x^2 - (a-b)x - ab$;
   2) $(x-c)\cdot(x-d) = x^2 - (c+d)x + cd$;
   3) $(x-e)\cdot(x+d) = x^2 - (e-d)x - ed$;
   4) $6ab + (2a^3 + b^3 - (3ab^2 - (a^3 + 2ab^2 - b^3))) = 3a^3 - ab^2 + 6ab$.

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

5. $\frac{x^2 + 4xy}{-16y^2 + x^2}$ kasrni qisqartiring.

   A) $-\frac{x}{x+4y}$ B) $\frac{x}{x+4y}$ C) $\frac{y}{4y-x}$
   D) $\frac{x}{x-4y}$

6. $\begin{cases} x^2 + y^2 + xy = 7 \\ x + y = 3, \quad 2\cdot x\cdot y - ? \end{cases}$

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

7. $f(x) = x^2$ funksiyaning (3; 5) nuqtadan o'tuvchi boshlang'ich funksiyasini toping.

   A) $\frac{x^3}{3} - 7$ B) $\frac{x^3}{3} + 7$ C) $2x + 4$
   D) $\frac{x^3}{3} - 4$

8. Quyidagi mulohazalardan qaysi biri noto'g'ri?
   A) *Agar ikkita teng yonli uchburchakning asoslari va asoslaridagi burchaklari teng bo'lsa, bunday uchburchaklar tengdir.*
   B) *Teng tomonli uchburchakning balandliklari uchidan boshlab hisoblanganda kesishish nuqtasida 2:1 nisbatda bo'linadi.*
   C) *Agar bir uchburchakning bir tomoni va shu tomon qarshisidagi burchagi, ikkinchi uchburchakning bir tomoni va shu tomon qarshisidagi burchagiga mos ravishda teng bo'lsa, bu uchburchaklar tengdir.*
   D) *Qavariq beshburchak ichki burchaklarining yig'indisi 540° ga teng.*

9. $x^2 + y^2 - 4x + 6y - 3 = 0$ tenglama bilan berilgan aylananing markazini toping.

   A) $(4; -4)$ B) $(-4; -3)$ C) $(2; -3)$
   D) $(-4; 6)$

10. Tekislikka tushirilgan og'ma va perpendikulyar orasidagi burchak $arcsin\frac{5}{13}$ ga teng. Og'maning uzunligi 39 ga teng. Perpendikulyarning uzunligini toping.

    A) 72 B) $11\frac{7}{13}$ C) 36 D) $27\frac{9}{13}$

11. Quyidagilardan qaysi biri Oyz tekislikka nisbatan $P(3; -2; 4)$ nuqtaga simmetrik bo'lgan nuqta?

    A) $(3; 2; -4)$ B) $(3; 2; 4)$ C) $(-3; -2; 4)$
    D) $(-3; 2; -4)$

12. Quyidagi formulalardan qaysilari to'g'ri?
    1) $cos(x-y) = cosx\cdot cosy + sinx\cdot siny$;
    2) $tg(x+y) = \frac{tgx + tgy}{1 - tgx\cdot tgy}$,
    $x, y, x+y \neq \frac{\pi}{2} + \pi n, n \in Z$;
    3) $cosx + cosy = -2sin\frac{x+y}{2}sin\frac{x-y}{2}$;
    4) $tgx - tgy = \frac{sin(x-y)}{cosx\cdot cosy}$,
    $x, y \neq \frac{\pi}{2} + \pi n, n \in Z$.

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

13. Quyidagi oddiy kasr ko'rinishida berilgan sonlardan qaysilarini chekli o'nli kasr ko'rinishiga keltirib bo'lmaydi:
    1) $\frac{15}{35}$; 2) $\frac{4}{125}$; 3) $\frac{11}{80}$; 4) $\frac{20}{55}$?

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

14. Massasi 400 g va konsentratsiyasi 16% bo'lgan eritma massasi 600 g va konsentratsiyasi 12% bo'lgan eritma bilan aralashtirildi. Hosil bo'lgan aralashmaning konsentratsiyasini (%) toping.

    A) 12 B) 11 C) 14,2 D) 13,6

15. $\frac{19}{\sqrt{20} - 1} - 2\sqrt{5} + 4$ ni soddalashtiring.

    A) 5 B) 6 C) 4 D) $2\sqrt{5} + 4$

16. $4^{13} + 4^{13} + 4^{13} + 4^{13}$ yig'indining yarmini hisoblang.

    A) 2^{24} B) 2^{25} C) $8\cdot 4^{12}$ D) 4^{48}

17. $\frac{0,2^2 + 2\cdot 0,2\cdot 0,3 + 0,3^2}{0,5\cdot 0,4 - 0,5\cdot 0,8}$ ni hisoblang.

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

18. b ning qanday qiymatlarida $b(2-x)=8$ tenglamaning ildizi manfiy bo'ladi?
A) $(0;4)$ B) $(-\infty;0)$ C) $[4;\infty)$ D) $(-4;0)$

19. k ning qanday qiymatlarida $kx^2-(k-9)x+3=0$ tenglama ikkita teng manfiy ildizga ega?
A) 1 B) 49; 1 C) 3 D) $-49;-1$

20. Arifmetik progressiyaning beshinchi hadi $5\frac{1}{3}$ ga teng. Uning dastlabki to'qqizta hadi yig'indisini toping.
A) 48 B) 36 C) 45 D) 54

21. $y=lnx$ funksiyaning grafigiga abssissasi $x_0=1$ bo'lgan nuqtada urinma o'tkazilgan. Urinmaning abssissasi 14 ga teng nuqtasi ordinatasini toping.
A) 13 B) 12 C) 15 D) 14

22. To'g'ri burchakli uchburchak katetlaridan biri 12 sm, gipotenuzasi esa ikkinchi katetdan 4 sm uzun. Gipotenuzaning uzunligini toping.
A) 22 B) 20 C) 18 D) 16

23. a ning qanday qiymatlarida $ax+3y=8$ va $y-x=4$ to'g'ri chiziqlar parallel bo'ladi ?
A) $a=2$ B) $a=1$ C) $a\in R$ D) $a=-3$

24. k ning quyida ko'rsatilgan qiymatlaridan qaysi birida $sinkxcosx-sinxcoskx=0$ tenglamaning ildizlari $\frac{\pi n}{7}\left(n\in Z\right)$ bo'ladi?
A) 8 B) 5 C) 7 D) 6

25. M ta sonning o'rta arifmetigi 14 ga, boshqa N tasiniki - 28 ga teng. Shu $M+N$ ta sonning o'rta arifmetigini toping.
A) $\frac{M+N}{42}$ B) $\frac{N}{M}$ C) $\frac{14M+28N}{M+N}$ D) $\frac{14N+28M}{M+N}$

26. x ning y ga nisbati 9:7 kabi, y ning z ga nisbati 14:15 kabi. z ning necha foizini x tashkil etadi?
A) 140 B) 120 C) 160 D) 80

27. $(x+6)(x+4)(x+2)x$ ko'paytmaning eng kichik qiymatini toping.
A) 9 B) -25 C) -16 D) -9

28. $(\sqrt{10}-\sqrt{2})\cdot\sqrt{3-\sqrt{5}}\cdot(3+\sqrt{5})-2$ ni hisoblang.
A) 4 B) 8 C) 6 D) 10

29. Raqamlarining yig'indisidan 8 marta katta, raqamlari kvadratlarining yig'indisi esa 53 ga teng bo'lgan ikki xonali sonning kvadratini toping.
A) 729 B) 5184 C) 6561 D) 529

30. $4x^2-16x\le -7$ tengsizlikning butun sonlardan iborat yechimlari yig'indisini toping.
A) 4 B) 3 C) 6 D) 5

31. Geometrik progressiyada $b_1+b_5=51$ va $b_2+b_6=102$. Shu progressiyaning dastlabki yettita hadi yig'indisini toping.
A) 765 B) 361 C) 399 D) 381

32. $\frac{log_{\sqrt{6}}x-2}{log_{\sqrt{6}}x-4}\le 0$ tengsizlikning yechimlaridan nechtasi tub sonlardan iborat?
A) 5 B) 6 C) 7 D) 8

33. Teng yonli trapetsiyaning asoslari 10 va 18 ga, asosidagi burchagi 60° ga teng. Shu trapetsiyaning yuzini hisoblang.
A) $56\sqrt{3}$ B) $36\sqrt{3}$ C) $28\sqrt{3}$ D) $46\sqrt{3}$

34. Muntazam uchburchakli piramidaning yon qirrasi 20 ga, asosining tomoni $16\sqrt{3}$ ga teng. Piramidaning balandligini toping.
A) $8\sqrt{3}$ B) 12 C) 8 D) 16

35. Qirrasi 12 ga teng bo'lgan kub yoqlarining markazlari tutashtirildi. Hosil bo'lgan jismning hajmini toping.
A) 144 B) 288 C) 216 D) 169

36. $sin^4\frac{17\pi}{8}-cos^4\frac{15\pi}{8}$ ni hisoblang.
A) $\frac{1}{2}$ B) $\frac{\sqrt{3}}{2}$ C) $-\frac{\sqrt{2}}{2}$ D) $-\frac{\sqrt{3}}{2}$

Matematika

1. $6\frac{3}{8} - (2,5 - 2\frac{1}{3}) : 1\frac{1}{3}$ ni hisoblang.

   A) $5\frac{1}{4}$ B) $5\frac{2}{3}$ C) $6\frac{1}{4}$ D) $4\frac{1}{2}$

2. $\sqrt{\sqrt{56}+2\sqrt{5}} \cdot \sqrt{\sqrt{56}-2\sqrt{5}}$ ni hisoblang.

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

3. k ning qanday qiymatlarida $y = \frac{k}{x} - 1$ funksiyaning grafigi $C(-2; -3)$ nuqtadan o'tadi?

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

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?

   1 $(x-c)\cdot(x-d) = x^2 + (c-d)x + cd$;
   2 $(x-e)\cdot(x+d) = x^2 - (e-d)x - ed$;
   3 $12x^2+y^2-(8x^2-5y^2-(-10x^2+(5x^2-6y^2))) = -x^2$;
   4) $3a-(2c-(6a-(c-b)+c+(a+8b)-6c)) = 10a+9b-8c$.

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

5. $(b-c)(b^2+bc+c^2)$ ifodaning $b = \sqrt[3]{5}$ va $c = \sqrt[3]{3}$ bo'lgandagi qiymatini hisoblang.

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

6. $\begin{cases} x+y=6, \\ x^2-y^2=12. \end{cases}$ $y-?$

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

7. $f(x) = x - \frac{x^2}{2}$ funksiyaning $(6; 2)$ nuqtadan o'tuvchi boshlang'ich funksiyasini toping.

   A) $\frac{x^2}{2} - \frac{x^3}{6} + 20$ B) $\frac{x^2}{2} + \frac{x^3}{6} - 56$
   C) $\frac{x^2}{2} - \frac{x^3}{6} + 18$ D) $\frac{x^2}{2} - \frac{x^3}{6} - 18$

8. Quyidagi mulohazalardan qaysi biri to'g'ri?

   A) *Ikkita to'g'ri burchakli uchburchakning gipotenuzalari va bittadan o'tkir burchaklari bir- biriga teng bo'lsa, bunday uchburchaklar tengdir.*
   B) *Teng tomonli uchburchakning balandliklari kesishish nuqtasida 4:3 nisbatda bo'linadi.*
   C) *Ikkitadan tomoni, bittadan burchagi o'zaro teng bo'lgan uchburchaklar tengdir.*
   D) *Ikkita parallel to'g'ri chiziqni uchinchi to'g'ri chiziq bilan kesganda hosil bo'lgan ichki bir tomonli burchaklar yig'indisi 180° dan kichik.*

9. P(0;3) nuqtani koordinata boshi atrofida 90° ga burganda hosil bo'ladigan nuqtaning koordinatalarini toping.

   A) $(0; -3)$ B) $(3; 0)$ C) $(3; 3)$
   D) $(-3; 0)$

10. Tekislikka og'ma va perpendikulyar tushirilgan. Og'maning tekislikdagi proyeksiyasi 20 ga, perpendikulyarning uzunligi 21 ga teng. Og'ma va perpendikulyar orasidagi burchakni toping.

    A) $arccos\frac{20}{21}$ B) $arcsin\frac{20}{29}$ C) $arcsin\frac{20}{21}$
    D) $arctg\frac{21}{29}$

11. Oyz tekisligiga nisbatan (1;2;3) nuqtaga simmetrik bo'lgan nuqtani toping.

    A) $(-1;-2;3)$ B) $(-1;2;3)$ C) $(1;-2;3)$
    D) $(1;2;-3)$

12. Quyidagi formulalardan qaysilari to'g'ri?

    1) $cos(x-y) = sinx \cdot cosy - cosx \cdot siny$;
    2) $cos^2\frac{x}{2} = \frac{1+cosx}{2}$;
    3) $cosx + cosy = 2cos\frac{x+y}{2}cos\frac{x-y}{2}$;
    4) $tgx + tgy = \frac{sin(x+y)}{cosx \cdot cosy}$,
    $x, y \neq \frac{\pi}{2} + \pi n, n \in Z$.

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

13. $17,3 \cdot 3,6 + 2,7 \cdot 64 + 2,7 \cdot 36 + 17,3 \cdot 64$ ning qiymatini toping.

    A) 1800 B) 3000 C) 1600 D) 2000

14. Agar kvadratning perimetri 20% ga kamaytirilsa, uning yuzi necha foizga kamayadi?

    A) 40 B) 20 C) 19 D) 36

15. $\frac{x^{-3}+8}{x^{-2}-2x^{-1}+4}$ ning $x = 0,25$ dagi qiymatini hisoblang.

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

16. $(\frac{2}{3})^{-3} + 2 \cdot 4^{-2} - (\frac{2}{3})^{-1}$ ni hisoblang.

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

17. $a = 2^5 + 2^{-5}$ va $b = 2^5 - 2^{-5}$ bo'lsa, $a^2 - b^2 - 2$ nimaga teng?

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

18. a ning qanday qiymatlarida $a(3x-a) = 12x - 16$ tenglama bitta musbat yechimga ega?

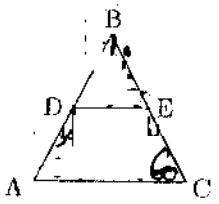
    A) $(-4;\infty)$ B) $(-4;4)$ C) $(4;\infty)$
    D) $(-4;4) \cup (4;\infty)$

19. Ildizlari $3x^2+x-4=0$ tenglamaning ildizlariga qarama-qarshi sonlardan iborat bo'lgan kvadrat tenglamani tuzing.
A) $3x^2-x+4=0$ B) $3x^2-x-4=0$
C) $3x^2-4x-1=0$ D) $3x^2+x+4=0$

20. Hadlari $x_n=4n+6$ $(n\in N)$ formula bilan berilgan ketma-ketlikning dastlabki o'ttizta hadi yig'indisini toping.
A) 1800 B) 2040 C) 1940 D) 2100

21. $y=x^2-5$ egri chiziqqa o'tkazilgan urinma $y=2x+3$ to'g'ri chiziqqa parallel. Urinish nuqtasining ordinatasini toping.
A) 2 B) 0 C) -4 D) 4

22. Chizmada $\angle DEB=60°$, BE=6 va DE=4 (uchburchakning o'rta chizig'i) bo'lsa, AB ni toping.



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

23. Parallelogrammning diagonallari 7 va 24 ga teng. Uning barcha tomonlari kvadratlarining yig'indisini toping.
A) 1150 B) 1250 C) 625 D) 1350

24. Agar $2sin6x(cos^43x-sin^43x)=sinkx$ tenglik hamma vaqt o'rinli bo'lsa, k ni toping.
A) 24 B) 12 C) 18 D) 6

25. 6 ni berilgan songa ko'paytirganda, hosil bo'lgan son ...14 ko'rinishda bo'lsa, berilgan son quyidagilardan qaysi biri ko'rinishida bo'lishi mumkin?
A) ...19 B) ...24 C) ...14 D) ...79

26. Birinchi son 80 ga teng. Ikkinchi son birinchi sonning 80% ini, uchinchisi esa birinchi va ikkinchi son yig'indisining 50% ini tashkil qiladi. Bu sonlarning o'rta arifmetigini toping.
A) 64 B) 80 C) 54 D) 72

27. Agar $\frac{5x+1}{x^2-x-12}=\frac{a}{x+3}+\frac{b}{x-4}$ ayniyat bo'lsa, $b-a$ ni toping.
A) -1 B) 6 C) 1 D) -6

28. $a^3-9a^2+27a-19$ ni ko'paytuvchilarga ajrating.
A) $(a+1)(a^2+8a-19)$
B) $(a-1)(a^2-8a+19)$
C) $(a-1)(a^2+8a-19)$
D) $(a+1)(a^2+8a+19)$

29. Agar $\sqrt{3x^2-6x+16}=2x-1$ bo'lsa, $x^2(4-x)$ ning qiymatini toping.
A) 65 B) 9 C) 54 D) -65

30. $x^2\le 2x+15$ tengsizlikning butun sonlardan iborat yechimlari yig'indisini toping.
A) 9 B) 4 C) 5 D) 7

31. Arifmetik progressiyaning birinchi va to'rtinchi hadi yig'indisi 26 ga teng, ikkinchi hadi esa beshinchi hadidan 6 ga ko'p. Shu progressiyaning to'rtinchi va sakkizinchi hadi yig'indisini toping.
A) 10 B) 20 C) 12 D) 22

32. Agar $\log_3 4=a$ va $\log_5 4=b$ bo'lsa, $\log_4 135$ ni a va b orqali ifodalang.
A) $\frac{3a+b}{a+b}$ B) $\frac{a+2b}{ab}$ C) $\frac{a+3b}{a+b}$
D) $\frac{a+3b}{ab}$

33. Teng yonli trapetsiyaning asoslari 21 va 27 ga, kichik asosidagi burchagi esa 135° ga teng. Trapetsiyaning yuzini toping.
A) 62 B) 72 C) 48 D) 96

34. Muntazam to'rtburchakli kesik piramida asoslarining tomonlari 14 va 10 sm, diagonali $4\sqrt{22}$ sm. Kesik piramidaning balandligi necha sm?
A) 7 B) 6 C) 5 D) 8

35. Radiusi 15 ga teng bo'lgan sharga ichki chizilgan konusning balandligi 12 ga teng. Konusning hajmini toping
A) 486π B) 756π C) 864π D) 672π

36. Agar $sin(\alpha+\beta)=\frac{4}{5}$, $sin(\alpha-\beta)=\frac{5}{13}$ va $0<\beta<\alpha<\frac{\pi}{4}$ bo'lsa, $cos\alpha+cos\beta$ ning qiymatini hisoblang.
A) $\frac{10}{\sqrt{130}}$ B) $\sqrt{\frac{20}{13}}$ C) $\frac{5}{\sqrt{130}}$ D) $\sqrt{\frac{40}{13}}$

Matematika

1. $-1\frac{3}{4} \cdot 6,5 \cdot (-\frac{4}{7}) - 9,25$ ni hisoblang.
A) $-10,25$ B) $-2,75$ C) $3,75$ D) $2,75$

2. $a(b-c) - b(c-a) - c(a-b)$ ni soddalashtiring.
A) $2ab - 2ac$ B) $-2ac$ C) $2ab - 2bc$
D) 0

3. Quyidagi nuqtalarning qaysi biri $f(x) = -2x + 7$ funksiyaning grafigiga tegishli?
A) $(2;1)$ B) $(1;2)$ C) $(2;4)$ D) $(3;1)$

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?
1) $(x+a)\cdot(x-b) = x^2 + (a-b)x - ab$;
2) $(x-c)\cdot(x-d) = x^2 - (c+d)x + cd$;
3) $(x-e)\cdot(x+d) = x^2 + (e-d)x - ed$;
4) $5a^2 - 3b^2 - ((a^2 - 2ab - b^2) - (5a^2 - 2ab - b^2)) = 9a^2 - 3b^2$.
A) $2;3;4$ B) $1;2;4$ C) $1;2;3$ D) $1;3;4$

5. $\frac{a^2 - 5ab}{-25b^2 + a^2}$ kasrni qisqartiring.
A) $\frac{a}{a-5b}$ B) $\frac{a}{a+5b}$ C) $-\frac{a}{a-5b}$
D) $-\frac{a}{a+5b}$

6. $\begin{cases} x^2 + y^2 - xy = 1, \\ x + y = -2. \end{cases}$ $2xy = ?$
A) -1 B) 1 C) -3 D) 2

7. $f(x) = x^3 + 3x - 5$ funksiyaning $[-1;1]$ kesmadagi eng katta va eng kichik qiymatlari orasidagi ayirmani toping.
A) 6 B) -6 C) 8 D) -5

8. Aylananing kesishuvchi ikki vatari orasidagi burchaklardan biri $100°$ ga teng. Shu burchakka qo'shni bo'lgan burchaklarning yig'indisini toping.
A) $90°$ B) $100°$ C) $160°$ D) $200°$

9. $x^2 + y^2 - 4x - 6y - 3 = 0$ tenglama bilan berilgan aylananing radiusini toping.
A) 5 B) 3 C) 4 D) 6

10. Tekislikka tushirilgan og'ma va perpendikulyar orasidagi burchak $arcsin\frac{24}{25}$ ga teng. Og'maning uzunligi 75 ga teng. Perpendikulyarning uzunligini toping.
A) 72 B) $10\frac{1}{2}$ C) $21\frac{7}{8}$ D) 21

11. Quyidagi nuqtalardan qaysi biri Oxz tekislikda yotadi?
A) $(0;-7;0)$ B) $(-4;3;0)$ C) $(2;-4;6)$
D) $(2;0;-8)$

12. Quyidagi formulalardan qaysilari to'g'ri?
1) $cos(x+y) = cosx \cdot cosy - sinx \cdot siny$;
2) $cos^2\frac{x}{2} = \frac{1+cosx}{2}$;
3) $sinx - siny = -2cos\frac{x+y}{2}sin\frac{x-y}{2}$;
4) $tgx - tgy = \frac{sin(x-y)}{cosx \cdot cosy}$,
$x, y \neq \frac{\pi}{2} + \pi n, n \in Z$.
A) $2;3;4$ B) $1;2;4$ C) $1;2;3$ D) $1;3;4$

13. $\frac{0,8 \cdot 0,06 + 1,2 \cdot 0,06}{0,2^2 - 0,4^2}$ ni soddalashtiring.
A) 10 B) -10 C) -1 D) $-0,1$

14. Mahsulotning bahosi 30% ga oshirildi. Ma'lum vaqtdan keyin 20% ga arzonlashtirildi, shundan so'ng uning narxi 8944 so'm bo'ldi. Mahsulotning dastlabki bahosi necha so'm bo'lgan?
A) 8400 B) 8600 C) 9300 D) 8500

15. $\sqrt{12\sqrt[3]{18}} \cdot \sqrt[3]{96}$ ni hisoblang.
A) 18 B) 6 C) 12 D) 9

16. $\frac{3^9 \cdot 2^{19} + 15 \cdot 4^9 \cdot 9^4}{6^9 \cdot 2^{10} + 12^{10}} \cdot \left(\frac{3}{4}\right)^{-1}$ ni hisoblang.
A) 2 B) 1 C) $\frac{2}{3}$ D) $\frac{1}{3}$

17. Agar $a^2 - 6a + 10 + b^2 + 2b = 0$ bo'lsa, $(a+b)^3$ ning qiymatini toping.
A) 27 B) 64 C) 25 D) 8

18. Turist butun yo'lning 0,85 qismini o'tganda, ko'zlangan manzilgacha 9,66 km qolgani ma'lum bo'ldi. Butun yo'lning uzunligi necha km?
A) 44 B) 52 C) $64,4$ D) $36,6$

19. p ning nechta natural qiymatida $x^2 + px + 30 = 0$ tenglama haqiqiy ildizga ega emas?
A) 14 B) 10 C) 15 D) 7

20. Dastlabki yettita hadining yig'indisi -280 ga va hadlarining ayirmasi -2 ga teng bo'lgan arifmetik progressiyaning birinchi hadini toping.
A) -42 B) -32 C) -36 D) -34

21. $f(x) = \frac{\sqrt{3}}{3}x^3 - 1$ funksiyaning grafigiga $x_0 = \frac{1}{\sqrt{3}}$ nuqtada o'tkazilgan urinmaning OX o'qi bilan tashkil qilgan burchagini toping.
A) $30°$ B) $60°$ C) $120°$ D) $45°$

22. Bir burchagi 150° bo'lgan uchburchakka tashqi chizilgan aylananing radiusi 2 ga teng. Uchburchak katta tomonining uzunligini toping.
A) 2 B) 1 C) 4 D) 3

23. a va b ning qanday qiymatlarida $ax + by = -4$ va $3x - 3y = 4$ to'g'ri chiziqlar ustma-ust tushadi?
A) $a = -3;\ b = 3$ B) $a = 3;\ b = -3$
C) $a = 3;\ b = -1$ D) $a = b = 3$

24. $cos2x \geq -\frac{1}{2}$ tengsizlikning $[0; 1,5\pi]$ kesmadagi yechimini toping.
A) $[0; \frac{\pi}{3}] \cup [\frac{2\pi}{3}; \frac{4\pi}{3}]$ B) $[\frac{\pi}{3}; \frac{2\pi}{3}]$
C) $[\frac{4\pi}{3}; 2\pi]$ D) $[0; \frac{\pi}{3}] \cup [\frac{2\pi}{3}; \pi]$

25. 1 dan 126 gacha bo'lgan sonlar orasida 2 ga ham, 7 ga ham bo'linmaydiganlari nechta?
A) 64 B) 54 C) 45 D) 50

26. Ikki sex 690 ta kir yuvish mashinasi ishlab chiqarishi kerak. Birinchi sex ishlab chiqargan mahsulotning $\frac{2}{9}$ qismi ikkinchi sex ishlab chiqargan mahsulotning 80% iga teng. Birinchi sex qancha mahsulot ishlab chiqargan?
A) 180 B) 150 C) 540 D) 240

27. Agar $(\sqrt{3}+2)a = 1$ va $(\sqrt{3}-2)b = -1$ bo'lsa, $(a+1)^{-1} - (b+1)^{-1}$ ning qiymatini hisoblang.
A) 0,5 B) $\frac{1}{\sqrt{3}}$ C) $\sqrt{3}$ D) $\frac{2}{\sqrt{3}}$

28. $\left(\frac{a^{\frac{3}{2}} + b^{\frac{3}{2}}}{(a^{\frac{1}{2}} + b^{\frac{1}{2}})^2} - \frac{a^{\frac{1}{2}}b^{\frac{1}{2}}}{a^{\frac{1}{2}} + b^{\frac{1}{2}}}\right) : (a-b)$ ning $a = 0,36$ va $b = 0,16$ bo'lgandagi qiymatini hisoblang.
A) $\frac{1}{5}$ B) $-\frac{1}{4}$ C) $-\frac{1}{5}$ D) $\frac{1}{125}$

29. $14 - \sqrt{x^2 - 3x + 6} = x^2 - 3x$ tenglama ildizlarining yig'indisini toping.
A) 6 B) 5 C) 3 D) 7

30. $\frac{(x^2+x+1)(x^2+5x+4)}{x^2+5x+6} \leq 0$ tengsizlikning butun sonlardan iborat yechimlari nechta?
A) 4 B) 5 C) 2 D) 3

31. Arifmetik progressiyaning oltinchi hadi 10 ga, dastlabki 16 ta hadining yig'indisi 200 ga teng. Bu progressiyaning 9-hadini toping.
A) 14 B) 16 C) 13 D) 18

32. $a = 0,2^{-0,7} \cdot 0,3^{-0,6}$; $b = 0,8^{-1/3} \cdot 3^{0,4}$; $c = 1,2^{0,4} \cdot 1,1^{1,5}$ va $d = 2^{-0,7} \cdot 0,2^{0,1}$ sonlardan qaysi biri 1 dan kichik?
A) b B) a C) d D) c

33. Ikki tomoni yig'indisi 1,8 ga va ular orasidagi burchagi 150° ga teng bo'lgan uchburchaklar ichida yuzasi eng katta bo'lgan uchburchakning yuzini toping.
A) $\frac{4}{25}$ B) $\frac{9}{10}$ C) $\frac{81}{400}$ D) $\frac{81}{100}$

34. Teng yonli ABC uchburchakning $(AB = AC)$ A uchidan uchburchak tekisligiga uzunligi 32 ga teng bo'lgan AD perpendikulyar o'tkazildi. D nuqtadan BC tomongacha bo'lgan masofa 40 ga teng. ABC uchburchakning BC tomoniga o'tkazilgan balandligi qanchaga teng?
A) 12 B) 24 C) 20 D) 14

35. Yasovchisi 15 ga, asosining radiusi 9 ga teng bo'lgan konusga ichki chizilgan sharning radiusini toping.
A) 6 B) 4,5 C) $3\sqrt{2}$ D) $4,5\sqrt{3}$

36. $tg(\alpha+\beta) = 4$, $tg(\alpha-\beta) = -2$ bo'lsa, $tg2\beta$ ni hisoblang.
A) $\frac{2}{3}$ B) $-\frac{7}{6}$ C) $\frac{3}{2}$ D) $-\frac{6}{7}$

Matematika

1. Birinchi kuni ish normasining $\frac{1}{2}$ qismi bajarildi. Ikkinchi kuni birinchi kunda bajarilgan ishning $\frac{1}{6}$ qismicha ko'p ish bajarildi. Shu ikki kunda qancha ish normasi bajarildi?
A) $\frac{11}{12}$ B) 1 C) $1\frac{1}{6}$ D) $1\frac{1}{12}$

2. Agar $ab = 9$ va $3b = 8,1c$ bo'lsa, ac ni hisoblang.
A) $2\frac{5}{8}$ B) $3\frac{1}{3}$ C) $2\frac{1}{2}$ D) $2\frac{4}{9}$

3. Agar $f(x) = (3 + \frac{1}{x})(11 + 4x)$ bo'lsa, $f(-\frac{1}{2})$ ni toping.
A) -3 B) 9 C) -5 D) 15

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?
1) $(x - c) \cdot (x - d) = x^2 + (c - d)x + cd$;
2) $(x - e) \cdot (x + d) = x^2 - (e - d)x - ed$;
3) $12x^2 + y^2 - (8x^2 - 5y^2 - (-10x^2 + (5x^2 - 6y^2))) = -x^2$;
4) $5a^2 - 3b^2 - ((a^2 - 2ab - b^2) - (5a^2 - 2ab - b^2)) = 9a^2 - 3b^2$.
A) 2; 3; 4 B) 1; 2; 4 C) 1; 2; 3 D) 1; 3; 4

5. $(1 - 3a)^2 - (1 + 3a)(3a - 1)$ ni soddalashtiring.
A) $-6a + 2$ B) $18a^2 - 6a$ C) $9a^2 - 3a$
D) $-3a + 2$

6. $\begin{cases} x + 3 = 0 \\ xy^2 = 12 \end{cases}$ tenglamalar sistemasining yechimini toping.
A) $(-3; -2)$ B) $(-3; 2)$
C) $(-3; -2), (-3; 2)$ D) $\emptyset$

7. $f(x) = -x + \frac{x^2}{2}$ funksiyaning $(6; 2)$ nuqtadan o'tuvchi boshlang'ich funksiyasini toping.
A) $-\frac{x^2}{2} + \frac{x^3}{6} - 18$ B) $-\frac{x^2}{2} + \frac{x^3}{6} - 16$
C) $-\frac{x^2}{2} + \frac{x^3}{6} + 18$ D) $-\frac{x^2}{2} + \frac{x^3}{6} + 16$

8. Aylananing AB vatari o'zi ajratgan yoylardan birining ixtiyoriy nuqtasidan $40°$ li burchak ostida ko'rinadi. A va B nuqta chegarasi bo'lgan yoylar necha gradus?
A) *80° va 280°* B) *160° va 200°*
C) *110° va 250°* D) *100° va 260°*

9. Uchlari $A(3; -1)$ va $B(2; 4)$ nuqtada bo'lgan AB kesmaning o'rtasidagi nuqtaning koordinatalarini toping.
A) $(-2,5; 1,5)$ B) $(2,5; 1,5)$ C) $(2,5; 3)$
D) $(2,5; -1,5)$

10. Og'ma va tekislik orasidagi burchak $arccos0,28$ ga, og'maning tekislikdagi proyeksiyasi 21 ga teng. Perpendikulyarning uzunligini toping.
A) 36 B) $5\frac{22}{25}$ C) 72 D) $20\frac{4}{25}$

11. Agar kesmaning bir uchi $A(1; -5; 4)$, o'rtasi $C(4; -2; 3)$ nuqtada bo'lsa, ikkinchi uchining koordinatalari qanday bo'ladi?
A) $(7; -1; 2)$ B) $(6; 5; 3)$ C) $(5; 4; 6)$
D) $(7; 1; 2)$

12. Quyidagi formulalardan qaysilari to'g'ri?
1) $tg(x - y) = \frac{tgx - tgy}{1 + tgx \cdot tgy}$,
$x, y, x - y \neq \frac{\pi}{2} + \pi n, n \in Z$;
2) $sin^2\frac{x}{2} = \frac{1 - cosx}{2}$;
3) $sinx + siny = 2cos\frac{x + y}{2} sin\frac{x - y}{2}$;
4) $tgx - tgy = \frac{sin(x - y)}{cosx \cdot cosy}$,
$x, y \neq \frac{\pi}{2} + \pi n, n \in Z$.
A) 1; 2; 4 B) 2; 3; 4 C) 1; 3; 4 D) 1; 2; 3

13. $0,34 \cdot 0,00025$ ko'paytma quyidagi sonlardan qaysi biriga teng emas?
A) $850 \cdot 10^{-7}$ B) $8,5 \cdot 10^{-5}$ C) $8,5 \cdot 10^{-6}$
D) $85 \cdot 10^{-6}$

14. Go'sht qaynatilganda o'z vaznining 40% ini yo'qotadi. 25 kg go'sht qaynatilganda vazni necha kg kamayadi?
A) 11 B) 12 C) 10 D) 9,5

15. $\frac{19}{\sqrt{20} + 1} + 4 - 2\sqrt{5}$ ni soddalashtiring.
A) 3 B) 6 C) $4\sqrt{5} - 6$ D) $4\sqrt{5} - 7$

16. $\left(\frac{3}{7}\right)^{-1} + 0,3^{-3} + (-0,5)^{-2} \cdot \frac{3}{4} - 10\frac{19}{27}$ ni hisoblang.
A) $42\frac{4}{9}$ B) $31\frac{2}{3}$ C) $48\frac{10}{27}$ D) $34\frac{2}{3}$

17. $\frac{4,5^2 - 1,5^2}{0,3 \cdot 0,5 - 0,3}$ ni hisoblang.
A) -120 B) -200 C) -2 D) 200

18. n ning qanday qiymatida $n^2(y - 1) = 4y - 2n$ tenglamaning ildizi yo'q?
A) $n = 1$ B) $n = -2$ C) $n = 2$
D) $n = -1$

19. $2x^2 - 14x + c = 0$ tenglamaning ildizlaridan biri 0,5 ga teng. Shu tenglamaning ikkinchi ildizini toping.
A) 3 B) 4 C) 6,5 D) 0

20. (b_n) $(n \in N)$ geometrik progressiyada $q = 2$ va $S_4 = 3$. b_2 ni toping.
A) 0,8 B) 0,4 C) $\frac{2}{3}$ D) $1\frac{1}{3}$

21. Qaysi nuqtada $y = x^2 + 2x - 8$ funksiyaning grafigiga o'tkazilgan urinma $y + 2x - 8 = 0$ to'g'ri chiziqqa parallel bo'ladi?
A) $(2;8)$ B) $(-2;8)$ C) $(2;-8)$
D) $(-2;-8)$

22. To'g'ri burchakli uchburchakning gipotenuzasi 75 sm, katetlari esa o'zaro 7:24 nisbatda. Shu uchburchakning katta katetini toping.
A) 36 B) 63 C) 42 D) 72

23. ABCD parallelogramm C uchining koordinatalari (5; 8), O(3; 6) esa parallelogramm diagonallarining kesishish nuqtasi. Parallelogramm A uchining koordinatalarini toping.
A) (3;2) B) (2;3) C) (4;1) D) (1;4)

24. $cos^2\frac{x}{4} > \frac{\sqrt{2}}{2} + sin^2\frac{x}{4}$ tengsizlikni yeching.
A) $\frac{\pi}{8} + \pi n < x < \frac{7\pi}{8} + \pi n,\ n \in Z$
B) $\frac{\pi}{8} + 2\pi n < x < \frac{7\pi}{8} + 2\pi n,\ n \in Z$
C) $\frac{\pi}{4} + 2\pi n < x < \frac{7\pi}{4} + 2\pi n,\ n \in Z$
D) $-\frac{\pi}{2} + 4\pi n < x < \frac{\pi}{2} + 4\pi n,\ n \in Z$

25. Tomoni 1000 dm ga teng bo'lgan kvadrat tomoni 5 sm ga teng bo'lgan kvadratchalarga ajratildi. Shu kvadratchalar kengligi 10 sm bo'lgan tasma shaklida joylashtirilsa, uning uzunligi qancha bo'ladi?
A) 200 km B) 100 km C) 1 km
D) 20 km

26. Yil boshida o'g'il bolalar sinfdagi o'quvchilarning 30% ini, qizlar esa 21 nafarni tashkil etardi. Yilning o'rtasida sinfga 6 ta yangi o'g'il bola keldi va 11 ta qiz boshqa sinfga o'tdi. Shundan so'ng o'g'il bolalar sinfdagi o'quvchilarning necha foizini tashkil etadi?
A) 50 B) 70 C) 60 D) 55

27. Agar $a(x-1)^2 + b(x-1) + c = 2x^2 - 5x + 8$ ayniyat bo'lsa, $a + b + c$ yig'indi nechaga teng bo'ladi?
A) 8 B) 7 C) 4 D) 6

28. $\frac{2,72^4 - 0,72^4}{3,44^2 - 2,72 \cdot 1,44}$ ni hisoblang.
A) 6,88 B) 5,68 C) 6,84 D) 5,28

29. Agar $y - x = 2$ va $a > 0$ bo'lsa, $\begin{cases} y^2 - x^2 = 6a \\ y + x = 1,5a^2 \end{cases}$ tenglamalar sistemasini yeching.
A) (7;9) B) (5;7) C) (2;4) D) (4;6)

30. $a > c > b > 0$ bo'lsa, $\frac{1}{a}$, $\frac{1}{a+b}$ va $\frac{1}{a+c}$ larni taqqoslang.
A) $\frac{1}{a} < \frac{1}{a+b} < \frac{1}{a+c}$ B) $\frac{1}{a} < \frac{1}{a+c} < \frac{1}{a+b}$
C) $\frac{1}{a+c} < \frac{1}{a+b} < \frac{1}{a}$ D) $\frac{1}{a+b} < \frac{1}{a+c} < \frac{1}{a}$

31. Ikkinchi hadi 6 ga teng, birinchi uchta hadining yig'indisi 26 ga teng o'suvchi geometrik progressiyaning to'rtinchi va ikkinchi hadlari ayirmasini toping.
A) 16 B) 32 C) 48 D) 36

32. $(x^2 - 12x + 32)\sqrt{\log_3(x-5)} \le 0$ tengsizlikni yeching.
A) [6; 8] B) (4; 8] C) (7; 8) D) [7; 8)

33. Teng yonli trapetsiyaning asoslari 8 va 26 ga, yon tomoni esa 15 ga teng. Trapetsiyaning yuzini hisoblang.
A) 102 B) 184 C) 255 D) 204

34. Uchburchakli muntazam prizmaning balandligi 32 ga, asosining yuzi $\frac{9\sqrt{3}}{16}$ ga teng. Prizma yon yog'ining yuzini toping.
A) 54 B) 48 C) 42 D) 36

35. Balandligi 9 ga, yasovchisi 15 ga teng konusga ichki chizilgan sharning sirtining yuzini toping.
A) 72π B) 56π C) 48π D) 64π

36. $cos(2arccos\frac{4}{9})$ ning qiymatini toping.
A) $\frac{49}{81}$ B) $\frac{8}{9}$ C) $-\frac{49}{81}$ D) $-\frac{8}{9}$

Matematika

1. $\left(3,5-3\frac{1}{3}\right)\cdot 10,4 : 5\frac{1}{5}$ ni hisoblang.

   A) $\frac{1}{3}$ B) $\frac{2}{5}$ C) $\frac{3}{7}$ D) $\frac{1}{12}$

2. $\sqrt{a-2a^{1/2}b^{1/2}+b}-\frac{a-b}{a^{1/2}-b^{1/2}}$
   ni soddalashtiring $(b>a>0)$.

   A) $-2a^{1/2}$ B) $2a^{1/2}-2b^{1/2}$ C) 0
   D) $-2b^{1/2}$

3. Quyidagilardan qaysilari o'suvchi funksiyalar?
   1) $y=3^{-x}$; 2) $y=(\sqrt[4]{10})^x$; 3) $y=(\frac{11}{9})^x$;
   4) $y=(\frac{5}{3})^x$; 5) $y=(0,84)^x$.

   A) 1; 2; 3 B) 1; 2; 4 C) 2; 3; 4
   D) 3; 4; 5

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?
   1) $(x-c)\cdot(x-d)=x^2+(c-d)x+cd$;
   2) $(x-e)\cdot(x+d)=x^2-(e-d)x-ed$;
   3) $6ab+(2a^3+b^3-(3ab^2-(a^3+2ab^2-b^3)))=3a^3-ab^2+6ab$;
   4) $5a^2-3b^2-((a^2-2ab-b^2)-(5a^2-2ab-b^2))=9a^2-3b^2$.

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

5. 1) $2a^2-4ab+2b^2=(b-a)^2\cdot 2$
   2) $-\frac{x^3-y^3}{x^2+xy+y^2}=x-y$
   3) $-(a-b-c)=-a+b+c$
   4) $-\frac{a^2-1}{b}=\frac{a^2-1}{b}$. Ushbu tengliklarning qaysi biri ayniyat?

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

6. $\begin{cases} x+y=3 \\ x^2-y^2=-6, \end{cases}$ $y-?$

   A) 2,5 B) 0,5 C) 1 D) 3

7. $F(x)=-3ctgx-2x+C$ funksiya quyidagi funksiyalardan qaysi birining boshlang'ich funksiyasi bo'ladi?

   A) $f(x)=\frac{3}{cos^2x}-2$ B) $f(x)=-\frac{3}{sin^2x}+2$
   C) $f(x)=-\frac{3}{cos^2x}+2$ D) $f(x)=\frac{3}{sin^2x}-2$

8. Qo'shni burchaklardan biri ikinchisidan besh marta kichik bo'lsa, shu burchaklardan kattasini toping.

   A) 130° B) 150° C) 144° D) 140°

9. $\vec{a}(2;-3)$ va $\vec{b}(-2;-3)$ vektorlar berilgan. $\vec{m}=\vec{a}-2\vec{b}$ vektorning koordinatalarini ko'rsating.

   A) $(-3;6)$ B) $(6;3)$ C) $(2;-3)$
   D) $(-2;-9)$

10. Tekislikka tushirilgan og'maning uzunligi 75 ga, uning tekislikdagi proyeksiyasi esa 60 ga teng. Og'ma va tekislik orasidagi burchakni toping.

    A) $arcsin\frac{3}{5}$ B) $arccos\frac{3}{10}$ C) $arcsin\frac{3}{4}$
    D) $arcsin\frac{4}{5}$

11. Oxy tekisligiga nisbatan (1;2;3) nuqtaga simmetrik bo'lgan nuqtani toping.

    A) $(-1;-2;3)$ B) $(-1;2;3)$ C) $(1;-2;3)$
    D) $(1;2;-3)$

12. Quyidagi formulalardan qaysilari to'g'ri?
    1) $tg(x+y)=\frac{tgx+tgy}{1-tgx\cdot tgy}$,
    $x,y,x+y\neq\frac{\pi}{2}+\pi n, n\in Z$;
    2) $sin^2\frac{x}{2}=\frac{1+cosx}{2}$;
    3) $sinx+siny=2sin\frac{x+y}{2}cos\frac{x-y}{2}$;
    4) $tgx+tgy=\frac{sin(x+y)}{cosx\cdot cosy}$,
    $x,y\neq\frac{\pi}{2}+\pi n, n\in Z$.

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

13. Uchta sonning o'rta arifmetigi 13,9 ga teng. Agar sonlarning ikkitasi 20,2 va 21,7 bo'lsa, uchinchi sonni toping.

    A) $-0,2$ B) 12,1 C) 13 D) $-8,4$

14. 32 dan 62,4 necha foiz ortiq?

    A) 95 B) 90 C) 85 D) 89,5

15. $\frac{1-x^2}{1+x^2}\cdot(\frac{1}{(x-1)^2}-\frac{x}{1-x^2})$ ni soddalashtiring.

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

16. $3^{10}+2^{11}$ yig'indining oxirgi raqamini toping.

    A) 3 B) 5 C) 1 D) 7

17. $\frac{0,4^2-1}{2,8\cdot 0,4-2,8}$ ni hisoblang.

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

18. m ning qanday qiymatlarida $m(mx-1)=16x+4$ tenglama cheksiz ko'p ildizga ega?

    A) $m=3$ B) $m=0$ C) $m=-1$
    D) $m=-4$

19. $y^2 - ty + \frac{1}{2}t + 2 = 0$ tenglama teng ildizlarga ega bo'ladigan t ning barcha qiymatlari yig'indisini toping.
A) 1,5 B) 1 C) 2 D) -1

20. $-\frac{1}{4}; -\frac{5}{24}; \ldots$ arifmetik progressiyaning nechta hadi manfiy?
A) 6 B) 8 C) 7 D) 5

21. $f(x) = \sqrt{3} \cdot sinx + cos\frac{\pi}{3} - \frac{9x^2}{2\pi}$. $f'(\frac{\pi}{6}) = ?$
A) 0,5 B) $\sqrt{3}$ C) 0 D) $\frac{\sqrt{3}}{2}$

22. ΔABC da $\angle B = 90°, \angle C = 60°$. BB_1 balandlik 3 ga teng. AB ni toping.
A) 12 B) 6 C) $6\sqrt{2}$ D) $6\sqrt{3}$

23. Qavariq to'rtburchakning burchaklaridan biri to'g'ri burchak, qolganlari esa o'zaro 6 : 5 : 4 nisbatda. To'rtburchakning kichik burchagini toping.
A) 108° B) 60° C) 72° D) 90°

24. $ctg(\frac{\pi}{2} - 3x) = tg2x + tgx$ tenglamani yeching.
A) $\frac{\pi n}{3}$, $n \in Z$ B) $\frac{\pi n}{2}$, $n \in Z$
C) $\frac{\pi n}{2}; \pi n$, $n \in Z$ D) πn, $n \in Z$

25. 1 dan 120 gacha bo'lgan sonlar orasida 3 ga ham, 5 ga ham bo'linmaydiganlari nechta?
A) 64 B) 56 C) 61 D) 60

26. Sexda 120 ta samovar va 25 ta patnis yasalgan. Sarf qilingan hamma materialning 0,96 qismi samovarga ketgan. Agar har bir samovarning og'irligi 3,6 kg dan bo'lsa, har bir patnis necha kg bo'lgan?
A) 0,04 B) 0,8 C) 0,9 D) 0,72

27. n ning nechta butun qiymatida $\frac{n^2 - 5n - 2}{n + 1}$ kasr butun son bo'ladi?
A) 2 B) 6 C) 4 D) 3

28. $\sqrt{11 + 6\sqrt{2}} - \sqrt{11 - 6\sqrt{2}}$ ni hisoblang.
A) 22 B) 6 C) $3\sqrt{2}$ D) $\sqrt{8}$

29. Agar $\begin{cases} x + y - \sqrt{xy} = 13 \\ x^2 + y^2 + xy = 481 \end{cases}$ bo'lsa, $\sqrt{xy}$ ning qiymatini toping.
A) 42 B) 36 C) 52 D) 12

30. $\sqrt{x + 6} > x + 4$ tengsizlikni qanoatlantiruvchi butun sonlar nechta?
A) 2 B) 3 C) 1 D) 4

31. Olti haddan iborat geometrik progressiyaning dastlabki uchta hadining yig'indisi 168 ga, keyingi uchtasiniki esa 21 ga teng. Shu progressiyaning birinchi hadini toping.
A) 96 B) 86 C) 126 D) $\frac{1}{2}$

32. $log_2 log_{\frac{1}{2}} log_8 x > 0$ tengsizlikni yeching.
A) $(-\infty; 0) \bigcup (0; 2)$ B) $(1; 2)$ C) $(-\infty\ 2)$ D) $(0; 2)$

33. Aylanaga ichki chizilgan muntazam olti burchakning tomoni 12 ga teng. Shu aylanaga kvadrat ham ichki chizilgan. Kvadratga ichki chizilgan doiraning yuzini toping.
A) 90π B) 72π C) 36π D) 48π

34. Muntazam to'rtburchakli piramidaning yon qirrasi $6\sqrt{2}$ ga, yon qirra va asos tekisligi orasidagi burchak 45° ga teng. Piramidaning hajmini toping.
A) 144 B) $96\sqrt{2}$ C) 192 D) 72

35. Balandligi $\sqrt{3}$ ga, yasovchisi $2\sqrt{3}$ ga teng bo'lgan konusga tashqi chizilgan sharning radiusini toping.
A) 2 B) $2\sqrt{3}$ C) $3\sqrt{3}$ D) $3\sqrt{2}$

36. $sin(2arctg\frac{7}{24})$ ni hicoblang.
A) $\frac{336}{625}$ B) $\frac{226}{625}$ C) $\frac{326}{625}$ D) $\frac{236}{625}$

Matematika

1. Bir kombaynchi bug'doyzorning $\frac{2}{9}$ qismidagi bug'doyni, ikkinchisi $\frac{4}{9}$ qismidagi bug'doyni o'rib oldi. Bug'doyzorning qancha qismi o'rilmay qoldi?
A) $\frac{1}{9}$ B) $\frac{2}{9}$ C) $\frac{4}{9}$ D) $\frac{1}{3}$

2. $\frac{\sqrt{32}+\sqrt{98}-\sqrt{50}}{\sqrt{72}} : \frac{1}{\sqrt{2}}$ ni hisoblang.
A) 1 B) 2 C) $2\sqrt{2}$ D) $\sqrt{2}$

3. Quyidagi nuqtalarning qaysi biri $f(x) = -2x + 9$ funksiyaning grafigiga tegishli?
A) $(2;5)$ B) $(-1;1)$ C) $(1;-1)$
D) $(-5;2)$

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?
1) $(x-e)\cdot(x+d) = x^2+(e-d)x-ed$;
2) $12x^2+y^2-(8x^2-5y^2-(-10x^2+(5x^2-6y^2))) = -x^2$;
3) $5a^2-3b^2-((a^2-2ab-b^2)-(5a^2-2ab-b^2)) = 9a^2-3b^2$;
4) $3a-(2c-(6a-(c-b)+c+(a+8b)-6c)) = 10a+9b-8c$.
A) 1;3;4 B) 2;3;4 C) 1;2;3 D) 1;2;4

5. $(3a-b)^2+(3a+b)^2$ ni soddalashtiring.
A) $-2b^2$ B) $2b^2+18a^2$ C) $-6ab+2b^2$
D) $-12ab$

6. $\begin{cases} y+2=0 \\ x^2y=18 \end{cases}$ tenglamalar sistemasining yechimini toping.
A) $(-3;\ 2)$ B) $(-3;\ -2)$ C) $\emptyset$
D) $(-3;\ -2)$, $(3;\ -2)$

7. $f(x) = x^3$ funksiyaning $(2;\ 3)$ nuqtadan o'tuvchi boshlang'ich funksiyasini toping.
A) $\frac{x^2}{2}+1$ B) $\frac{x^4}{4}-1$ C) $\frac{x^4}{2}+3$
D) $\frac{x^4}{4}-3$

8. Aylananing MN vatari 120° li yoyni tortib turadi. MN vatar o'zi tortib turgan kichik yoyning ixtiyoriy nuqtasidan qanday burchak ostida ko'rinadi?
A) 120° B) 270° C) 110° D) 100°

9. $x^2+y^2+4x-6y-3=0$ tenglama bilan berilgan aylananing markazini toping.
A) $(2;-3)$ B) $(-2;3)$ C) $(-4;6)$
D) $(4;-3)$

10. Tekislikka og'ma va perpendikulyar tushirilgan. Og'maning tekislikdagi proyeksiyasi 21 ga, perpendikulyarning uzunligi 20 ga teng. Og'ma va perpendikulyar orasidagi burchakni toping.
A) $arccos\frac{20}{21}$ B) $arcsin\frac{21}{29}$ C) $arcsin\frac{20}{21}$
D) $arctg\frac{20}{29}$

11. Quyidagi nuqtalardan qaysi biri Oyz tekislikda yotadi?
A) $(2;0;-5)$ B) $(2;-3;0)$ C) $(0;9;-7)$
D) $(1;0;-4)$

12. Quyidagi formulalardan qaysilari to'g'ri?
1) $cos(x-y) = cosx\cdot cosy + sinx\cdot siny$;
2) $tg(x-y) = \frac{tgx-tgy}{1+tgx\cdot tgy}$,
$x, y, x-y \neq \frac{\pi}{2}+\pi n, n\in Z$;
3) $sin^2\frac{x}{2} = \frac{1+cosx}{2}$;
4) $tgx+tgy = \frac{sin(x+y)}{cosx\cdot cosy}$,
$x, y \neq \frac{\pi}{2}+\pi n, n\in Z$.
A) 1;3;4 B) 1;2;4 C) 2;3;4 D) 1;2;3

13. Quyidagi oddiy kasr ko'rinishida berilgan sonlardan qaysilarini chekli o'nli kasr ko'rinishiga keltirib bo'lmaydi:
1) $\frac{10}{65}$; 2) $\frac{7}{40}$; 3) $\frac{15}{85}$; 4) $\frac{18}{250}$?
A) *2; 3* B) *1; 2* C) *1; 3* D) *3; 4*

14. Mahsulotning narxi ketma-ket ikki marta 20% dan oshirildi. Keyinchalik bu mahsulotga talabning kamligi tufayli uning narxi 40% ga kamaytirildi. Mahsulotning keyingi bahosi dastlabki bahosiga qaraganda qanday o'zgargan?
A) 1,2% *ga ortgan* B) *o'zgarmagan*
C) 8,64% *ga kamaygan*
D) 13,6% *ga kamaygan*

15. $\frac{a^2+ab+b^2}{a^3-b^3}+\frac{a^2-ab+b^2}{a^3+b^3}$ ni soddalashtiring.
A) $\frac{2a}{a^2-b^2}$ B) $\frac{2b}{b^2-a^2}$ C) $\frac{2a}{b^2-a^2}$
D) $\frac{2b}{a^2-b^2}$

16. n ning qanday eng kichik natural qiymatida $2^{n-3}+1$ soni 33 ga qoldiqsiz bo'linadi?
A) 8 B) 7 C) 4 D) 6

17. $\frac{(32-16a^{\frac{1}{4}})\cdot(2a^{\frac{1}{4}}+a^{\frac{1}{2}})}{8a^{\frac{1}{4}}-2a^{\frac{3}{4}}}$ kasrni qisqartiring.
A) 4 B) 15 C) 8 D) 7,5

18. Velosipedchi butun yo'lning 0,6 qismini o'tgach, qolgan yo'l, u bosib o'tgan yo'ldan 8 km ga kamligi ma'lum bo'ldi. Butun yo'lning uzunligini (km) toping.
A) 24 B) 40 C) 36,6 D) 20

19. Agar y_1 va y_2 $y^2 - by + 2b - 3 = 0$ tenglamaning ildizlari bo'lsa, b ning qanday qiymatida $y_1^2 + y_2^2$ ifodaning qiymati eng kichik bo'ladi?
A) 2 B) 1,2 C) 1,5 D) 1

20. Geometrik progressiyaning maxraji 3 ga, dastlabki to'rtta hadlari yig'indisi 40 ga teng. Uning to'rtinchi hadini toping.
A) 32 B) 24 C) 27 D) 54

21. $y = 3x^4 - 4x^3 + 1$ funksiyaning $[0; 2]$ kesmadagi eng kichik qiymatini toping.
A) -16 B) 0 C) 1 D) -1

22. To'g'ri burchakli uchburchakning bir kateti $4\sqrt{3}$ ga, bu katet qarshisidagi burchak 60^0 ga teng. Ikkinchi katetni toping.
A) 4 B) $2\sqrt{3}$ C) $\sqrt{2}$ D) $\frac{4\sqrt{3}}{3}$

23. Bir uchi $(8; 2)$ nuqtada, o'rtasi $(4,5; -5,5)$ nuqtada bo'lgan kesmaning ikkinchi uchi koordinatalarini toping.
A) $(0; -24)$ B) $(1; -13)$ C) $(0; 26)$
D) $(0; -26)$

24. $\sin^4 x - \cos^4 x = \frac{1}{2}$ tenglama $[-2\pi; 2\pi]$ kesmada nechta ildizga ega?
A) 9 B) 8 C) 7 D) 10

25. 36455472363 ni 2, 4, 5, 9, 10 va 25 ga bo'lganda hosil bo'lgan qoldiqlar yig'indisini toping.
A) 16 B) 26 C) 14 D) 15

26. Korxonada mahsulot ishlab chiqarish birinchi yili 18% ga, ikkinchi yili 15% ga ortdi. Mahsulot ishlab chiqarish ikki yil mobaynida necha foizga ortgan?
A) 34,7 B) 35,7 C) 33 D) 35

27. Agar $\sqrt{t^5 + 3} - \sqrt{t^5 - 2} = 2$ bo'lsa, $\sqrt{t^5 + 3} + \sqrt{t^5 - 2}$ ning qiymati nechaga teng bo'ladi?
A) 3,5 B) 2 C) 2,5 D) 1

28. $\sqrt{\frac{9 + \sqrt{65}}{2}} + \sqrt{\frac{9 - \sqrt{65}}{2}}$ ni hisoblang.
A) $9 - \sqrt{10}$ B) $\sqrt{13}$ C) $7 - \sqrt{2}$ D) $\sqrt{5}$

29. Ikki xonali son o'zining raqamlari yig'indisidan 4 marta katta. Raqamlari kvadratlarining yig'indisi 80 ga teng. Shu ikki xonali sonning kvadratini hisoblang.
A) 196 B) 7056 C) 169 D) 2304

30. $|3 - x| \leq 4$ tengsizlikning butun sonlardan iborat yechimlari nechta?
A) 9 B) 4 C) 7 D) 8

31. Geometrik progressiyaning oltinchi va birinchi hadi ayirmasi 1210 ga, maxraji 3 ga teng. Shu progressiyaning dastlabki oltita hadi yig'indisini toping.
A) 1720 B) 1820 C) 605 D) 1520

32. $4^{log_2 x} + x^2 < 50$ tengsizlikning barcha butun sonlardan iborat yechimlari yig'indisini toping.
A) 10 B) 6 C) 7 D) 15

33. Kichik diagonali $24\sqrt{3}$ bo'lgan muntazam oltiburchakka tashqi chizilgan aylananing radiusini toping.
A) $12\sqrt{3}$ B) $24\sqrt{3}$ C) 24 D) 12

34. Muntazam to'rtburchakli kesik piramida asoslarining tomonlari 4 va 8 sm, diagonali 12 sm. Kesik piramidaning balandligi necha sm?
A) $6\sqrt{2}$ B) 3 C) 4,5 D) $8\sqrt{2}$

35. Konusning yasovchisi 20 ga, asosining diametri 24 ga teng. Unga ichki chizilgan shar sirtining yuzini toping.
A) 156π B) 169π C) 289π D) 144π

36. $2sin43^\circ cos17^\circ + 2sin^2 32^\circ - 1$ ni hisoblang.
A) $\frac{\sqrt{2}}{2}$ B) $\frac{1}{2}$ C) 1 D) $\frac{\sqrt{3}}{2}$

Matematika

1. G'ildirak $6\frac{2}{9}$ minutda $11\frac{1}{5}$ marta aylanadi. U 1 minutda necha marta aylanadi?
A) 1 B) $1\frac{4}{5}$ C) $1\frac{2}{5}$ D) $1\frac{3}{5}$

2. $a(b+c-bc)-b(c+a-ac)-c(b+a)$ ni soddalashtiring.
A) $2ac-2bc$ B) $-2abc$ C) $ab-ac$ D) $-2bc$

3. Agar $f(x)=(2x-\frac{1}{3})(4x+\frac{1}{4})$ bo'lsa, $f(\frac{1}{2})$ ni toping.
A) $\frac{7}{12}$ B) $-4,5$ C) $1,5$ D) $4,5$

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?
1) $(x+a)\cdot(x-b)=x^2+(a-b)x-ab$;
2) $(x-c)\cdot(x-d)=x^2-(c+d)x+cd$;
3) $(x-e)\cdot(x+d)=x^2+(e-d)x-ed$;
4) $5a^2-3b^2-((a^2-2ab-b^2)-(5a^2-2ab-b^2))=9a^2-3b^2$.
A) 2;3;4 B) 1;2;4 C) 1;2;3 D) 1;3;4

5. $\frac{0,4^2+2\cdot0,04+0,1^2}{0,5-0,5^2}$ ning qiymatini hisoblang.
A) -1 B) 1 C) 10 D) $-0,1$

6. $\begin{cases}x+y=6,\\x^2-y^2=12.\end{cases}$ $y-?$
A) 4 B) 2 C) 3 D) 1

7. $f(x)=x^3$ funksiyaning (2; 3) nuqtadan o'tuvchi boshlang'ich funksiyasini toping.
A) $\frac{x^2}{2}+1$ B) $\frac{x^4}{4}-1$ C) $\frac{x^4}{2}+3$ D) $\frac{x^4}{4}-3$

8. Aylananing MN vatari 120° li yoyni tortib turadi. MN vatar o'zi tortib turgan kichik yoyning ixtiyoriy nuqtasidan qanday burchak ostida ko'rinadi?
A) 120° B) 270° C) 110° D) 100°

9. $P(3;0)$ nuqtani koordinata boshi atrofida 90° ga burganda u qaysi nuqtaga o'tadi?
A) $(0;-3)$ B) $(-3;0)$ C) $(0;3)$ D) $(3;3)$

10. Tekislikka tushirilgan og'maning uzunligi 125 ga, uning tekislikdagi proyeksiyasi esa 35 ga teng. Og'ma va tekislik orasidagi burchakni toping.
A) $arccos\frac{12}{25}$ B) $arcsin\frac{24}{25}$ C) $arctg\frac{7}{48}$ D) $arcsin\frac{7}{25}$

11. Quyidagi nuqtalardan qaysi biri Oxz tekislikda yotadi?
A) $(0;-7;0)$ B) $(-4;3;0)$ C) $(2;-4;6)$ D) $(2;0;-8)$

12. Quyidagi formulalardan qaysilari to'g'ri?
1) $sin(x+y)=sinx\cdot cosy+cosx\cdot siny$;
2) $tg(x+y)=\frac{tgx-tgy}{1+tgx\cdot tgy}$, $x,y,x+y\neq\frac{\pi}{2}+\pi n, n\in Z$;
3) $sin^2\frac{x}{2}=\frac{1-cosx}{2}$;
4) $sinx+siny=2sin\frac{x+y}{2}cos\frac{x-y}{2}$.
A) 1;3;4 B) 2;3;4 C) 1;2;4 D) 1;2;3

13. $25\frac{1}{2}$ sonini 6;7;4 sonlariga mutanosib bo'laklarga bo'lgandagi eng kichik sonni toping.
A) 4 B) 3 C) 6 D) 5

14. 14% ga arzonlashtirilgandan keyin mahsulotning bahosi 2150 so'm bo'ldi. Mahsulotning dastlabki bahosini aniqlang.
A) 2500 B) 2250 C) 3000 D) 2750

15. $\frac{n^2-8n+7}{n^2-1}$ ni qisqartiring.
A) $\frac{n-7}{n+1}$ B) $\frac{n-7}{n-1}$ C) $\frac{n-7}{n-1}$ D) $\frac{n+7}{n+1}$

16. Agar $a=3$, $b=5$ bo'lsa, $\sqrt[3]{a^b+b^a-152}$ ni hisoblang.
A) $\sqrt[3]{200}$ B) $\sqrt[3]{150}$ C) 6 D) 5

17. Amallarni bajaring:
$\frac{9}{5-\sqrt{7}}-\frac{22}{7+\sqrt{5}}+\frac{1}{\sqrt{7}+\sqrt{5}}$.
A) 6 B) $\sqrt{7}-1$ C) 5 D) $\sqrt{7}-\sqrt{5}$

18. $\begin{cases}ax+by=6\\bx+ay=4\end{cases}$ tenglamalar sistemasi $x=3$, $y=2$ yechimga ega bo'lsa, a ning qiymatini toping.
A) 5 B) 4 C) 2 D) 3

19. Agar $x-\sqrt{x+3}-27=0$ bo'lsa, $\sqrt{x+3}$ ning qiymatini hisoblang.
A) 4 B) 5 C) 7 D) 6

20. Arifmetik progressiyaning o'n uchinchi hadi 3 ga teng. Uning dastlabki 25 ta hadi yig'indisini toping.
A) 100 B) 125 C) 225 D) 75

21. $f(x)=0,5x^2-x-1,5$ funksiya grafigining abssissasi 2 ga teng bo'lgan nuqtasiga o'tkazilgan urinmaning burchak koeffitsiyentini toping.
A) 2 B) 1 C) 4 D) 3

22. Uchburchakning tomonlari 4; 5 va 6 ga teng. 5 ga teng bo'lgan tomon qarshisidagi burchakning kosinusini toping.
A) $\frac{9}{16}$ B) $\frac{7}{16}$ C) $\frac{1}{8}$ D) $\frac{7}{8}$

23. Qavariq to'rtburchakning burchaklaridan biri to'g'ri burchak, qolganlari esa o'zaro $6:5:4$ nisbatda. To'rtburchakning kichik burchagini toping.
A) $108°$ B) $60°$ C) $72°$ D) $90°$

24. $4cos^2 2x - 2,5 = cos4x$ tenglamani yeching.
A) $\pm\frac{\pi}{12} + \frac{\pi n}{2}, n \in Z$ B) $\frac{\pi}{4} + \frac{n\pi}{2}, n \in Z$
C) $\frac{\pi}{3} + \frac{n\pi}{2}, n \in Z$ D) $\frac{\pi}{6} + \frac{n\pi}{2}, n \in Z$

25. 55 dan katta bo'lmagan barcha natural sonlarning ko'paytmasi nechta nol bilan tugaydi?
A) 12 B) 14 C) 11 D) 13

26. Ikki sex 690 ta kir yuvish mashinasi ishlab chiqarishi kerak. Birinchi sex ishlab chiqargan mahsulotning $\frac{2}{9}$ qismi ikkinchi sex ishlab chiqargan mahsulotning 80% iga teng. Birinchi sex qancha mahsulot ishlab chiqargan?
A) 180 B) 150 C) 540 D) 240

27. $\frac{x^3+1}{x^4+x^2+1}$ kasrni qisqartiring.
A) $\frac{x}{x+2}$ B) $\frac{x-1}{x^2-x+1}$ C) $\frac{x-2}{x^2-x-1}$
D) $\frac{x+1}{x^2+x+1}$

28. $\frac{\sqrt{3+2\sqrt{2}}+\sqrt{3-2\sqrt{2}}+\sqrt{2}}{4\sqrt{2}}$ ni hisoblang.
A) 0,5 B) $\frac{\sqrt{2}}{4}$ C) 0,75 D) $\frac{\sqrt{2}}{2}$

29. $(x-2)x(x-3)(x+1) = 40$ tenglama haqiqiy ildizlarining yig'indisini toping.
A) 2 B) 5 C) -4 D) -1

30. $\frac{(-x^2+x-1)(x^2-3x+2)}{x^2-7x+12} \geq 0$ tengsizlikning butun sonlardan iborat yechimlari nechta?
A) 1 B) 4 C) 3 D) 2

31. Arifmetik progressiyaning birinchi va to'rtinchi hadi yig'indisi 26 ga teng, ikkinchi hadi esa beshinchi hadidan 6 ga ko'p. Shu progressiyaning to'rtinchi va sakkizinchi hadi yig'indisini toping.
A) 10 B) 20 C) 12 D) 22

32. $x^{\log_2 x+2} < 8$ tengsizlikni yeching.
A) $(2^{-2}; 2)$ B) $(2^{-5}; 2)$ C) $(2^{-4}; 2)$
D) $(2^{-3}; 2)$

33. Teng yonli trapetsiyaning asoslari 10 va 18 ga, asosidagi burchagi $60°$ ga teng. Shu trapetsiyaning yuzini hisoblang.
A) $56\sqrt{3}$ B) $36\sqrt{3}$ C) $28\sqrt{3}$ D) $46\sqrt{3}$

34. Teng yonli ABC uchburchakning $(AB = AC)$ A uchidan uchburchak tekisligiga uzunligi 32 ga teng bo'lgan AD perpendikulyar o'tkazildi. D nuqtadan BC tomongacha bo'lgan masofa 40 ga teng. ABC uchburchakning BC tomoniga o'tkazilgan balandligi qanchaga teng?
A) 12 B) 24 C) 20 D) 14

35. Radiusi 15 ga teng bo'lgan sharga ichki chizilgan konusning balandligi 12 ga teng. Konusning hajmini toping.
A) 486π B) 756π C) 864π D) 672π

36. $tg(arccos\frac{4}{5} - arcsin\frac{7}{25})$ ni hisoblang.
A) $\frac{44}{75}$ B) $\frac{44}{117}$ C) $\frac{100}{117}$ D) $\frac{4}{3}$

Matematika

1. $(2\frac{17}{36} - 4\frac{7}{12}) : \frac{2}{9} - \frac{3}{26} \cdot 4\frac{1}{3}$ ni hisoblang.
   A) $8\frac{1}{2}$ B) 9 C) -10 D) 9

2. $\frac{x^3-8}{x^2+2x+4} - \frac{x^3+8}{x^2-2x+4}$ ni soddalashtiring.
   A) $4x$ B) -4 C) 0 D) $-2x$

3. k ning qanday qiymatida $y = kx^3 + 2$ funksiyaning grafigi $B(-2; -14)$ nuqtadan o'tadi?
   A) 1 B) 2 C) -1 D) $-0,5$

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?
   1) $(x+a)\cdot(x-b) = x^2 - (a\ \ b)x - ab$;
   2) $6ab + (2a^3 + b^3 - (3ab^2 - (a^3 + 2ab^2 - b^3))) = 3a^3 - ab^2 + 6ab$;
   3) $5a^2 - 3b^2 - ((a^2 - 2ab - b^2) - (5a^2 - 2ab - b^2)) = 9a^2 - 3b^2$;
   4) $3a - (2c - (6a - (c - b) + c + (a + 8b) - 6c)) = 10a + 9b - 8c$.
   A) 1; 3; 4 B) 1; 2; 4 C) 2; 3; 4 D) 1; 2; 3

5. $(m^2 - \frac{2+m^4}{m^2-1}) : \frac{m^2+2}{m-1}$ ni soddalashtiring.
   A) $\frac{1}{m-1}$ B) $m-1$ C) 1 D) $-\frac{1}{m+1}$

6. $\begin{cases} x + y = 3 \\ x^3 - y^2 = -6, \end{cases}$ $y-?$
   A) 2,5 B) 0,5 C) 1 D) 3

7. $f(x) = x - \frac{x^2}{2}$ funksiyaning (6; 2) nuqtadan o'tuvchi boshlang'ich funksiyasini toping.
   A) $\frac{x^2}{2} - \frac{x^3}{6} + 20$ B) $\frac{x^2}{2} + \frac{x^3}{6} - 56$
   C) $\frac{x^2}{2} - \frac{x^3}{6} + 18$ D) $\frac{x^2}{2} - \frac{x^3}{6} - 18$

8. $130°$ li yoyga tiralgan vatar aylanani ikki qismga ajratadi. Katta yoyning ixtiyoriy nuqtasidan qaraganda, bu vatar qanday burchak ostida ko'rinadi?
   A) $115°$ B) $65°$ C) $70°$ D) $120°$

9. Uchlari $A(3; -1)$ va $B(2; 4)$ nuqtada bo'lgan AB kesmaning o'rtasidagi nuqtaning koordinatalarini toping.
   A) $(-2,5;\ 1,5)$ B) $(2,5;\ 1,5)$ C) $(2,5;\ 3)$ D) $(2,5;\ -1,5)$

10. Tekislikka tushirilgan og'ma va perpendikulyar orasidagi burchak $arcsin\frac{7}{25}$ ga teng. Og'maning uzunligi 75 ga teng. Perpendikulyarning uzunligini toping.
    A) 21 B) 36 C) 72 D) $31\frac{1}{2}$

11. Quyidagilardan qaysi biri Oyz tekislikka nisbatan $P(3; -2; 4)$ nuqtaga simmetrik bo'lgan nuqta?
    A) $(3; 2; -4)$ B) $(3; 2; 4)$ C) $(-3; -2; 4)$ D) $(-3; 2; -4)$

12. Quyidagi formulalardan qaysilari to'g'ri?
    1) $tg(x-y) = \frac{tgx - tgy}{1 + tgx \cdot tgy}$,
    $x, y, x - y \neq \frac{\pi}{2} + \pi n, n \in Z$;
    2) $cos^2\frac{x}{2} = \frac{1 - cosx}{2}$;
    3) $sinx - siny = 2cos\frac{x+y}{2}sin\frac{x-y}{2}$;
    4) $tgx - tgy = \frac{sin(x-y)}{cosx \cdot cosy}$,
    $x, y \neq \frac{\pi}{2} + \pi n, n \in Z$.
    A) 2; 3; 4 B) 1; 2; 3 C) 1; 2; 4 D) 1; 3; 4

13. Quyidagi oddiy kasr ko'rinishida berilgan sonlardan qaysilarini chekli o'nli kasr ko'rinishiga keltirib bo'lmaydi:
    1) $\frac{2}{34}$; 2) $\frac{14}{625}$; 3) $\frac{4}{90}$; 4) $\frac{11}{125}$?
    A) *2; 3* B) *1; 3* C) *4; 1* D) *3; 4*

14. Umumiy daftarning bahosi oldin 15%, keyin 139 so'm arzonlashgach, 150 so'm bo'ldi. Daftarning dastlabki bahosi necha so'm bo'lgan?
    A) 500 B) 400 C) 340 D) 350

15. $(\frac{4a}{4-a^2} - \frac{a-2}{4+2a}) \cdot \frac{2}{a+2} + \frac{a+1}{2-a}$ ni soddalashtiring.
    A) $\frac{2+a}{2-a}$ B) -1 C) 1 D) $\frac{3+a}{2-a}$

16. $\sqrt[5]{1024 \cdot 108} + 0,5 \cdot \sqrt[5]{32 \cdot 243}$ ni hisoblang.
    A) 48 B) 45 C) 51 D) 49

17. Agar $a = 6 + \sqrt{3}$ va $b = 6 - \sqrt{3}$ bo'lsa, $\frac{a^3 - b^3}{a^2 - b^2} : \frac{a^2 + ab + b^2}{a^3 + 3a^2b + 3ab^2 + b^3}$ ning qiymatini hisoblang.
    A) 198 B) 144 C) 169 D) 196

18. Ikki sonning yig'indisi 24 ga teng. Agar shu sonlardan birining 60% i ikkinchisining $\frac{3}{10}$ qismiga teng bo'lsa, shu sonlarni toping.
A) 20 va 4 B) 18 va 6 C) 8 va 16
D) 7 va 17

19. $x^2 - \frac{a}{4}x + a = 0$ tenglamaning ildizlaridan biri 1 ga teng. Tenglamaning ikkinchi ildizini toping.
A) $-\frac{1}{2}$ B) $-\frac{4}{3}$ C) $-\frac{1}{3}$ D) $\frac{1}{3}$

20. $a_n = 4n - 12$ $(n \in N)$ formula bilan berilgan ketma-ketlikning dastlabki 60 ta hadining yig'indisini toping.
A) 6000 B) 4500 C) 7200 D) 6600

21. $y = \frac{1}{3}x^3 + \frac{1}{2}x^2 - 6x$ funksiyaning grafigiga o'tkazilgan urinma x ning qanday qiymatlarida $y = 4x - 1$ to'g'ri chiziqqa parallel bo'ladi?
A) -4 va 3 B) -3 va 2 C) -5 va 4
D) -2 va 1

22. Teng yonli uchburchakning asosi 40 ga, unga tushirilgan balandligi 21 ga teng. Uchburchakning yon tomonini toping.
A) 27 B) 29 C) 19 D) 31

23. Romb diagonallarining tomonlari bilan hosil qilgan burchaklari kattaliklarining nisbati 4:5 ga teng. Rombning kichik burchagini toping.
A) 50° B) 80° C) 60° D) 40°

24. k ning quyida ko'rsatilgan qiymatlaridan qaysi birida $cos kx \cdot cos 4x - sin kx \cdot sin 4x = \frac{\sqrt{3}}{2}$ tenglamaning ildizlari $\pm\frac{\pi}{30} + \frac{2\pi n}{5}$ $(n \in Z)$ bo'ladi?
A) 3 B) 2 C) 1 D) 4

25. 6 ni berilgan songa ko'paytirganda, hosil bo'lgan son ...14 ko'rinishda bo'lsa, berilgan son quyidagilardan qaysi biri ko'rinishida bo'lishi mumkin?
A) ...19 B) ...24 C) ...14 D) ...79

26. x y ning 75% ini tashkil etadi, y esa z dan 300% ga ko'p. x z dan necha foiz ko'p?
A) 80 B) 100 C) 250 D) 200

27. $\sqrt{17 - 12\sqrt{2}} \cdot (9 + 6\sqrt{2})$ ning qiymatini hisoblang.
A) 3 B) $2\sqrt{2}$ C) 2 D) $\sqrt{3 + \sqrt{8}}$

28. $(\sqrt{10} - \sqrt{2}) \cdot \sqrt{3 - \sqrt{5}} \cdot (3 + \sqrt{5}) - 2$ ni hisoblang.
A) 4 B) 8 C) 6 D) 10

29. a ning qanday qiymatida faqat bitta $(x;\ y)$ juftlik $\begin{cases} x + y = a \\ xy = 0,25 \end{cases}$ tenglamalar sistemasini qanoatlantiradi?
A) $\frac{1}{2}; -\frac{1}{2}$ B) $-1; 1$ C) $-3; 3$ D) -3

30. $2|x + 3| \le |x - 6|$ tengsizlikning butun sonlardan iborat yechimlari nechta?
A) 5 B) 13 C) 10 D) 6

31. Cheksiz kamayuvchi geometrik progressiyaning yig'indisi 9 ga, maxraji esa $\frac{1}{3}$ ga teng. Uning birinchi hamda to'rtinchi hadlarining ayirmasini toping.
A) $4\frac{2}{9}$ B) $5\frac{1}{3}$ C) $5\frac{7}{9}$ D) $5\frac{2}{3}$

32. $\frac{2\log_4 x}{2 + \log_4 x} \le 1$ tengsizlikning yechimlaridan iborat tub sonlarning yig'indisini toping.
A) 28 B) 17 C) 21 D) 41

33. Muntazam oltiburchakka tashqi chizilgan aylananing radiusi $8\sqrt{3}$ ga teng. Uning parallel tomonlari orasidagi masofa topilsin.
A) 12 B) 18 C) 16 D) 24

34. Muntazam to'rtburchakli kesik piramida asoslarining tomonlari 3 va 5 sm, diagonali $2\sqrt{17}$ sm. Kesik piramidaning balandligi necha sm?
A) 7 B) 6 C) 8 D) 5

35. Balandligi 9 ga, yasovchisi 15 ga teng konusga ichki chizilgan sharning sirtining yuzini toping.
A) 72π B) 56π C) 48π D) 64π

36. $8 sin^2 \frac{25\pi}{24} \cdot cos^2 \frac{23\pi}{24} - 1$ ni hisoblang.
A) $\frac{\sqrt{3}}{2}$ B) $-\frac{\sqrt{3}}{2}$ C) $\frac{1}{2}$ D) $-\frac{1}{2}$

Matematika

1. $6\frac{3}{8} - (2,5 - 2\frac{1}{3}) : 1\frac{1}{3}$ ni hisoblang.
   A) $5\frac{1}{4}$ B) $5\frac{2}{3}$ C) $6\frac{1}{4}$ D) $4\frac{1}{2}$

2. $\frac{\sqrt[4]{-24} + \sqrt[4]{81} + \sqrt[4]{192} + 3\sqrt[3]{-375}}{\sqrt[3]{-375}} - 1$ ni hisoblang.
   A) 1 B) -1 C) 0 D) 3

3. Agar $f(x) = (3 + \frac{1}{x})(11 + 4x)$ bo'lsa, $f(-\frac{1}{2})$ ni toping.
   A) -3 B) 9 C) -5 D) 15

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?
   1) $(x - c) \cdot (x - d) = x^2 + (c - d)x + cd$;
   2) $(x - e) \cdot (x + d) = x^2 - (e - d)x - ed$;
   3) $12x^2 + y^2 - (8x^2 - 5y^2 - (-10x^2 + (5x^2 - 6y^2))) = -x^2$;
   4) $5a^2 - 3b^2 - ((a^2 - 2ab - b^2) - (5a^2 - 2ab - b^2)) = 9a^2 - 3b^2$.
   A) 2;3;4 B) 1;2;4 C) 1;2;3 D) 1;3;4

5. $\frac{0,05 \cdot 0,9 - 0,05}{0,2^2 - 2 \cdot 0,06 + 0,3^2}$ ning qiymatini hisoblang.
   A) -2 B) 0,2 C) 0,25 D) $-0,5$

6. $\begin{cases} x + 2 = 0 \\ x^2 y = 8 \end{cases}$ tenglamalar sistemasini yeching.
   A) $(-2;2)$ B) $(-2;-2)$ C) $\emptyset$
   D) $(-2;2), (-2;-2)$

7. $f(x) = x^3 + 3x - 5$ funksiyaning $[-1;1]$ kesmadagi eng katta va eng kichik qiymatlari orasidagi ayirmani toping.
   A) 6 B) -6 C) 8 D) -5

8. Ikki qo'shni burchakning ayirmasi 28° ga teng. Shu burchaklardan kichigini toping.
   A) 78° B) 72° C) 76° D) 82°

9. $\vec{a}(2;-3)$ va $\vec{b}(-2;-3)$ vektorlar berilgan. $\vec{m} = \vec{a} - 2\vec{b}$ vektorning koordinatalarini ko'rsating.
   A) $(-3;6)$ B) $(6;3)$ C) $(2;-3)$
   D) $(-2;-9)$

10. Tekislikka tushirilgan og'ma va perpendikulyar orasidagi burchak $arcsin\frac{5}{13}$ ga teng. Og'maning uzunligi 39 ga teng. Perpendikulyarning uzunligini toping.
    A) 72 B) $11\frac{7}{13}$ C) 36 D) $27\frac{9}{13}$

11. Oxz tekisligiga nisbatan $(1;2;3)$ nuqtaga simmetrik bo'lgan nuqtani toping.
    A) $(-1;-2;3)$ B) $(-1;2;3)$ C) $(1;-2;3)$
    D) $(1;2;-3)$

12. Quyidagi formulalardan qaysilari to'g'ri?
    1) $cos(x - y) = cosx \cdot cosy + sinx \cdot siny$;
    2) $tg(x + y) = \frac{tgx + tgy}{1 - tgx \cdot tgy}$,
    $x, y, x + y \neq \frac{\pi}{2} + \pi n, n \in Z$;
    3) $cosx + cosy = -2sin\frac{x+y}{2} sin\frac{x-y}{2}$;
    4) $tgx - tgy = \frac{sin(x-y)}{cosx \cdot cosy}$,
    $x, y \neq \frac{\pi}{2} + \pi n, n \in Z$.
    A) 1;2;4 B) 2;3;4 C) 1;3;4 D) 1;2;3

13. Ikki sonning ko'paytmasi 5,76 ga teng. Birinchi ko'paytuvchi 0,8 ga, ikkinchi ko'paytuvchi 1,6 ga bo'linsa, ko'paytma necha bo'ladi?
    A) 10 B) 6 C) 4,5 D) 12

14. Mahsulotning narxi ketma-ket ikki marta 20% ga oshirilgandan so'ng 516 so'm bo'ldi. Birinchi ko'tarilgandan so'ng mahsulotning narxi necha so'm bo'lgan?
    A) 430 B) 416 C) 486 D) 480

15. $\left(\frac{1}{a(a+1)} + \frac{1}{(a+1)(a+2)}\right) \cdot \frac{a^2 + 2a}{8}$ ni soddalashtiring.
    A) $\frac{1}{8}$ B) $\frac{1}{6}$ C) $\frac{1}{4}$ D) $\frac{3}{4}$

16. $\sqrt{19 - \sqrt{192}}$ ni soddalashtiring.
    A) $4 - \sqrt{3}$ B) $4 + \sqrt{3}$ C) $10 - \sqrt{3}$
    D) $\sqrt{3} - 4$

17. $\frac{3,6 \cdot (1,7^3 - 1,5^3)}{5,1^2 + 5,1 \cdot 4,5 + 4,5^2}$ ni hisoblang.
    A) 0,08 B) 0,45 C) 0,06 D) 0,3

18. $2,5(ax - 5,2) = 2a - 5x - 9$ tenglama a ning qanday qiymatlarida cheksiz ko'p yechimga ega?
    A) 2 B) $-\frac{1}{2}$ C) -2 D) $\frac{1}{2}$

19. $x^2 = |6 - 5x|$ tenglamaning nechta ildizi bor?
    A) 1 B) 4 C) 3 D) 2

20. Birinchi hadi 4 ga, o'n birinchi hadi 8 ga teng bo'lgan arifmetik progressiyaning oltinchi hadini toping.
    A) 5 B) 4 C) 7 D) 6

21. $f(x)=\frac{1}{3}x^3-5lnx$ funksiyaning grafigiga $x_0=2$ nuqtada o'tkazilgan urinmaning burchak koeffitsiyentini toping.
A) 3 B) 3,5 C) 1,5 D) 2

22. Uchburchakning kichik tomoni 3 ga, unga tashqi chizilgan aylananing diametri esa $2\sqrt{3}$ ga teng. Uchburchakning kichik burchagini toping.
A) 45° B) 30° C) 75° D) 60°

23. Parallelogrammning diagonallari 7 va 24 ga teng. Uning barcha tomonlari kvadratlarining yig'indisini toping.
A) 1150 B) 1250 C) 625 D) 1350

24. $4cos5x=6+3cos(\frac{\pi}{2}+5x)$ tenglama $[-\pi;\ 2\pi]$ kesmada nechta ildizga ega?
A) 1 B) $\emptyset$ C) 3 D) 2

25. 100 va 125 so'mlik daftarlardan hammasi bo'lib 1750 so'mlik xarid qilindi. Quyida keltirilgan sonlardan qaysi biri 100 so'mlik daftarlarning soniga teng bo'lishi mumkin?
A) 15 B) 14 C) 17 D) 16

26. Daftarning narxi ketma-ket ikki marta bir xil foizga pasaytirilgandan keyin, 90 so'mdan 72,9 so'mga tushdi. Daftarning narxi har gal necha foizga pasaytirilgan?
A) 9 B) 20 C) 10 D) 15

27. Agar $a+a^{-1}=6$ bo'lsa, a^3+a^{-3} ni hisoblang.
A) 198 B) 216 C) 210 D) 234

28. $\sqrt[3]{a}=\sqrt[3]{c}+\sqrt[3]{b}$ bo'lsa, $(a-b-c)^3$ ni toping.
A) $81abc$ B) $-27abc$ C) $27abc$
D) $-81a^2b^2c^2$

29. Agar $y-x=2$ va $a>0$ bo'lsa, $\begin{cases} y^2-x^2=6a \\ y+x=1,5a^2 \end{cases}$ tenglamalar sistemasini yeching.
A) (7;9) B) (5;7) C) (2;4) D) (4;6)

30. $2\mid x-3\mid\leq\mid x+3\mid$ tengsizlikning butun sonlardan iborat yechimlari nechta?
A) 5 B) 6 C) 0 D) 9

31. (b_n) geometrik progressiyada $b_4-b_2=24$ va $b_2+b_3=6$ bo'lsa, b_2 ning qiymatini toping.
A) 1 B) 0,4 C) 2,2 D) $1\frac{1}{5}$

32. $a=2log_25$, $b=4\log_{\frac{1}{4}}\frac{5}{26}$, $c=3\log_{\frac{1}{8}}\frac{1}{23}$ sonlarni o'sish tartibida joylashtiring.
A) $a<b<c$ B) $b<a<c$ C) $c<a<b$
D) $b<c<a$

33. Rombning yuzi 120 ga, diagonallaridan biri 24 ga teng. Uning tomonini toping.
A) 13 B) 10 C) 14 D) 8

34. Muntazam to'rtburchakli kesik piramida asoslarining tomonlari 4 va 8 sm, diagonali 12 sm. Kesik piramidaning balandligi necha sm?
A) $6\sqrt{2}$ B) 3 C) 4,5 D) $8\sqrt{2}$

35. Qirrasi 12 ga teng bo'lgan kub yoqlarining markazlari tutashtirildi. Hosil bo'lgan jismning hajmini toping.
A) 144 B) 288 C) 216 D) 169

36. $cos^284°+cos^236°+cos84°\cdot cos36°$ ni soddalashtiring.
A) $\frac{1}{2}$ B) $\frac{3}{4}$ C) $\frac{2}{3}$ D) $\frac{1}{4}$

Matematika

1. $-1\frac{3}{4}\cdot 6,5\cdot(-\frac{4}{7})-9,25$ ni hisoblang.
A) $-10,25$ B) $-2,75$ C) $3,75$ D) $2,75$

2. $a(b-c)-b(c-a)-c(a-b)$ ni soddalashtiring.
A) $2ab-2ac$ B) $-2ac$ C) $2ab-2bc$
D) 0

3. Toq funksiyani ko'rsating.
A) $f(x)=\cos x+\sin x$
B) $f(x)=\cos^2 x-\cos x$
C) $f(x)=e^x+\operatorname{ctg} x$
D) $f(x)=(1-cos2x)\cdot ctgx-2x$

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?
1) $(x+a)\cdot(x-b)=x^2-(a-b)x-ab$;
2) $(x-c)\cdot(x-d)=x^2-(c+d)x+cd$;
3) $(x-e)\cdot(x+d)=x^2-(e-d)x-ed$;
4) $6ab+(2a^3+b^3-(3ab^2-(a^3+2ab^2-b^3)))=3a^3-ab^2+6ab$.
A) 2;3;4 B) 1;2;3 C) 1;2;4 D) 1;3;4

5. Quyida keltirilgan tengliklardan qaysi biri ayniyat?
A) $2mn-n^2-m^2=-(m+n)^2$
B) $\frac{m^3-n^3}{m-n}=m^2-mn+n^2$
C) $-\frac{m-n}{n}=\frac{-m-n}{n}$
D) $m-(m-n)-(m+n)=-m$

6. $\begin{cases}x^2+y^2-xy=1,\\ x+y=-2.\end{cases}$ $2xy=?$
A) -1 B) 1 C) -3 D) 2

7. $f(x)=-x+\frac{x^2}{2}$ funksiyaning $(6;2)$ nuqtadan o'tuvchi boshlang'ich funksiyasini toping.
A) $-\frac{x^2}{2}+\frac{x^3}{6}-18$ B) $-\frac{x^2}{2}+\frac{x^3}{6}-16$
C) $-\frac{x^2}{2}+\frac{x^3}{6}+18$ D) $-\frac{x^2}{2}+\frac{x^3}{6}+16$

8. Aylananing kesishuvchi ikki vatari orasidagi burchaklardan biri 100° ga teng. Shu burchakka qo'shni bo'lgan burchaklarning yig'indisini toping.
A) 90° B) 100° C) 160° D) 200°

9. $x^2+y^2+4x-6y-3=0$ tenglama bilan berilgan aylananing markazini toping.
A) $(2;-3)$ B) $(-2;3)$ C) $(-4;6)$
D) $(4;-3)$

10. Tekislikka og'ma va perpendikulyar tushirilgan. Og'ma va tekislik orasidagi burchak $arccos\frac{4}{5}$ ga, og'maning tekislikdagi proyeksiyasi 36 ga teng. Perpendikulyarning uzunligini toping.
A) 27 B) $21\frac{3}{5}$ C) 48 D) $28\frac{4}{5}$

11. Quyidagilardan qaysi biri Oxz tekislikka nisbatan $K(2;4;-5)$ nuqtaga simmetrik bo'lgan nuqta?
A) $(2;-4;5)$ B) $(-2;4;5)$ C) $(-2;-4;5)$
D) $(2;-4;-5)$

12. Quyidagi formulalardan qaysilari to'g'ri?
1) $tg(x-y)=\frac{tgx-tgy}{1+tgx\cdot tgy}$,
$x,y,x-y\neq\frac{\pi}{2}+\pi n, n\in Z$;
2) $sin^2\frac{x}{2}=\frac{1-cosx}{2}$;
3) $sinx+siny=2cos\frac{x+y}{2}sin\frac{x-y}{2}$;
4) $tgx-tgy=\frac{sin(x-y)}{cosx\cdot cosy}$,
$x,y\neq\frac{\pi}{2}+\pi n, n\in Z$.
A) 1;2;4 B) 2;3;4 C) 1;3;4 D) 1;2;3

13. $0,26\cdot0,00015$ ko'paytma quyidagi sonlardan qaysi biriga teng emas?
A) $390\cdot10^{-7}$ B) $3,9\cdot10^{-5}$ C) $3,9\cdot10^{-6}$
D) $39\cdot10^{-6}$

14. To'g'ri to'rtburchakning bo'yi 20% ga orttirildi. Uning yuzi o'zgarmasligi uchun enini necha foizga kamaytirish kerak?
A) $16\frac{2}{3}$ B) 20 C) $18\frac{1}{3}$ D) 25

15. $(\frac{1}{m^2-m}-\frac{1}{m-1})\cdot\frac{m}{m+2}+\frac{m+1}{m+2}$ ni soddalashtiring.
A) $\frac{m}{m-2}$ B) $\frac{2m-2}{m^2-4}$ C) $\frac{m}{m+2}$
D) $\frac{2}{m^2-4}$

16. $\frac{\left(\frac{1}{343}\right)^{-1/3}+\left(\frac{1}{8}\right)^{-1/3}}{\sqrt[3]{18\sqrt{144}}}$ ni hisoblang.
A) $\frac{5}{16}$ B) $\frac{3}{2}$ C) $\frac{4}{7}$ D) $\frac{2}{3}$

17. $\frac{x^4+1}{x^2-x\sqrt{2}+1}$ ni qisqartiring.
A) $x^2-x\sqrt{2}-1$ B) x^2+1 C) x^2-1
D) $x^2+\sqrt{2}x+1$

18. Bir son ikkinchi sondan 6 ta ortiq. Ularning o'rta arifmetigi 23 ga teng. Shu sonlardan kattasini toping.
A) 27 B) 23 C) 26 D) 33

19. $x^2 - 9x + q = 0$ tenglamaning ildizlaridan biri 2 ga teng. Bu tenglamaning barcha koeffitsiyentlari yig'indisini toping.
A) -6 B) 2 C) 6 D) 3

20. Hadlari $b_n = 3n - 10,5$ $(n \in N)$ formula bilan berilgan ketma-ketlikning dastlabki 40 ta hadi yig'indisini toping.
A) 2040 B) 4860 C) 5440 D) 5140

21. Qaysi to'g'ri chiziq $y = 4 - x^2$ funksiya grafigiga $x_0 = -\frac{1}{2}$ nuqtada o'tkazilgan urinmaga parallel bo'ladi?
A) $y = 2x + 8$ B) $y = 4 - 4x$
C) $y = 4x + 8$ D) $y = x + 8$

22. Teng yonli uchburchakning asosi 40 ga, unga tushirilgan balandligi 21 ga teng. Uchburchakning yon tomonini toping.
A) 27 B) 29 C) 19 D) 31

23. a va b ning qanday qiymatlarida $ax + by = -4$ va $3x - 3y = 4$ to'g'ri chiziqlar ustma-ust tushadi?
A) $a = -3; b = 3$ B) $a = 3; b = -3$
C) $a = 3; b = -1$ D) $a = b = 3$

24. $cos^2\frac{x}{4} > \frac{\sqrt{2}}{2} + sin^2\frac{x}{4}$ tengsizlikni yeching.
A) $\frac{\pi}{8} + \pi n < x < \frac{7\pi}{8} + \pi n,\ n \in Z$
B) $\frac{\pi}{8} + 2\pi n < x < \frac{7\pi}{8} + 2\pi n,\ n \in Z$
C) $\frac{\pi}{4} + 2\pi n < x < \frac{7\pi}{4} + 2\pi n,\ n \in Z$
D) $-\frac{\pi}{2} + 4\pi n < x < \frac{\pi}{2} + 4\pi n,\ n \in Z$

25. M ta sonning o'rta arifmetigi 14 ga, boshqa N tasiniki - 28 ga teng. Shu $M + N$ ta sonning o'rta arifmetigini toping.
A) $\frac{M+N}{42}$ B) $\frac{N}{M}$ C) $\frac{14M + 28N}{M+N}$
D) $\frac{14N + 28M}{M+N}$

26. Korxonada mahsulot ishlab chiqarish birinchi yili 18% ga, ikkinchi yili 15% ga ortdi. Mahsulot ishlab chiqarish ikki yil mobaynida necha foizga ortgan?
A) 34,7 B) 35,7 C) 33 D) 35

27. $\left(\frac{\sqrt{y} - \sqrt{x}}{y - \sqrt{xy} + x} + \frac{x}{x\sqrt{x} + y\sqrt{y}}\right) \cdot \frac{x\sqrt{x} + y\sqrt{y}}{y}$ ni soddalashtiring.
A) $\sqrt{x} - \sqrt{y}$ B) $\sqrt{x} + \sqrt{y}$ C) $\sqrt{y}$

28. $\frac{1}{\sqrt{2} + \sqrt{3} + \sqrt{5}}$ kasrning maxrajini irratsionallikdan qutqaring.
A) $\frac{2\sqrt{3} - 3\sqrt{2} + \sqrt{30}}{12}$ B) $\frac{2\sqrt{3} + 3\sqrt{2} - \sqrt{30}}{12}$
C) $\frac{3\sqrt{2} - 2\sqrt{3} + \sqrt{30}}{12}$ D) $\frac{3\sqrt{2} - 2\sqrt{3} - \sqrt{30}}{12}$

29. $\begin{cases} x^3 + y^3 = 126 \\ x^2y + xy^2 = 30 \end{cases}$ tenglamalar sistemasining haqiqiy yechimlaridan iborat barcha x va y larning yig'indisini toping.
A) 2 B) 12 C) 10 D) 6

30. $4x^2 - 16x \le -7$ tengsizlikning butun sonlardan iborat yechimlari yig'indisini toping.
A) -4 B) 3 C) 6 D) 5

31. Ikkinchi hadi 6 ga teng, birinchi uchta hadining yig'indisi 26 ga teng o'suvchi geometrik progressiyaning to'rtinchi va ikkinchi hadlari ayirmasini toping.
A) 16 B) 32 C) 48 D) 36

32. $log_{0,5}(x+3)^4 > log_{0,5}(3x-7)^4$ tengsizlikni yeching.
A) $(5; \infty)$ B) $(-\infty; -3) \cup (-3; 1) \cup (5; \infty)$
C) $(-\infty; 1) \cup (1; \infty)$ D) $(-3; 1) \cup (5; \infty)$

33. Aylanaga ichki chizilgan muntazam olti burchakning tomoni 12 ga teng. Shu aylanaga kvadrat ham ichki chizilgan. Kvadratga ichki chizilgan doiraning yuzini toping.
A) 90π B) 72π C) 36π D) 48π

34. Muntazam to'rtburchakli piramidaning yon qirrasi $6\sqrt{2}$ ga, yon qirra va asos tekisligi orasidagi burchak $45°$ ga teng. Piramidaning hajmini toping.
A) 144 B) $96\sqrt{2}$ C) 192 D) 72

35. Yasovchisi 15 ga, asosining radiusi 9 ga teng bo'lgan konusga ichki chizilgan sharning radiusini toping.
A) 6 B) 4,5 C) $3\sqrt{2}$ D) $4,5\sqrt{3}$

36. $cos(2arcsin\frac{4}{5})$ ni hisoblang.
A) $\frac{7}{25}$ B) $\frac{24}{25}$ C) $-\frac{24}{25}$ D) $-\frac{7}{25}$

Matematika

1. Chumoli 5 minutda $18\frac{1}{3}$ m yuradi. U 1 minutda necha metr yuradi?
   A) $3\frac{2}{3}$ B) $3\frac{5}{6}$ C) $3\frac{1}{3}$ D) $3\frac{1}{6}$

2. Agar $ab = 9$ va $3b = 8,1c$ bo'lsa, ac ni hisoblang.
   A) $2\frac{5}{8}$ B) $3\frac{1}{3}$ C) $2\frac{1}{2}$ D) $2\frac{4}{9}$

3. Agar $f(x) = (2x+3)(\frac{3}{x} - 3)$ bo'lsa, $f(-1)$ ni toping.
   A) 6 B) 0 C) -3 D) -6

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?
   1) $(x-c)\cdot(x+d) = x^2 - (e-d)x - cd$;
   2) $12x^2+y^2-(8x^2-5y^2-(-10x^2+(5x^2-6y^2))) = -x^2$;
   3) $6ab + (2a^3+b^3-(3ab^2-(a^3+2ab^2-b^3))) = 3a^3 - ab^2 + 6ab$;
   4) $5a^2-3b^2-((a^2-2ab-b^2)-(5a^2-2ab-b^2)) = 9a^2+4ab-3b^2$.
   A) 1;3;4 B) 1;2;3 C) 1;2;4 D) 2;3;4

5. Quyida keltirilgan tengliklardan qaysi biri ayniyat?
   A) $2mn - n^2 - m^2 = (m+n)^2$
   B) $\frac{m^3-n^3}{m-n} = m^2 - mn + n^2$
   C) $\frac{m-n}{n} = \frac{-m-n}{n}$
   D) $m-(m-n)-(m+n) = -m$

6. $\begin{cases} x+3=0 \\ xy^2 = 12 \end{cases}$ tenglamalar sistemasining yechimini toping.
   A) $(-3;\ -2)$ B) $(-3;\ 2)$
   C) $(-3;\ -2),\ (-3;\ 2)$ D) $\emptyset$

7. $y = e^{2-3x}$ funksiyaning boshlang'ich funksiyasini ko'rsating.
   A) $e^{2-3x} + C$ B) $\frac{1}{3}e^{2-3x} + C$
   C) $-\frac{1}{3}e^{2-3x} + C$ D) $-3e^{2-3x} + C$

8. Aylananing AB vatari o'zi ajratgan yoylardan birining ixtiyoriy nuqtasidan $40°$ li burchak ostida ko'rinadi. A va B nuqta chegarasi bo'lgan yoylar necha gradus?
   A) $80°$ va $280°$ B) $160°$ va $200°$
   C) $110°$ va $250°$ D) $100°$ va $260°$

9. $x^2+y^2-4x+6y-3=0$ tenglama bilan berilgan aylananing markazini toping.
   A) $(4;-4)$ B) $(-4;-3)$ C) $(2;-3)$
   D) $(-4;6)$

10. Tekislikka og'ma va perpendikulyar tushirilgan. Og'maning tekislikdagi proyeksiyasi 11 ga, perpendikulyarning uzunligi 60 ga teng. Og'ma va perpendikulyar orasidagi burchakni toping.
    A) $arccos\frac{11}{60}$ B) $arcsin\frac{11}{61}$ C) $arcsin\frac{11}{60}$
    D) $arctg\frac{60}{61}$

11. Oxy tekisligiga nisbatan $(1;2;3)$ nuqtaga simmetrik bo'lgan nuqtani toping.
    A) $(-1;-2;3)$ B) $(-1;2;3)$ C) $(1;-2;3)$
    D) $(1;2;-3)$

12. Quyidagi formulalardan qaysilari to'g'ri?
    1) $cos(x-y) = cosx\cdot cosy + sinx\cdot siny$;
    2) $tg(x-y) = \frac{tgx-tgy}{1+tgx\cdot tgy}$;
    $x, y, x-y \neq \frac{\pi}{2} + \pi n, n \in Z$;
    3) $sin^2\frac{x}{2} = \frac{1+cosx}{2}$;
    4) $tgx + tgy = \frac{sin(x+y)}{cosx\cdot cosy}$,
    $x, y \neq \frac{\pi}{2} + \pi n, n \in Z$.
    A) 1;3;4 B) 1;2;4 C) 2;3;4 D) 1;2;3

13. a; 4,2; 3,1 va 1,1 sonlarining o'rta arifmetigi 2,95 ga teng. a ning qiymatini toping.
    A) $-2,6$ B) 2,1 C) 2 D) 3,4

14. Kvadratning perimetri 30% ga uzaytirilsa, uning yuzi necha foizga ko'payadi?
    A) 60 B) 69 C) 44 D) 59

15. $\frac{4+\sqrt{8}}{4-\sqrt{8}} - \frac{4-\sqrt{8}}{4+\sqrt{8}}$ ning qiymatini toping.
    A) $\frac{3\sqrt{8}}{8}$ B) $4\sqrt{2}$ C) $\frac{\sqrt{8}+8}{4}$ D) $4\frac{2}{5}$

16. $\sqrt[3]{2\sqrt[5]{2\sqrt{2}}} : 2^{\frac{1}{15}}$ ni hisoblang.
    A) $\sqrt[3]{16}$ B) $\sqrt[3]{32}$ C) $\sqrt[3]{64}$ D) $\sqrt[3]{8}$

17. $(a^3-3a^2b+3ab^2-b^3)(a+b) : \left(ab - \frac{a^3+b^3}{a+b}\right)$ ni soddalashtiring.
    A) a^2-b^2 B) b^2-a^2 C) $(a+b)^2$
    D) $(a-b)^2$

18. k ning qanday qiymatida $\begin{cases} 3x+6y = k, \\ 9x+18y = k+1\frac{1}{3} \end{cases}$ tenglamalar sistemasi cheksiz ko'p yechimga ega?
    A) 1 B) $\frac{1}{3}$ C) $\frac{2}{3}$ D) $\frac{1}{2}$

19. $7x^2+(5k^2-6k-11)x-k^4=0$tenglamaning ildizlari qarama-qarshi sonlarbo'ladigan k ning barcha qiymatlari yig'indisini aniqlang.
A) 1,4 B) 1,2 C) 1,8 D) 1,6

20. Arifmetik progressiya 26 haddan iborat. Agar $a_6=-0,25$ va $a_{21}=-1,25$ bo'lsa, uning hadlari yig'indisini toping.
A) $-10,75$ B) $-9,75$ C) $-8,5$ D) $-19,5$

21. $y=\frac{1}{2}x^2-\frac{3}{2}lnx$ funksiyaning grafigiga $x_0=2$ nuqtada o'tkazilgan urinmaning burchak koeffitsiyentini toping.
A) 2 B) $-2,5$ C) 1,25 D) 1,5

22. ABC uchburchakda $AB=3, CB=4$ va $cosB=-\frac{11}{24}$ bo'lsa, AC ning qiymatini toping.
A) 6 B) 2 C) 4 D) 3

23. ABCD parallelogramm C uchining koordinatalari (5; 8), O(3; 6) esa parallelogramm diagonallarining kesishish nuqtasi. Parallelogramm A uchining koordinatalarini toping.
A) (3;2) B) (2;3) C) (4;1) D) (1;4)

24. Agar $2sin6x(cos^43x \quad sin^43x)=sinkx$ tenglik hamma vaqt o'rinli bo'lsa, k ni toping.
A) 24 B) 12 C) 18 D) 6

25. $\frac{n^3-2n^2-12}{n}$ $(n\in N)$ kasrning natural sonlardan iborat barcha qiymatlari yig'indisini toping.
A) 105 B) 102 C) 124 D) 146

26. 11300 ning 36% i va 9000 ning 28% i yig'indisi shu sonlar yig'indisining 40% idan qanchaga kam?
A) 1432 B) 1532 C) 1528 D) 1632

27. Agar $\frac{4b+a}{5a-7b}=\frac{7}{8}$ bo'lsa, $\frac{3a^2-4ab+b^2}{5a^2+3b^2}$ ning qiymati nimaga teng bo'ladi?
A) $\frac{22}{47}$ B) $\frac{1}{3}$ C) $\frac{9}{22}$ D) 0,5

28. $\frac{\sqrt[3]{26-15\sqrt{3}}\cdot(2-\sqrt{3})}{28-16\sqrt{3}}$ ni soddalashtiring.
A) $\frac{1}{3}$ B) 1 C) $\frac{1}{4}$ D) $2-\sqrt{3}$

29. Raqamlarining yig'indisidan 8 marta katta, raqamlari kvadratlarining yig'indisi esa 53 ga teng bo'lgan ikki xonali sonning kvadratini toping.
A) 729 B) 5184 C) 6561 D) 529

30. $|4-x|<5$ tengsizlikning butun sonlardan iborat yechimlari nechta?
A) 5 B) 10 C) 11 D) 9

31. 7, 10, 13, ... arifmetik progressiyaning nechta hadining har birini qiymati 99 dan katta, 212 dan kichik bo'ladi?
A) 34 B) 33 C) 38 D) 39

32. Agar $\log_3 4=a$ va $\log_5 4=b$ bo'lsa, $\log_4 135$ ni a va b orqali ifodalang.
A) $\frac{3a+b}{a+b}$ B) $\frac{a+2b}{ab}$ C) $\frac{a+3b}{a+b}$ D) $\frac{a+3b}{ab}$

33. Aylananing radiusi 8 ga teng. Aylanaga ichki chizilgan muntazam uchburchakning yuzini toping.
A) $36\sqrt{2}$ B) 64 C) $48\sqrt{3}$ D) $27\sqrt{3}$

34. Uchburchakli muntazam prizmaning balandligi 32 ga, asosining yuzi $\frac{9\sqrt{3}}{16}$ ga teng. Prizma yon yog'ining yuzini toping.
A) 54 B) 48 C) 42 D) 36

35. Sharga ichki chizilgan konusning asosi sharning katta doirasiga teng. Konus o'q kesimining yuzi 36 ga teng. Sharning hajmini toping.
A) 144π B) 432π C) 288π D) 334π

36. $\frac{3sin\alpha+2}{5+cos\beta}+\frac{3}{tg^2\gamma+ctg^2\gamma}$ ifodaning eng katta qiymatini toping.
A) 4,75 B) 6,25 C) 2,75 D) 3,45

Matematika

1. $\frac{84}{95}\cdot 1\frac{3}{14}:1\frac{1}{5}:4\cdot 4\frac{3}{4}$ ni hisoblang.

   A) $1\frac{3}{8}$ B) $1\frac{1}{16}$ C) $1\frac{5}{7}$ D) $2\frac{1}{8}$

2. $\frac{c-2\sqrt{c}+1}{1-\sqrt{c}}$ kasrni qisqartiring.

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

3. Quyidagi nuqtalarning qaysi biri $f(x)=-2x+9$ funksiyaning grafigiga tegishli?

   A) $(2;5)$ B) $(-1;1)$ C) $(1;-1)$
   D) $(-5;2)$

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?
   1) $(x-c)\cdot(x-d)=x^2+(c-d)x+cd$;
   2) $(x-c)\cdot(x+d)=x^2-(c-d)x-cd$;
   3) $12x^2+y^2-(8x^2-5y^2-(-10x^2+(5x^2-6y^2)))=-x^2$;
   4) $3a-(2c-(6a-(c-b)+c+(a+8b)-6c))=10a+9b-8c$.

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

5. 1) $2a^2-4ab+2b^2=(b-a)^2\cdot 2$
   2) $-\frac{x^3-y^3}{x^2+xy+y^2}=x-y$
   3) $-(a-b-c)=-a+b+c$
   4) $-\frac{a^2-1}{b}=\frac{a^2-1}{b}$. Ushbu tengliklarning qaysi biri ayniyat?

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

6. $\begin{cases} y+4=2 \\ xy^2=4 \end{cases}$ tenglamalar sistemasini yeching.

   A) $(-1;-2)$ B) $(1;-2)$
   C) $(-1;-2);\ (1;-2)$ D) $\emptyset$

7. $y=\frac{-3}{e^x}$ funksiyaning boshlang'ich funksiyasini toping.

   A) $3lnx+C$ B) $\frac{3}{e^x}+C$ C) $\frac{1}{3e^x}+C$
   D) $\frac{1}{3}e^{-x}+C$

8. Qo'shni burchaklardan biri ikkinchisidan 52° ga katta. Shu burchaklardan kattasini toping.

   A) 118° B) 106° C) 114° D) 116°

9. $x^2+y^2+4x+6y-3=0$ tenglama bilan berilgan aylananing radiusini toping.

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

10. Og'ma va tekislik orasidagi burchak $arccos0,28$ ga, og'maning tekislikdagi proyeksiyasi 21 ga teng. Perpendikulyarning uzunligini toping.

    A) 36 B) $5\frac{22}{25}$ C) 72 D) $20\frac{4}{25}$

11. Oyz tekisligiga nisbatan $(1;2;3)$ nuqtaga simmetrik bo'lgan nuqtani toping.

    A) $(-1;-2;3)$ B) $(-1;2;3)$ C) $(1;-2;3)$
    D) $(1;2;-3)$

12. Quyidagi formulalardan qaysilari to'g'ri?
    1) $cos(x+y)=sinx\cdot cosy+cosx\cdot siny$;
    2) $tg(x+y)=\frac{tgx+tgy}{1-tgx\cdot tgy}$,
    $x,y,x+y\neq\frac{\pi}{2}+\pi n, n\in Z$;
    3) $sin^2\frac{x}{2}=\frac{1-cosx}{2}$;
    4) $sinx-siny=2cos\frac{x+y}{2}\cdot sin\frac{x-y}{2}$.

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

13. Quyidagi oddiy kasr ko'rinishida berilgan sonlardan qaysilarini chekli o'nli kasr ko'rinishiga keltirib bo'lmaydi:
    1) $\frac{7}{32}$; 2) $\frac{10}{55}$; 3) $\frac{11}{160}$; 4) $\frac{20}{35}$?

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

14. Mis va qo'rg'oshindan iborat qotishmaning 60% i mis bo'lib, mis qo'rg'oshindan $1\frac{5}{6}$ kg ko'p. Qotishmada qancha mis bor?

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

15. $(a+b-2)(a+b)-(a-b)^2+1$ ni ko'paytuvchilarga ajrating.

    A) $(2a+1)(2b+1)$ B) $(2a-1)(2b-1)$
    C) $(a+1)(2b-1)$ D) $2b(a+1)$

16. $\frac{2^8\cdot 10^{10}\cdot 50^5}{(80+20)^{16}}$ ni hisoblang.

    A) 16 B) $\frac{1}{32}$ C) $\frac{1}{64}$ D) 8

17. Agar $a=\sqrt{2}$ va $b=\sqrt[3]{3}$ bo'lsa, $\sqrt{a^2-2ab+b^2}-\sqrt{a^2+2ab+b^2}$ ning qiymatini hisoblang.

    A) $-\sqrt[3]{12}$ B) $\sqrt{8}$ C) $\sqrt[3]{24}$ D) $-\sqrt{8}$

18. Ikki sonning ayirmasi 5 ga teng. Agar shu sonlardan kattasining 20% i kichigining $\frac{7}{30}$ qismiga teng bo'lsa, shu sonlarni toping.

    A) 36 va 41 B) 30 va 35 C) 63 va 68
    D) 45 va 50

19. a ning qanday qiymatida $x^2-(a-1)x+32=0$ tenglamaning ildizlaridan biri 4 ga teng bo'ladi?
A) 12 B) 13 C) 14 D) 11

20. (x_n) $(n\in N)$ arifmetik progressiyaning dastlabki n ta hadi yig'indisi 120 ga teng. Agar $x_3+x_{n-2}=30$ bo'lsa, yig'indida nechta had qatnashgan?
A) 10 B) 6 C) 12 D) 8

21. $y=x^2-2x-2,75$ dagi qanday nuqtada o'tkazilgan urinma $y=-4(x+1)$ to'g'ri chiziqqa parallel bo'ladi?
A) $(-1;\ 4)$ B) $(-1;\ \frac{1}{4})$ C) $(1;\ 1)$
D) $(1;\ \frac{1}{4})$

22. To'g'ri burchakli uchburchakning kateti $6\sqrt{3}$ ga, bu katet qarshisidagi burchak 60° ga teng. Shu uchburchakning gipotenuzasini toping.
A) $4\sqrt{3}$ B) 12 C) $3\sqrt{3}$ D) $6\sqrt{3}$

23. Bir uchi $(8;2)$ nuqtada, o'rtasi $(4,5;-5,5)$ nuqtada bo'lgan kesmaning ikkinchi uchi koordinatalarini toping.
A) $(0;-24)$ B) $(1;-13)$ C) $(0;26)$
D) $(0;-26)$

24. $ctg(\frac{\pi}{2}-3x)=tg2x+tgx$ tenglamani yeching.
A) $\frac{\pi n}{3},\ n\in Z$ B) $\frac{\pi n}{2},\ n\in Z$
C) $\frac{\pi n}{2};\pi n,\ n\in Z$ D) $\pi n,\ n\in Z$

25. Agar x, y, z va t ketma-ket keladigan natural sonlar bo'lsa, quyidagilarning qaysi biri albatta juft son bo'ladi?
A) $\frac{xyzt}{24}$ B) $\frac{x+y+z}{3}$ C) $\frac{yzt}{3}$ D) $\frac{xyz}{6}$

26. x ning y ga nisbati 9:7 kabi, y ning z ga nisbati 14:15 kabi, z ning necha foizini x tashkil etadi?
A) 140 B) 120 C) 160 D) 80

27. Agar $\sqrt{13+z^3}-\sqrt{z^3-14}=3,375$ bo'lsa, $\sqrt{13+z^3}+\sqrt{z^3-14}$ ning qiymati nechaga teng bo'ladi?
A) 6 B) 5 C) 8 D) 7

28. $\left(\frac{a^{\frac{3}{2}}+b^{\frac{3}{2}}}{(a^{\frac{1}{2}}+b^{\frac{1}{2}})^2}-\frac{a^{\frac{1}{2}}b^{\frac{1}{2}}}{a^{\frac{1}{2}}+b^{\frac{1}{2}}}\right):(a-b)$ ning $a=0,36$ va $b=0,16$ bo'lgandagi qiymatini hisoblang.
A) $\frac{1}{5}$ B) $-\frac{1}{4}$ C) $-\frac{1}{5}$ D) $\frac{1}{125}$

29. Agar $\sqrt{3x^2-6x+16}=2x-1$ bo'lsa, $x^2(4-x)$ ning qiymatini toping.
A) 65 B) 9 C) 54 D) -65

30. $3x^2\le 16x-5$ tengsizlikning butun yechimlari ko'paytmasini toping.
A) 120 B) 12 C) 24 D) 30

31. Arifmetik progressiyaning oltinchi hadi 10 ga, dastlabki 16 ta hadining yig'indisi 200 ga teng. Bu progressiyaning 9-hadini toping.
A) 14 B) 16 C) 13 D) 18

32. $|x-14|\cdot log_2(x-4)=3(14-x)$ tenglama ildizlarining yig'indisini toping.
A) 26 B) 42 C) 24 D) $30\frac{1}{8}$

33. Kichik diagonali $24\sqrt{3}$ bo'lgan muntazam oltiburchakka tashqi chizilgan aylananing radiusini toping.
A) $12\sqrt{3}$ B) $24\sqrt{3}$ C) 24 D) 12

34. Muntazam uchburchakli piramidaning yon qirrasi 20 ga, asosining tomoni $16\sqrt{3}$ ga teng. Piramidaning balandligini toping.
A) $8\sqrt{3}$ B) 12 C) 8 D) 16

35. Radiusi 6 ga teng shar konusga ichki chizilgan. Konus yasovchisi va balandligi orasidagi burchak 30° ga teng. Konus yon sirtining yuzini toping.
A) 96π B) 48π C) 216π D) 72π

36. Agar $sin(\alpha+\beta)=\frac{4}{5}, sin(\alpha-\beta)=\frac{5}{13}$ va $0<\beta<\alpha<\frac{\pi}{4}$ bo'lsa, $cos\alpha+cos\beta$ ning qiymatini hisoblang.
A) $\frac{10}{\sqrt{130}}$ B) $\sqrt{\frac{20}{13}}$ C) $\frac{5}{\sqrt{130}}$ D) $\sqrt{\frac{40}{13}}$

Matematika

1. $3\frac{3}{5} : 2\frac{7}{10} - 3\frac{3}{4} : x$ proporsiyaning noma'lum hadini toping.
A) $2\frac{3}{10}$ B) $2\frac{13}{16}$ C) $1\frac{15}{16}$ D) $3\frac{1}{3}$

2. $2\frac{1}{3} \cdot (\frac{6}{7}m - 3) - 1\frac{2}{3} \cdot (\frac{6}{5}m - 6)$ ni soddalashtiring.
A) 4 B) $m-2$ C) 3 D) $m+3$

3. Quyidagilardan qaysilari o'suvchi funksiyalar?
1) $y = 3^{-x}$; 2) $y = (\sqrt[4]{10})^x$; 3) $y = (\frac{11}{9})^x$;
4) $y = (\frac{5}{3})^x$; 5) $y = (0,84)^x$.
A) 1; 2; 3 B) 1; 2; 4 C) 2; 3; 4
D) 3; 4; 5

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?
1) $(x-c)\cdot(x-d) = x^2 - (c+d)x + cd$;
2) $(x-e)\cdot(x+d) = x^2 - (e-d)x - ed$;
3) $5a^2 - 3b^2 - ((a^2 - 2ab - b^2) - (5a^2 - 2ab - b^2)) = 9a^2 - 3b^2$;
4) $3a - (2c - (6a - (c-b) + c + (a+8b) - 6c)) = 2a + 7b - 8c$.
A) 1;3;4 B) 2;3;4 C) 1;2;4 D) 1;2;3

5. $(m^2 - \frac{2+m^4}{m^2-1}) : \frac{m^2+2}{m-1}$ ni soddalashtiring.
A) $\frac{1}{m-1}$ B) $m-1$ C) 1 D) $-\frac{1}{m+1}$

6. $\begin{cases} x^2 - y^2 + 2x - 4 = 0 \\ x + y = 0 \end{cases}$ tenglamalar sistemasini yeching.
A) $(-2;-2)$ B) $(2;2)$ C) $(2;-2)$
D) $(-1;-1)$

7. $f(x) = x^2$ funksiyaning (3; 5) nuqtadan o'tuvchi boshlang'ich funksiyasini toping.
A) $\frac{x^3}{3} - 7$ B) $\frac{x^3}{3} + 7$ C) $2x + 4$
D) $\frac{x^3}{3} - 4$

8. Ikki to'g'ri chiziqning kesishishidan hosil bo'lgan burchaklarning biri 40° ga teng. Qolgan burchaklarni toping.
A) 110°, 110°, 110° B) 150°, 150°, 30°
C) 140°, 140°, 40° D) 60°, 60°, 30°

9. $\vec{m}(-3;1)$ va $\vec{n}(5;-6)$ vektorlar berilgan. $\vec{a} = \vec{n} - 3 \cdot \vec{m}$ vektorning koordinatalarini toping.
A) $(4;-3)$ B) $(14;-9)$ C) $(9;3)$
D) $(14;-3)$

10. Tekislikka tushirilgan og'maning uzunligi 75 ga, uning tekislikdagi proyeksiyasi esa 60 ga teng. Og'ma va tekislik orasidagi burchakni toping.
A) $arcsin\frac{3}{5}$ B) $arccos\frac{3}{10}$ C) $arcsin\frac{3}{4}$
D) $arcsin\frac{4}{5}$

11. Koordinatalar boshiga nisbatan (1;2;3) nuqtaga simmetrik bo'lgan nuqtani toping.
A) $(-1;-2;-3)$ B) $(-1;2;3)$ C) $(1;-2;3)$
D) $(1;2;-3)$

12. Quyidagi formulalardan qaysilari to'g'ri?
1) $sin(x-y) = sinx \cdot cosy - cosx \cdot siny$;
2) $cos^2\frac{x}{2} = \frac{1-cosx}{2}$;
3) $cosx + cosy = 2cos\frac{x+y}{2}cos\frac{x-y}{2}$;
4) $tgx - tgy = \frac{sin(x-y)}{cosx \cdot cosy}$,
$x, y \neq \frac{\pi}{2} + \pi n, n \in Z$.
A) 2;3;4 B) 1;2;4 C) 1;3;4 D) 1;2;3

13. Uchta sonning o'rta arifmetigi 8,1 ga, birinchi son esa 7,35 ga teng. Agar keyingi har bir son avvalgisidan ayni bir songa farq qilsa, keyingi sondan oldingisining ayirmasini toping.
A) 0,1 B) 0,75 C) 0,2 D) $\frac{1}{4}$

14. Mahsulotning narxi 25% ga oshirildi. Lekin mahsulotga talabning kamligi tufayli uning narxi 12% ga kamaytirildi. Mahsulotning oxirgi narxi dastlabkisiga qaraganda necha foiz ortdi?
A) 13 B) 10 C) 12,5 D) 12

15. $(a+b)(a+b+1) - (a-b)(a-b-1)$ ni ko'paytuvchilarga ajrating.
A) $4a(b+1)$ B) $2(a+b)(b+1)$
C) $2a(2b+1)$ D) $2a(b-1)$

16. $\frac{(-3)^{17}\cdot(-4) - 2\cdot(-3)^{16}}{9^7 \cdot 15}$ sonining uchdan bir qismini toping.
A) 3 B) 6 C) 9 D) 2

17. $\sqrt{a} - \sqrt{b} = 3$ va $a - b = 24$ bo'lsa, $\sqrt{a} + \sqrt{b}$ nimaga teng?
A) 4 B) 6 C) 8 D) 5

18. a ning qanday qiymatlarida $ax - 3 = a + 4x$ tenglamaning yechimi bo'lmaydi?
A) $a = 2$ B) $a = 4$ C) $a = -2$
D) $a = -4$

19. $x^2 - 3|x| - 28 = 0$ tenglamaning ildizlari ko'paytmasini toping.
A) -36 B) -49 C) -64 D) -32

20. Arifmetik progressiyada $a_2 - a_1 = 6$ bo'lsa, $a_8 - a_5$ ning qiymati nechaga teng bo'ladi?
A) 12 B) 10 C) 18 D) 9

21. $f(x) = -\frac{1}{3}x^3 - \frac{1}{6}x + \frac{1}{3}$ funksiyaning $[-1;1]$ kesmadagi eng katta va eng kichik qiymatlari yig'indisini hisoblang.
A) 0 B) $-\frac{1}{3}$ C) $\frac{2}{3}$ D) $\frac{1}{3}$

22. To'g'ri burchakli uchburchakning gipotenuzasi 75 sm, katetlari esa o'zaro 7:24 nisbatda. Shu uchburchakning katta katetini toping.
A) 36 B) 63 C) 42 D) 72

23. Parallelogrammning diagonali tomonlari bilan 20° va 30° li burchaklar tashkil qiladi. Parallelogrammning katta burchagini toping.
A) 145° B) 100° C) 110° D) 130°

24. $4cos^2 2x - 2,5 = cos4x$ tenglamani yeching.
A) $\pm\frac{\pi}{12} + \frac{\pi n}{2}, n \in Z$ B) $\frac{\pi}{4} + \frac{n\pi}{2}, n \in Z$
C) $\frac{\pi}{3} + \frac{n\pi}{2}, n \in Z$ D) $\frac{\pi}{6} + \frac{n\pi}{2}, n \in Z$

25. 36455472363 ni 2, 4, 5, 9, 10 va 25 ga bo'lganda hosil bo'lgan qoldiqlar yig'indisini toping.
A) 16 B) 26 C) 14 D) 15

26. Ikkita musbat sonning o'rta arifmetigi 6,5 ga teng. Ularning o'rta geometrigi esa shu sonlarning o'rta arifmetigini $\frac{12}{13}$ qismini tashkil etadi. Berilgan sonlarni toping.
A) 12 va 1 B) 12 va 3 C) 9 va 4
D) 7 va 6

27. $\frac{1}{2+\sqrt{3}} + \frac{2}{\sqrt{3}-1} - 1$ ni hisoblang.
A) 3 B) 2 C) $\sqrt{3}$ D) 4

28. $\sqrt[3]{2001 \cdot 1997 - 1998 \cdot 2000 + 9}$ ni hisoblang.
A) $\sqrt[3]{13}$ B) 2 C) $\sqrt[3]{6}$ D) $\sqrt[3]{17}$

29. Ikki xonali son o'zining raqamlari yig'indisidan 4 marta katta. Raqamlari kvadratlarining yig'indisi 80 ga teng. Shu ikki xonali sonning kvadratini hisoblang.
A) 196 B) 7056 C) 169 D) 2304

30. $a > c > b > 0$ bo'lsa, $\frac{1}{a}$, $\frac{1}{a+b}$ va $\frac{1}{a+c}$ larni taqqoslang.
A) $\frac{1}{a} < \frac{1}{a+b} < \frac{1}{a+c}$ B) $\frac{1}{a} < \frac{1}{a+c} < \frac{1}{a+b}$
C) $\frac{1}{a+c} < \frac{1}{a+b} < \frac{1}{a}$ D) $\frac{1}{a+b} < \frac{1}{a+c} < \frac{1}{a}$

31. Olti haddan iborat geometrik progressiyaning dastlabki uchta hadining yig'indisi 168 ga, keyingi uchtasiniki esa 21 ga teng. Shu progressiyaning birinchi hadini toping.
A) 96 B) 85 C) 126 D) $\frac{1}{2}$

32. $log_2 log_{\frac{1}{3}} log_8 x > 0$ tengsizlikni yeching.
A) $(-\infty;0)\bigcup(0;2)$ B) $(1;2)$ C) $(-\infty\ 2)$
D) $(0;2)$

33. Muntazam oltiburchakka tashqi chizilgan aylananing radiusi $4\sqrt{3}$ ga teng. Uning kichik diagonalini toping.
A) 12 B) $6\sqrt{6}$ C) $3\sqrt{6}$ D) 6

34. Muntazam uchburchakli piramidaning balandligi asosining tomonidan olti marta kichik. Piramidaning yon yog'i asos tekisligi bilan qanday burchak tashkil etadi?
A) 30° B) 60° C) 45° D) 15°

35. Balandligi $\sqrt{3}$ ga, yasovchisi $2\sqrt{3}$ ga teng bo'lgan konusga tashqi chizilgan sharning radiusini toping.
A) 2 B) $2\sqrt{3}$ C) $3\sqrt{3}$ D) $3\sqrt{2}$

36. $\frac{2cos^2\frac{\alpha}{2}}{ctg\frac{\alpha}{4} - tg\frac{\alpha}{4}}$ ni soddalashtiring.
A) $cos\alpha$ B) $-sin\alpha$ C) $\frac{1}{2}sin\alpha$ D) $sin\alpha$

Matematika

1. $5,8-\frac{3}{7}\cdot 2,2\cdot(-2\frac{1}{3})$ ni hisoblang.
   A) -8 B) 6 C) $-3,6$ D) 8

2. $\frac{y^2-x^2}{2xy}:\frac{x+y}{2y}$ ni soddalashtiring.
   A) $\frac{x-y}{y(1+y)}$ B) $\frac{x-y}{y}$ C) $\frac{y-x}{x}$
   D) $1-\frac{x}{y}$

3. k ning qanday qiymatlarida $y=\frac{k}{x}-1$ funksiyaning grafigi $C(-2;\ -3)$ nuqtadan o'tadi?
   A) 4 B) 1 C) $\frac{1}{2}$ D) -1

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?
   1) $(x-c)\cdot(x-d)=x^2-(c+d)x+cd$;
   2) $(x-e)\cdot(x+d)=x^2-(e-d)x-ed$;
   3) $12x^2+y^2-(8x^2-5y^2-(-10x^2+(5x^2-6y^2)))=-x^2+12y^2$;
   4) $3a-(2c-(6a-(c-b)+c+(a+8b)-6c))=10a+9b-8c$.
   A) 1; 3; 4 B) 2; 3; 4 C) 1; 2; 4 D) 1; 2; 3

5. $(x^2+xy+y^2)(x-y)$ ifodaning $x=\sqrt[3]{4}$ va $y=\sqrt[3]{2}$ bo'lgandagi qiymatini hisoblang.
   A) -6 B) 6 C) -2 D) 2

6. $\begin{cases} y+2=0 \\ x^2y=18 \end{cases}$ tenglamalar sistemasining yechimini toping.
   A) $(-3;\ 2)$ B) $(-3;\ -2)$ C) $\emptyset$
   D) $(-3;\ -2)$, $(3;\ -2)$

7. $F(x)=2ctgx-x+C$ quyidagi funksiyalardan qaysi birining boshlang'ich funksiyasi?
   A) $f(x)=\frac{2}{\cos^2 x}-1$ B) $f(x)=-\frac{2}{\sin^2 x}-1$
   C) $f(x)=\frac{2}{\sin^2 x}+1$ D) $f(x)=-\frac{2}{\cos^2 x}-1$

8. Quyidagi mulohazalardan qaysi biri noto'g'ri?
   A) *Agar ikkita teng yonli uchburchakning asoslari va asoslaridagi burchaklari teng bo'lsa, bunday uchburchaklar tengdir.*
   B) *Teng tomonli uchburchakning balandliklari uchidan boshlab hisoblanganda kesishish nuqtasida 2:1 nisbatda bo'linadi.*
   C) *Agar bir uchburchakning bir tomoni va shu tomon qarshisidagi burchagi, ikkinchi uchburchakning bir tomoni va shu tomon qarshisidagi burchagiga mos ravishda teng bo'lsa, bu uchburchaklar tengdir.*
   D) *Qavariq beshburchak ichki burchaklarining yig'indisi 540° ga teng.*

9. $x^2+y^2-4x-6y-3=0$ tenglama bilan berilgan avlananing radiusini toping.
   A) 5 B) 3 C) 4 D) 6

10. Tekislikka og'ma va perpendikulyar tushirilgan. Og'ma va tekislik orasidagi burchak $arccos\frac{3}{5}$ ga, og'maning tekislikdagi proyeksiyasi 24 ga teng. Perpendikulyarning uzunligini toping.
    A) $19\frac{1}{5}$ B) 32 C) 72 D) 16

11. Quyidagilardan qaysi biri Oxy tekislikka nisbatan $M(7;\ -3;\ 1)$ nuqtaga simmetrik bo'lgan nuqta?
    A) $(-7;\ 3;\ -1)$ B) $(-7;\ 3;\ 1)$
    C) $(7;\ -3;\ -1)$ D) $(7;\ 3;\ -1)$

12. Quyidagi formulalardan qaysilari to'g'ri?
    1) $sin(x+y)=sinx\cdot cosy+cosx\cdot siny$;
    2) $tg(x+y)=\frac{tgx+tgy}{1-tgx\cdot tgy}$,
    $x, y, x+y\neq\frac{\pi}{2}+\pi n, n\in Z$;
    3) $cos^2\frac{x}{2}=\frac{1-cosx}{2}$;
    4) $sinx+siny=2sin\frac{x+y}{2}cos\frac{x-y}{2}$.
    A) 1; 2; 4 B) 2; 3; 4 C) 1; 3; 4 D) 1; 2; 3

13. $4,2\cdot 13,5-8,7\cdot 4,2-5,8\cdot 8,7+13,5\cdot 5,8$ ni hisoblang.
    A) 52 B) 42 C) 48 D) 50

14. Yog'liligi 2% bo'lgan 80 l sut bilan yog'liligi 5% bo'lgan necha l sut aralashtirilsa, yog'liligi 2,6% bo'lgan sut olish mumkin?
    A) 30 B) 20 C) 50 D) 40

15. $4\sqrt{7\frac{1}{2}}-\frac{2\sqrt{10}}{2\sqrt{3}-\sqrt{10}}+8+3\sqrt{10}$ ni soddalashtiring.
    A) 10 B) $2-3\sqrt{10}$ C) -10
    D) $3\sqrt{10}-2$

16. $\frac{4^{2/3}\cdot 40^{1/3}}{10^{-2/3}}$ ni hisoblang.
    A) 20 B) 15 C) 40 D) 60

17. $\sqrt{2+\sqrt{3}}+\sqrt{2-\sqrt{3}}$ ni soddalashtiring.
    A) $\sqrt{6}$ B) $\sqrt{3}$ C) $\sqrt{2}$ D) $2\sqrt{2}$

18. a ning qanday qiymatlarida $3x+2y=3$ va $3x-2ay=5$ to'g'ri chiziqlarning kesishish nuqtasi musbat ordinataga ega?
    A) $a=2$ B) $a<2$ C) $a<-1$ D) $a>2$

19. $2x^2 - 26x + 32 = 0$ tenglama ildizlarining o'rta proporsionalini toping
A) 5 B) 4 C) 6 D) 7

20. 160 dan katta bo'lmagan 7 ga karrali barcha natural sonlarning yig'indisini toping.
A) 1617 B) 1470 C) 1624 D) 1771

21. $f(x) = -\frac{\sqrt{3}}{2}x^2 + 1$ funksiyaning grafigiga $x_0 = -\frac{1}{3}$ nuqtada o'tkazilgan urinmaning OX o'qi bilan tashkil qilgan burchagini toping.
A) 60° B) 30° C) 150° D) 120°

22. Katetlari 7 va 24 bo'lgan to'g'ri burchakli uchburchakning gipotenuzasiga tushirilgan balandligini toping.
A) 6,62 B) 6,72 C) $6\frac{8}{25}$ D) 6,82

23. a ning qanday qiymatlarida $ax + 3y = 8$ va $y - x = 4$ to'g'ri chiziqlar parallel bo'ladi ?
A) $a = 2$ B) $a = 1$ C) $a \in R$ D) $a = -3$

24. $4cos5x = 6 + 3cos(\frac{\pi}{2} + 5x)$ tenglama $[-\pi; 2\pi]$ kesmada nechta ildizga ega?
A) 1 B) 0 C) 3 D) 2

25. 1 dan 120 gacha bo'lgan sonlar orasida 2 ga ham, 5 ga ham bo'linmaydiganlari nechta?
A) 40 B) 36 C) 48 D) 44

26. 1040 soni shunday ikki bo'lakka bo'linganki, ulardan birining 80% i ikkinchisining 24% ini tashkil qiladi. Bo'laklarning kichigini toping.
A) 240 B) 800 C) 460 D) 500

27. $\left(\frac{a^{\frac{1}{2}}+1}{a^{\frac{1}{2}}-1} + \frac{a^{\frac{1}{2}}-1}{a^{\frac{1}{2}}+1} - \frac{4}{a-1}\right)^{-3} - \frac{1}{4}$ ni soddalashtiring.
A) $-\frac{5}{8}$ B) $\frac{3}{8}$ C) $-\frac{1}{8}$ D) $\frac{1}{8}$

28. $\frac{729a+1}{81\sqrt[3]{a^2} - 9a^{\frac{1}{3}} + 1} - \frac{729a-1}{81a^{\frac{2}{3}} + 9\sqrt[3]{a} + 1} + 4$ ni soddalashtiring.
A) 5 B) 4 C) 9 D) 6

29. Agar $\begin{cases} x + y - \sqrt{xy} = 13 \\ x^2 + y^2 + xy = 481 \end{cases}$ bo'lsa, $\sqrt{xy}$ ning qiymatini toping.
A) 42 B) 36 C) 52 D) 12

30. $\sqrt{6x - x^2 - 4} > x - 4$ tengsizlikni qanoatlantiruvchi butun sonlar nechta?
A) 3 B) 5 C) 2 D) 4

31. Geometrik progressiyaning oltinchi va birinchi hadi ayirmasi 1210 ga, maxraji 3 ga teng. Shu progressiyaning dastlabki oltita hadi yig'indisini toping.
A) 1720 B) 1820 C) 605 D) 1520

32. $y = \sqrt{\lg^2|2x-7| \cdot (5x - 6 - x^2)}$ funksiyaning aniqlanish sohasiga tegishli butun sonlarning yig'indisini toping.
A) 5 B) 14 C) 12 D) 9

33. Teng yonli trapetsiyaning asoslari 21 va 27 ga, kichik asosidagi burchagi esa 135° ga teng. Trapetsiyaning yuzini toping.
A) 62 B) 72 C) 48 D) 96

34. Barcha qirralari teng bo'lgan muntazam uchburchakli prizma asosining medianasi $6\sqrt{3}$ ga teng. Shu prizmaning hajmini toping.
A) $144\sqrt{3}$ B) $432\sqrt{3}$ C) $864\sqrt{3}$ D) $288\sqrt{3}$

35. Konusning yasovchisi 20 ga, asosining diametri 24 ga teng. Unga ichki chizilgan shar sirtining yuzini toping.
A) 156π B) 169π C) 289π D) 144π

36. $tg(arccos\frac{4}{5} \quad arcsin\frac{7}{25})$ ni hisoblang.
A) $\frac{44}{75}$ B) $\frac{44}{117}$ C) $\frac{100}{117}$ D) $\frac{4}{3}$

Matematika

1. $8\frac{3}{4}+\frac{5}{12}:\left(\frac{1}{3}\cdot 2\frac{1}{2}-\frac{7}{8}\right)$ ni hisoblang.
A) $-1\frac{1}{4}$ B) $-6\frac{3}{4}$ C) $-8\frac{3}{4}$ D) $9\frac{1}{4}$

2. $\frac{\sqrt{32}+\sqrt{98}-\sqrt{50}}{\sqrt{72}}:\frac{1}{\sqrt{2}}$ ni hisoblang.
A) 1 B) 2 C) $2\sqrt{2}$ D) $\sqrt{2}$

3. k ning qanday qiymatida $y=kx^2-2$ funksiyaning grafigi $A(-1;\ 0)$ nuqtadan o'tadi?
A) -3 B) 4 C) 2 D) 3

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?
1) $(x-c)\cdot(x+d)=x^2+(c-d)x-cd$;
2) $12x^2+y^2-(8x^2-5y^2-(-10x^2+(5x^2-6y^2)))=-x^2$;
3) $5a^2-3b^2-((a^2-2ab-b^2)-(5a^2-2ab-b^2))=9a^2-3b^2$;
4) $3a-(2c-(6a-(c-b)+c+(a+8b)-6c))=10a+9b-8c$.
A) 1;3;4 B) 2;3;4 C) 1;2;3 D) 1;2;4

5. $\frac{0,05\cdot 0,9-0,05}{0,2^2-2\cdot 0,06+0,3^2}$ ning qiymatini hisoblang.
A) -2 B) 0,2 C) 0,25 D) $-0,5$

6. $\begin{cases} x^2+y^2=5 \\ x-y=1, \end{cases}\quad 2\cdot x\cdot y=?$
A) 3 B) 2 C) 4 D) 1,5

7. $F(x)=-3ctgx-2x+C$ funksiya quyidagi funksiyalardan qaysi birining boshlang'ich funksiyasi bo'ladi?
A) $f(x)=\frac{3}{cos^2x}-2$ B) $f(x)=-\frac{3}{sin^2x}+2$
C) $f(x)=-\frac{3}{cos^2x}+2$ D) $f(x)=\frac{3}{sin^2x}-2$

8. Qo'shni burchaklardan biri ikinchisidan besh marta kichik bo'lsa, shu burchaklardan kattasini toping.
A) 130° B) 150° C) 144° D) 140°

9. $P(-3;0)$ nuqtani koordinata boshi atrofida 90° ga burganda hosil bo'ladigan nuqtaning koordinatalarini toping.
A) $(0;\ -3)$ B) $(3;\ 0)$ C) $(0;\ 3)$
D) $(3;\ 3)$

10. Tekislikka og'ma va perpendikulyar tushirilgan. Og'maning tekislikdagi proyeksiyasi 20 ga, perpendikulyarning uzunligi 21 ga teng. Og'ma va perpendikulyar orasidagi burchakni toping.
A) $arccos\frac{20}{21}$ B) $arcsin\frac{20}{29}$ C) $arcsin\frac{20}{21}$
D) $arctg\frac{21}{29}$

11. Agar kesmaning bir uchi $A(1;-5;4)$, o'rtasi $C(4;-2;3)$ nuqtada bo'lsa, ikkinchi uchining koordinatalari qanday bo'ladi?
A) $(7;-1;2)$ B) $(6;5;3)$ C) $(5;4;6)$
D) $(7;1;2)$

12. Quyidagi formulalardan qaysilari to'g'ri?
1) $tg(x+y)=\frac{tgx+tgy}{1-tgx\cdot tgy}$,
$x,y,x+y\neq\frac{\pi}{2}+\pi n, n\in Z$;
2) $sin^2\frac{x}{2}=\frac{1+cosx}{2}$;
3) $sinx+siny=2sin\frac{x+y}{2}cos\frac{x-y}{2}$;
4) $tgx+tgy=\frac{sin(x+y)}{cosx\cdot cosy}$,
$x,y\neq\frac{\pi}{2}+\pi n, n\in Z$.
A) 2;3;4 B) 1;3;4 C) 1;2;3 D) 1;2;4

13. $\frac{0,005\cdot 0,081\cdot 3,2}{0,09\cdot 0,0025\cdot 6,4}$ ning qiymatini toping.
A) 0,3 B) 3 C) 0,9 D) 30

14. $x(x>0)$ ga teskari bo'lgan son x ning 16% ini tashkil etadi. x ning qiymatini toping.
A) $2\frac{3}{4}$ B) $2\frac{1}{2}$ C) $3\frac{1}{3}$ D) $2\frac{1}{4}$

15. $\frac{\sqrt[3]{\left(5+2\sqrt{6}\right)^2}}{\sqrt[3]{5-\sqrt{24}}}-6-\sqrt{24}$ ni hisoblang.
A) -3 B) -1 C) -8 D) -7

16. $\frac{2^8\cdot 10^{10}\cdot 50^5}{(80+20)^{10}}$ ni hisoblang.
A) 16 B) $\frac{1}{32}$ C) $\frac{1}{64}$ D) 8

17. $\frac{(8,7^2-11,3^2)(13^2-12,6^2)}{(4,2^2-5,8^2)(2,3^2-0,3^2)}$ ni hisoblang.
A) 0,32 B) 32 C) 6,4 D) 3,2

18. $2,5(ax-5,2)=2a-5x-9$ tenglama a ning qanday qiymatlarida yagona yechimga ega?
A) $-\frac{1}{2}$ B) $(-\infty;-\frac{1}{2})\cup(-\frac{1}{2};\infty)$
C) $(-\infty;-2)\cup(-2;\infty)$ D) $\frac{1}{5}$

19. $x^2+px-12=0$ tenglamaning ildizlaridan biri 3 ga teng. Shu tenglamaning barcha koeffitsiyentlari yig'indisini toping.
A) -10 B) -13 C) -11 D) -12

20. Geometrik progressiyaning maxraji 3 ga, dastlabki to'rtta hadining yig'indisi 120 ga teng. Birinchi hadining qiymatini toping.
A) 2 B) 1 C) 4 D) 3

21. $y=2cos\frac{x}{3}$ funksiya grafigining $M(\frac{3\pi}{2};\ 0)$ nuqtasiga o'tkazilgan urinmaning tenglamasini yozing.
A) $y-1=0$ B) $y=2$ C) $y=x-\frac{3\pi}{2}$
D) $y=-\frac{2}{3}x+\pi$

22. To'g'ri burchakli uchburchak katetlaridan biri 15 sm, ikkinchisi esa gipotenuzadan 3 sm qisqa. Shu uchburchak gipotenuzasini toping.
A) 20 B) 36 C) 39 D) 25

23. a ning qanday qiymatlarida $ax+2y=3$ va $3x-y=-1$ to'g'ri chiziqlar kesishadi?
A) $a\neq 2$ B) $a=0$ C) $a\neq -6$ D) $a\in R$

24. $cos2x\geq -\frac{1}{2}$ tengsizlikning $[0;1,5\pi]$ kesmadagi yechimini toping
A) $[0;\frac{\pi}{3}]\cup[\frac{2\pi}{3};\frac{4\pi}{3}]$ B) $[\frac{\pi}{3};\frac{2\pi}{3}]$
C) $[\frac{4\pi}{3};2\pi]$ D) $[0;\frac{\pi}{3}]\cup[\frac{2\pi}{3};\pi]$

25. $3p-3\in N$ son 1; 2; 3; 6; 9; 18 va 21 ga qoldiqsiz bo'linadi. p ning eng kichik natural qiymatini toping.
A) 41 B) 42 C) 7 D) 43

26. Birinchi son 0,75 ga, ikkinchi son 0,15 ga teng Birinchi son ikkinchi sondan necha foiz ortiq?
A) 500 B) 400 C) 40 D) 300

27. Agar $x=(\sqrt{8}-5)/2$ bo'lsa, $(x+1)(x+2)(x+3)(x+4)$ ning qiymatini hisoblang.
A) $-\frac{7}{16}$ B) $\frac{7}{16}$ C) -1 D) 1

28. $\frac{4a^2-12ab+9b^2}{-2a^2+ab+3b^2}$ ni soddalashtiring.
A) $\frac{3b-2a}{a+b}$ B) $\frac{3a-2b}{a+b}$ C) $\frac{2a-3b}{a-b}$
D) $\frac{2a-3b}{a+b}$

29. Agar $\begin{cases}(x-2)^2+|y-1|=4\\|x-2|+|y-1|=2\end{cases}$ bo'lsa, $x-y$ ning qiymatini toping.
A) 0 *yoki* 4 B) 3 *yoki* -1 C) 1 *yoki* 5
D) -2 *yoki* 4

30. $\sqrt{x+6}>x-4$ tengsizlikni qanoatlantiruvchi butun sonlar nechta?
A) 2 B) 3 C) 1 D) 4

31. Geometrik progressiyada $b_1+b_5=51$ va $b_2+b_6=102$. Shu progressiyaning dastlabki yettita hadi yig'indisini toping.
A) 765 B) 361 C) 399 D) 381

32. $2log_8x-log_8(x-1)>\frac{2}{3}$ tengsizlikni yeching.
A) $(2;\infty)$ B) $(3;5)$ C) $(3;\infty)$
D) $(1;2)\cup(2;\infty)$

33. Teng yonli trapetsiyaning asoslari 8 va 26 ga, yon tomoni esa 15 ga teng. Trapetsiyaning yuzini hisoblang.
A) 102 B) 184 C) 255 D) 204

34. Muntazam to'rtburchakli piramida asosining tomoni 5 ga, to'la sirti 65 ga teng. Piramida yon yog'ining asos tekisligiga og'ish burchagini toping.
A) $arcsin\frac{5}{8}$ B) $arccos\frac{5}{8}$ C) $arcsin\frac{5}{16}$
D) $arccos\frac{5}{16}$

35. Muntazam to'rt burchakli piramidaning balandligi 9 ga, diagonal kesimning yuzi 54 ga teng. Piramidaning hajmini toping.
A) 216 B) 206 C) 128 D) 648

36. $sin^4\frac{17\pi}{8}-cos^4\frac{15\pi}{8}$ ni hisoblang.
A) $\frac{1}{2}$ B) $\frac{\sqrt{3}}{2}$ C) $-\frac{\sqrt{2}}{2}$ D) $-\frac{\sqrt{3}}{2}$

Matematika

1. $(11\frac{2}{3} - 7,4) : 5\frac{1}{3} + 1\frac{2}{5}$ ni hisoblang.

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

2. $\frac{x^3+y^3}{x^2-xy+y^2} - \frac{x^3-y^3}{x^2+xy+y^2}$ ni soddalashtiring.

   A) $2y$ B) $2x$ C) $-2x$ D) $-2y$

3. Quyidagi nuqtalarning qaysi biri $f(x) = -2x + 7$ funksiyaning grafigiga tegishli?

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

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?

   1) $(x-c)\cdot(x-d) = x^2 + (c-d)x + cd$;
   2) $(x-e)\cdot(x+d) = x^2 - (e-d)x - ed$;
   3) $6ab + (2a^3 + b^3 - (3ab^2 - (a^3 + 2ab^2 - b^3))) = 3a^3 - ab^2 + 6ab$;
   4) $5a^2 - 3b^2 - ((a^2 - 2ab - b^2) - (5a^2 - 2ab - b^2)) = 9a^2 - 3b^2$.

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

5. $\frac{x^2 - 5xy}{-25y^2 + x^2}$ kasrni qisqartiring.

   A) $-\frac{x}{x+5y}$ B) $\frac{x}{x+5y}$ C) $-\frac{x}{x-5y}$
   D) $\frac{x}{x-5y}$

6. $\begin{cases} x^2 + y^2 + xy = 7 \\ x + y = 3, \quad 2 \cdot x \cdot y - ? \end{cases}$

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

7. $F(x) = 5tgx + 3x + C$ quyidagi funksiyalardan qaysi birining boshlang'ich funksiyasi?

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

8. Quyidagi mulohazalardan qaysi biri to'g'ri?

   A) *Ikkita to'g'ri burchakli uchburchakning gipotenuzalari va bittadan o'tkir burchaklari bir- biriga teng bo'lsa, bunday uchburchaklar tengdir.*

   B) *Teng tomonli uchburchakning balandliklari kesishish nuqtasida 4:3 nisbatda bo'linadi.*

   C) *Ikkitadan tomoni, bittadan burchagi o'zaro teng bo'lgan uchburchaklar tengdir.*

   D) *Ikkita parallel to'g'ri chiziqni uchinchi to'g'ri chiziq bilan kesganda hosil bo'lgan ichki bir tomonli burchaklar yig'indisi 180° dan kichik.*

9. P(0;3) nuqtani koordinata boshi atrofida 90° ga burganda hosil bo'ladigan nuqtaning koordinatalarini toping.

   A) (0; −3) B) (3; 0) C) (3; 3)
   D) (−3; 0)

10. Tekislikka tushirilgan og'ma va perpendikulyar orasidagi burchak $arcsin\frac{24}{25}$ ga teng. Og'maning uzunligi 75 ga teng. Perpendikulyarning uzunligini toping.

    A) 72 B) $10\frac{1}{2}$ C) $21\frac{7}{8}$ D) 21

11. Quyidagi nuqtalardan qaysi biri Oyz tekislikda yotadi?

    A) (2; 0; −5) B) (2; −3; 0) C) (0; 9; −7)
    D) (1; 0; −4)

12. Quyidagi formulalardan qaysilari to'g'ri?

    1) $tg(x-y) = \frac{tgx + tgy}{1 - tgx \cdot tgy}$,
    $x, y, x - y \neq \frac{\pi}{2} + \pi n, n \in Z$;

    2) $cos^2\frac{x}{2} = \frac{1 + cosx}{2}$;

    3) $sinx - siny = 2cos\frac{x+y}{2}sin\frac{x-y}{2}$;

    4) $tgx + tgy = \frac{sin(x+y)}{cosx \cdot cosy}$,
    $x, y \neq \frac{\pi}{2} + \pi n, n \in Z$.

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

13. $\frac{0,28}{0,84} + \frac{0,23}{0,03} - \frac{0,9}{0,05}$ ifodaning qiymatini toping.

    A) −10 B) 25 C) 10 D) $\frac{32}{3}$

14. 720 ning 50% i 18 ning 500% idan necha foiz ko'p?

    A) 200 B) 400 C) 320 D) 300

15. $\frac{5x+6}{x^2-4} - \frac{x}{x^2-4} : \frac{x}{x-2} + 1$ ifodani soddalashtiring.

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

16. $\frac{3^9 \cdot 2^{19} + 15 \cdot 4^9 \cdot 9^4}{6^9 \cdot 2^{10} + 12^{10}} \cdot \left(\frac{3}{4}\right)^{-1}$ ni hisoblang.

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

17. Agar $x = 2,5$ va $y = -1,5$ bo'lsa, $x^3 - x^2y - xy^2 + y^3$ ni hisoblang.

    A) 16 B) 10 C) 25 D) 8

18. Bir son ikkinchisidan 15 ga kichik. Bu sonlarning o'rta arifmetigi 13,5 ga teng. Shu sonlardan kichigini toping.
A) 6 B) 3 C) 7 D) 4

19. a ning qanday qiymatlarida $ax^2 - 3x + 3 = 0$ tenglama bitta ildizga ega bo'ladi?
A) 0 va 1 B) $\frac{1}{3}$ C) $\frac{1}{3}$ va 0 D) $\frac{3}{4}$ va 0

20. Ikkinchi hadi 5 ga, sakkizinchi hadi 12 ga teng bo'lgan arifmetik progressiyaning beshinchi hadini toping.
A) 12,5 B) 7,5 C) 8,5 D) 10

21. Agar $f(x) = 3x - 2e^{-x}$ bo'lsa, $f'(\ln 2)$ ni hisoblang.
A) 2 B) 1 C) 4 D) 5

22. $\triangle ABC$ da $\angle B = 90°$, $\angle C = 60°$. BB_1 balandlik 3 ga teng. AB ni toping.
A) 12 B) 6 C) $6\sqrt{2}$ D) $6\sqrt{3}$

23. To'rtburchakka diagonal o'tkazish natijasida u perimetrlari 25 va 27 ga teng bo'lgan ikkita uchburchakka ajratildi. Agar to'rtburchakning perimetri 36 ga teng bo'lsa, o'tkazilgan diagonalning uzunligini hisoblang.
A) 8 B) 6 C) 11 D) 10

24. Nechta butun son $\sin(16\pi/x) = 0$ tenglamani qanoatlantiradi?
A) 8 B) 10 C) 24 D) 16

25. $\frac{18n^2 - 162}{n^2}$ ifoda natural son bo'ladigan n ning barcha natural qiymatlari nechta?
A) 1 B) 3 C) 6 D) 2

26. Yil boshida o'g'il bolalar sinfdagi o'quvchilarning 30% ini, qizlar esa 21 nafarni tashkil etardi. Yilning o'rtasida sinfga 6 ta yangi o'g'il bola keldi va 11 ta qiz boshqa sinfga o'tdi. Shundan so'ng o'g'il bolalar sinfdagi o'quvchilarning necha foizini tashkil etadi?
A) 50 B) 70 C) 60 D) 55

27. $\begin{cases} x^3 - y^3 = 152, \\ x - y = 2. \end{cases}$
$x \cdot y$ -?
A) 4 B) 12 C) 6 D) 24

28. $\frac{2,72^4 - 0,72^4}{3,44^2 - 2,72 \cdot 1,44}$ ni hisoblang.
A) 6,88 B) 5,68 C) 6,84 D) 5,28

29. $14 - \sqrt{x^2 - 3x + 6} = x^2 - 3x$ tenglama ildizlarining yig'indisini toping.
A) 6 B) 5 C) 3 D) 7

30. Agar $a < 0 < b$ va $|a| < |b|$ bo'lsa, $\frac{1}{a^3 + b^3}$, $\frac{1}{a^4 + b^3}$ va $\frac{1}{a^3}$ larni taqqoslang.
A) $\frac{1}{a^4 + b^3} > \frac{1}{a^3} > \frac{1}{a^3 + b^3}$
B) $\frac{1}{a^3} < \frac{1}{a^3 + b^3} < \frac{1}{a^4 + b^3}$
C) $\frac{1}{a^3} < \frac{1}{a^4 + b^3} < \frac{1}{a^3 + b^3}$
D) $\frac{1}{a^4 + b^3} > \frac{1}{a^3 + b^3} > \frac{1}{a^3}$

31. 7 ga bo'lganda, qoldig'i 3 ga teng bo'ladigan barcha ikki xonali sonlarning yig'indisini toping.
A) 776 B) 656 C) 676 D) 666

32. $(x^2 - 12x + 32)\sqrt{\log_3(x - 5)} \le 0$ tengsizlikni yeching.
A) [6; 8] B) (4; 8] C) (7; 8) D) [7; 8)

33. Ikki tomoni yig'indisi 1,8 ga va ular orasidagi burchagi 150° ga teng bo'lgan uchburchaklar ichida yuzasi eng katta bo'lgan uchburchakning yuzini toping.
A) $\frac{4}{25}$ B) $\frac{9}{10}$ C) $\frac{81}{400}$ D) $\frac{81}{100}$

34. Muntazam to'rtburchakli kesik piramida asoslarining tomonlari 14 va 10 sm, diagonali $4\sqrt{22}$ sm. Kesik piramidaning balandligi necha sm?
A) 7 B) 6 C) 5 D) 8

35. Silindrning balandligi va asosining radiusi 8 ga teng. Yuzi silindrning to'la sirtiga teng bo'lgan doiraning radiusini toping.
A) 8 B) 16 C) 12 D) 9

36. $tg(\alpha + \beta) = 4$, $tg(\alpha - \beta) = -2$ bo'lsa, $tg2\beta$ ni hisoblang.
A) $\frac{2}{3}$ B) $-\frac{7}{6}$ C) $\frac{3}{2}$ D) $-\frac{6}{7}$

Matematika

1. $\left(3,5-3\frac{1}{3}\right)\cdot 10,4:5\frac{1}{5}$ ni hisoblang.

A) $\frac{1}{3}$ B) $\frac{2}{5}$ C) $\frac{3}{7}$ D) $\frac{1}{12}$

2. $a=4b$ va $c+12b=0$ $(b\neq 0)$ bo'lsa, $\frac{a}{c}$ni toping.

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

3. k ning qanday qiymatida $y=kx^3+2$ funksiyaning grafigi $B(-2;\ -14)$ nuqtadan o'tadi?

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

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?
1) $(x-c)\cdot(x-d)=x^2+(c-d)x+cd$;
2) $(x-e)\cdot(x+d)=x^2-(e-d)x-ed$;
3) $12x^2+y^2-(8x^2-5y^2\ \ (-10x^2+(5x^2-6y^2)))=-x^2$;
4) $5a^2-3b^2-((a^2-2ab-b^2)-(5a^2-2ab-b^2))=9a^2-3b^2$.

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

5. $(3a-b)^2+(3a+b)^2$ ni soddalashtiring.

A) $-2b^2$ B) $2b^2+18a^2$ C) $-6ab+2b^2$
D) $-12ab$

6. $\begin{cases} x+y=6, \\ x^2-y^2=12. \end{cases}$ $y-?$

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

7. $F(x)=2ctgx-x+C$ quyidagi funksiyalardan qaysi birining boshlang'ich funksiyasi?

A) $f(x)=\frac{2}{cos^2x}-1$ B) $f(x)=-\frac{2}{sin^2x}-1$
C) $f(x)=\frac{2}{sin^2x}+1$ D) $f(x)=-\frac{2}{cos^2x}-1$

8. Quyidagi mulohazalardan qaysi biri noto'g'ri?

A) *Agar ikkita teng yonli uchburchakning asoslari va asoslaridagi burchaklari teng bo'lsa, bunday uchburchaklar tengdir.*

B) *Teng tomonli uchburchakning balandliklari uchidan boshlab hisoblanganda kesishish nuqtasida 2:1 nisbatda bo'linadi.*

C) *Agar bir uchburchakning bir tomoni va shu tomon qarshisidagi burchagi, ikkinchi uchburchakning bir tomoni va shu tomon qarshisidagi burchagiga mos ravishda teng bo'lsa, bu uchburchaklar tengdir.*

D) *Qavariq beshburchak ichki burchaklarining yig'indisi 540° ga teng.*

9. $P(3;0)$ nuqtani koordinata boshi atrofida 90° ga burganda u qaysi nuqtaga o'tadi?

A) $(0;-3)$ B) $(-3;0)$ C) $(0;3)$ D) $(3;3)$

10. Tekislikka og'ma va perpendikulyar tushirilgan. Og'maning tekislikdagi proyeksiyasi 21 ga, perpendikulyarning uzunligi 20 ga teng. Og'ma va perpendikulyar orasidagi burchakni toping.

A) $arccos\frac{20}{21}$ B) $arcsin\frac{21}{29}$ C) $arcsin\frac{20}{21}$
D) $arctg\frac{20}{29}$

11. Oxz tekisligiga nisbatan $(1;\ 2;\ 3)$ nuqtaga simmetrik bo'lgan nuqtani toping.

A) $(-1;-2;3)$ B) $(-1;2;3)$ C) $(1;-2;3)$
D) $(1;2;-3)$

12. Quyidagi formulalardan qaysilari to'g'ri?
1) $sin(x+y)=sinx\cdot cosy+cosx\cdot siny$;
2) $sin^2\frac{x}{2}=\frac{1+cosx}{2}$;
3) $cosx+cosy=2cos\frac{x+y}{2}cos\frac{x-y}{2}$;
4) $tgx-tgy=\frac{sin(x-y)}{cosx\cdot cosy}$,
$x,y\neq\frac{\pi}{2}+\pi n, n\in Z$.

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

13. $0,34\cdot 0,00025$ ko'paytma quyidagi sonlardan qaysi biriga teng emas?

A) $850\cdot 10^{-7}$ B) $8,5\cdot 10^{-5}$ C) $8,5\cdot 10^{-6}$
D) $85\cdot 10^{-6}$

14. 14% ga arzonlashtirilgandan keyin mahsulotning bahosi 2150 so'm bo'ldi. Mahsulotning dastlabki bahosini aniqlang.

A) 2500 B) 2250 C) 3000 D) 2750

15. $\frac{4+\sqrt{8}}{4-\sqrt{8}}-\frac{4-\sqrt{8}}{4+\sqrt{8}}$ ning qiymatini toping.

A) $\frac{3\sqrt{8}}{8}$ B) $4\sqrt{2}$ C) $\frac{\sqrt{8}+8}{4}$ D) $4\frac{2}{5}$

16. $(\frac{2}{3})^{-3}+2\cdot 4^{-2}-(\frac{2}{3})^{-1}$ ni hisoblang.

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

17. $\sqrt[6]{3-2\sqrt{2}}:\sqrt[3]{\sqrt{2}-1}+1$ ni hisoblang.

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

18. a ning qanday qiymatlarida $ax-3=a+4x$ tenglamaning yechimi bo'lmaydi?

A) $a=2$ B) $a=4$ C) $a=-2$
D) $a=-1$

19. $x^2+px-12=0$ tenglamaning ildizlaridan biri 3 ga teng. Shu tenglamaning barcha koeffitsiyentlari yig'indisini toping.

A) -10 B) -13 C) -11 D) -12

20. Hadlari $b_n = 3n - 10,5$ $(n \in N)$ formula bilan berilgan ketma-ketlikning dastlabki 40 ta hadi yig'indisini toping.
A) 2040 B) 4860 C) 5440 D) 5140

21. $f(x) = -2x^3 + 18x^2 + 12$ funksiya o'sadigan kesmaning uzunligini aniqlang.
A) 4 B) 5 C) 4,5 D) 6

22. To'g'ri burchakli uchburchakning bir kateti $4\sqrt{3}$ ga, bu katet qarshisidagi burchak 60^0 ga teng. Ikkinchi katetni toping.
A) 4 B) $2\sqrt{3}$ C) $\sqrt{2}$ D) $\frac{4\sqrt{3}}{3}$

23. Parallelogrammning diagonallari 7 va 24 ga teng. Uning barcha tomonlari kvadratlarining yig'indisini toping.
A) 1150 B) 1250 C) 625 D) 1350

24. $\sin^4 x - \cos^4 x = \frac{1}{2}$ tenglama $[-2\pi;\ 2\pi]$ kesmada nechta ildizga ega?
A) 9 B) 8 C) 7 D) 10

25. Barcha uch xonali sonlar ichida 44 ga qoldiqsiz bo'linadiganlari nechta?
A) 20 B) 19 C) 21 D) 22

26. Sexda 120 ta samovar va 25 ta patnis yasalgan. Sarf qilingan hamma materialning 0,96 qismi samovarga ketgan. Agar har bir samovarning og'irligi 3,6 kg dan bo'lsa, har bir patnis necha kg bo'lgan?
A) 0,04 B) 0,8 C) 0,9 D) 0,72

27. $4y(5x - y) - (5x - 2)(5x + 2) + 2$ ning eng katta qiymatini toping.
A) 5 B) 6 C) 2 D) 4

28. $a^3 - 9a^2 + 27a - 19$ ni ko'paytuvchilarga ajrating.
A) $(a + 1)(a^2 + 8a - 19)$
B) $(a - 1)(a^2 - 8a + 19)$
C) $(a - 1)(a^2 + 8a - 19)$
D) $(a + 1)(a^2 + 8a + 19)$

29. Ikki sonning o'rta arifmetigi 16 ga, kvadratlarining ayirmasi 192 ga teng. Shu ikki son kvadratlarining yig'indisini toping.
A) 520 B) 514 C) 544 D) 530

30. $\frac{(x^2 + x + 1)(x^2 + 5x + 4)}{x^2 + 5x + 6} \le 0$ tengsizlikning butun sonlardan iborat yechimlari nechta?
A) 4 B) 5 C) 2 D) 3

31. 7 ga bo'lganda, qoldig'i 3 ga teng bo'ladigan barcha ikki xonali sonlarning yig'indisini toping.
A) 776 B) 656 C) 676 D) 666

32. $\frac{log_{\sqrt{6}}x - 2}{log_{\sqrt{6}}x - 4} \le 0$ tengsizlikning yechimlaridan nechtasi tub sonlardan iborat?
A) 5 B) 6 C) 7 D) 8

33. Teng yonli trapetsiyaning asoslari 10 va 18 ga, asosidagi burchagi 60^0 ga teng. Shu trapetsiyaning yuzini hisoblang.
A) $56\sqrt{3}$ B) $36\sqrt{3}$ C) $28\sqrt{3}$ D) $46\sqrt{3}$

34. Uchburchakli muntazam piramida asosining tomoni 24 ga teng. Yon yog'i asos tekisligi bilan 30^0 li burchak hosil qiladi. Piramidaning balandligini toping.
A) 12 B) 4 C) 6 D) 8

35. Silindrning balandligi va asosining radiusi 8 ga teng. Yuzi silindrning to'la sirtiga teng bo'lgan doiraning radiusini toping.
A) 8 B) 16 C) 12 D) 9

36. $sin(2arctg\frac{7}{24})$ ni hisoblang.
A) $\frac{336}{625}$ B) $\frac{226}{625}$ C) $\frac{326}{625}$ D) $\frac{236}{625}$

Matematika

1. $3\frac{1}{3} : 5\frac{5}{7} = 2\frac{4}{5} : x$ proporsiyaning noma'lum hadini toping.
   • A) $\frac{2}{3}$ B) $\frac{1}{2}$ C) $\frac{3}{5}$ D) $4\frac{4}{5}$

2. $a(b+c-bc)-b(c+a-ac)-c(b+a)$ ni soddalashtiring.
   A) $2ac-2bc$ • B) $-2abc$ C) $ab-ac$ D) $-2bc$

3. Quyidagi nuqtalarning qaysi biri $f(x)=-2x+7$ funksiyaning grafigiga tegishli?
   A) (2;1) B) (1;2) • C) (2;4) D) (3;1)

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?
   1) $(x+a)\cdot(x-b)=x^2-(a-b)x-ab$;
   2) $6ab+(2a^3+b^3-(3ab^2-(a^3+2ab^2-b^3)))=3a^3-ab^2+6ab$;
   3) $5a^2-3b^2-((a^2-2ab-b^2)-(5a^2-2ab-b^2))=9a^2-3b^2$;
   4) $3a-(2c-(6a-(c-b)+c+(a+8b)-6c))=10a+9b-8c$.
   • A) 1;3;4 B) 1;2;4 C) 2;3;4 D) 1;2;3

5. $(x-\frac{2+x^2}{x-1}) : \frac{x^2+4x+4}{x+1}$ ni soddalashtiring.
   A) $\frac{1}{x+2}$ B) -1 C) $-\frac{1}{x+2}$
   • D) $\frac{x-2}{(x+2)^2}$

6. $\begin{cases} x^2-y^2+2x-4=0 \\ x+y=0 \end{cases}$ tenglamalar sistemasini yeching.
   • A) $(-2;-2)$ B) $(2;2)$ C) $(2;-2)$ D) $(-1;-1)$

7. $y=\frac{-3}{e^x}$ funksiyaning boshlang'ich funksiyasini toping.
   A) $3lnx+C$ • B) $\frac{3}{e^x}+C$ C) $\frac{1}{3e^x}+C$ D) $\frac{1}{3}e^{-x}+C$

8. Qo'shni burchaklardan biri ikkinchisidan 52° ga katta. Shu burchaklardan kattasini toping.
   • A) 118° B) 106° C) 114° D) 116°

9. Uchlari $A(3;-1)$ va $B(2;4)$ nuqtada bo'lgan AB kesmaning o'rtasidagi nuqtaning koordinatalarini toping.
   A) (−2,5; 1,5) B) (2,5; 1,5) • C) (2,5; 3) D) (2,5; −1,5)

10. Tekislikka og'ma va perpendikulyar tushirilgan. Og'ma va tekislik orasidagi burchak $arccos0,96$ ga, og'maning tekislikdagi proyeksiyasi 72 ga teng. Perpendikulyarning uzunligini toping.
    • A) 42 B) $20\frac{4}{25}$ C) $10\frac{2}{25}$ D) 21

11. Quyidagilardan qaysi biri Oxz tekislikka nisbatan $K(2;4;-5)$ nuqtaga simmetrik bo'lgan nuqta?
    A) (2;−4;5) B) (−2;4;5) C) (−2;−4;5) • D) (2;−4;−5)

12. Quyidagi formulalardan qaysilari to'g'ri?
    1) $cos(x+y)=cosx\cdot cosy-sinx\cdot siny$;
    2) $cos^2\frac{x}{2}=\frac{1+cosx}{2}$;
    3) $sinx-siny=-2cos\frac{x+y}{2}sin\frac{x-y}{2}$;
    4) $tgx-tgy=\frac{sin(x-y)}{cosx\cdot cosy}$, $x,y\neq\frac{\pi}{2}+\pi n, n\in Z$.
    A) 2;3;4 B) 1;2;4 • C) 1;2;3 D) 1;3;4

13. $4,2\cdot13,5\quad8,7\cdot4,2-5,8\cdot8,7+13,5\cdot5,8$ ni hisoblang.
    • A) 52 B) 42 C) 48 D) 50

14. To'g'ri to'rtburchakning bo'yi 20% ga orttirildi. Uning yuzi o'zgarmasligi uchun enini necha foizga kamaytirish kerak?
    A) $16\frac{2}{3}$ • B) 20 C) $18\frac{1}{3}$ D) 25

15. $a^2+\frac{9}{a^2}=31$ bo'lsa, $a-\frac{3}{a}$ nimaga teng?
    A) −3 • B) 3 C) ±4 D) ±5

16. $(0,75)^3\cdot\left(-\frac{4}{6}\right)\cdot\left(\frac{8}{6}\right)^3\cdot4\frac{1}{8}$ ni hisoblang.
    A) −1,75 B) 1,5 C) −2 • D) −2,75

17. Agar $a^2-6a-10+b^2+2b=0$ bo'lsa, $(a+b)^3$ ning qiymatini toping.
    A) 27 • B) 64 C) 25 D) 8

18. $\begin{cases} ax+by=6 \\ bx+ay=4 \end{cases}$ tenglamalar sistemasi $x=3$, $y=2$ yechimga ega bo'lsa, a ning qiymatini toping.
    • A) 5 B) 4 C) 2 D) 3

19. $x^2-9x+q=0$ tenglamaning ildizlaridan biri 2 ga teng. Bu tenglamaning barcha koeffitsiyentlari yig'indisini toping.
    A) −6 B) 2 C) 6 • D) 3

20. Ikkinchi hadi 5 ga, sakkizinchi hadi 12 ga teng bo'lgan arifmetik progressiyaning beshinchi hadini toping.
A) 12,5 B) 7,5 C) 8,5 D) 10

21. Abssissasi $x_o = 2\sqrt{3}$ bo'lgan nuqtadan $f(x) = \sqrt{3}lnx$ funksiyaga o'tkazilgan urinma OY o'qi bilan qanday burchak tashkil etadi?
A) 60° B) $arctg\frac{1}{2}$ C) $arctg2$ D) 30°

22. Bir burchagi 150° bo'lgan uchburchakka tashqi chizilgan aylananing radiusi 2 ga teng. Uchburchak katta tomonining uzunligini toping.
A) 2 B) 1 C) 4 D) 3

23. a va b ning qanday qiymatlarida $ax + by = -4$ va $3x - 3y = 4$ to'g'ri chiziqlar ustma-ust tushadi?
A) $a = -3; b = 3$ B) $a = 3; b = -3$
C) $a = 3; b = -1$ D) $a = b = 3$

24. k ning quyida ko'rsatilgan qiymatlaridan qaysi birida $sinkxcosx - sinxcoskx = 0$ tenglamaning ildizlari $\frac{\pi n}{7}\ \left(n \in Z\right)$ bo'ladi?
A) 8 B) 5 C) 7 D) 6

25. 1 dan 120 gacha bo'lgan sonlar orasida 3 ga ham, 5 ga ham bo'linmaydiganlari nechta?
A) 64 B) 56 C) 61 D) 60

26. Ishlab chiqarish samaradorligi birinchi yili 15% ga, ikkinchi yili 16% ga ortdi. Shu ikki yil ichida samaradorlik necha foizga ortgan?
A) 33,4 B) 32,4 C) 31 D) 34,4

27. Agar $a = 39\sqrt{432}$ bo'lsa, $\sqrt{a} + \sqrt{3}$ ifodaning qiymatini aniqlang.
A) 6 B) 4 C) $6 + \sqrt{3}$ D) 5

28. $\sqrt{11 + 6\sqrt{2}} - \sqrt{11 - 6\sqrt{2}}$ ni hisoblang.
A) 22 B) 6 C) $3\sqrt{2}$ D) $\sqrt{8}$

29. Agar $x^2y + xy^2 = 12$ va $x^2y - xy^2 = 84$ bo'lsa, $\frac{y}{x}$ ning qiymatini hisoblang.
A) $\frac{1}{4}$ B) 1 C) $-\frac{1}{2}$ D) $-\frac{3}{4}$

30. $(x - 1) \cdot \sqrt{8 - 2x - x^2} \leq 0$ tengsizlikning yechimini ko'rsating.
A) $[-2; 3]$ B) $[-4; 1] \cup \{2\}$ C) $[2; \infty)$
D) $[-2; 1] \cup \{3\}$

31. Ikkinchi hadi 6 ga teng, birinchi uchta hadining yig'indisi 26 ga teng o'suvchi geometrik progressiyaning to'rtinchi va ikkinchi hadlari ayirmasini toping.
A) 16 B) 32 C) 48 D) 36

32. Agar $\log_4(\sqrt{3} - 1) + \log_4(\sqrt{6} - 2) = a$ bo'lsa, $\log_4(\sqrt{3} + 1) + \log_4(\sqrt{6} + 2)$ yig'indini toping.
A) $\sqrt{3} - a$ B) $\sqrt{6} - a$ C) $2 - a$
D) $1 - a$

33. Kichik diagonali $24\sqrt{3}$ bo'lgan muntazam oltiburchakka tashqi chizilgan aylananing radiusini toping.
A) $12\sqrt{3}$ B) $24\sqrt{3}$ C) 24 D) 12

34. Muntazam to'rtburchakli piramidaning hajmi 19200 ga, balandligi esa 9 ga teng. Piramida apofemasi uzunligini toping.
A) 27 B) 39 C) 41 D) 36

35. Yasovchisi 15 ga, asosining radiusi 9 ga teng bo'lgan konusga ichki chizilgan sharning radiusini toping.
A) 6 B) 4,5 C) $3\sqrt{2}$ D) $4,5\sqrt{3}$

36. $cos(2arccos\frac{4}{9})$ ning qiymatini toping.
A) $\frac{49}{81}$ B) $\frac{8}{9}$ C) $-\frac{49}{81}$ D) $-\frac{8}{9}$

Matematika

1. $6\frac{2}{3}\cdot 2\frac{1}{4}\cdot(-\frac{1}{2})\cdot\frac{2}{5}$ ni hisoblang.
   A) -3 B) 3 C) $-2,5$ D) 2,5

2. $25-(8a-3)^2$ ni ko'paytuvchilarga ajrating.
   A) $(8a-2)(8+8a)$ B) $(8a+2)(8a-8)$
   C) $(8a-2)(8-8a)$ D) $(8a+2)(8-8a)$

3. Agar $f(x)=(2x-\frac{1}{3})(4x+\frac{1}{4})$ bo'lsa, $f(\frac{1}{2})$ ni toping.
   A) $\frac{7}{12}$ B) $-4,5$ C) 1,5 D) 4,5

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?
   1) $(x-c)\cdot(x-d)=x^2-(c+d)x+cd$;
   2) $(x-e)\cdot(x+d)=x^2-(e-d)x-ed$;
   3) $5a^2-3b^2-((a^2-2ab-b^2)-(5a^2-2ab-b^2))=9a^2-3b^2$;
   4) $3a-(2c-(6a-(c-b)+c+(a+8b)-6c))=2a+7b-8c$.
   A) 1;3;4 B) 2;3;4 C) 1;2;4 D) 1;2;3

5. $(b-c)(b^2+bc+c^2)$ ifodaning $b=\sqrt[3]{5}$ va $c=\sqrt[3]{3}$ bo'lgandagi qiymatini hisoblang.
   A) 8 B) 2 C) -8 D) -2

6. $\begin{cases} x+y=3 \\ x^2-y^2=-6, \end{cases}$ $y-?$
   A) 2,5 B) 0,5 C) 1 D) 3

7. $f(x)=-x+\frac{x^2}{2}$ funksiyaning (6;2) nuqtadan o'tuvchi boshlang'ich funksiyasini toping.
   A) $-\frac{x^2}{2}+\frac{x^3}{6}-18$ B) $-\frac{x^2}{2}+\frac{x^3}{6}-16$
   C) $-\frac{x^2}{2}+\frac{x^3}{6}+18$ D) $-\frac{x^2}{2}+\frac{x^3}{6}+16$

8. Ikki qo'shni burchakning ayirmasi 28° ga teng. Shu burchaklardan kichigini toping.
   A) 78° B) 72° C) 76° D) 82°

9. $P(-3;0)$ nuqtani koordinata boshi atrofida 90° ga burganda hosil bo'ladigan nuqtaning koordinatalarini toping.
   A) (0; -3) B) (3; 0) C) (0; 3)
   D) (3; 3)

10. Tekislikka tushirilgan og'maning uzunligi 75 ga, uning tekislikdagi proyeksiyasi esa 72 ga teng. Og'ma va tekislik orasidagi burchakni toping.
    A) $arccos\frac{7}{50}$ B) $arcsin\frac{24}{25}$ C) $arcsin\frac{7}{24}$
    D) $arcsin\frac{7}{25}$

11. Quyidagilardan qaysi biri Oyz tekislikka nisbatan $P(3;-2;4)$ nuqtaga simmetrik bo'lgan nuqta?
    A) (3; 2; -4) B) (3; 2; 4) C) $(-3;-2;4)$
    D) $(-3;2;-4)$

12. Quyidagi formulalardan qaysilari to'g'ri?
    1) $cos(x+y)=cosx\cdot cosy-sinx\cdot siny$;
    2) $tg(x+y)=\frac{tgx+tgy}{1-tgx\cdot tgy}$;
    $x,y,x+y\neq\frac{\pi}{2}+\pi n, n\in Z$;
    3) $sin^2\frac{x}{2}=\frac{1-cosx}{2}$;
    4) $sinx+siny=2cos\frac{x+y}{2}sin\frac{x-y}{2}$.
    A) 2;3;4 B) 1;2;4 C) 1;3;4 D) 1;2;3

13. $\frac{0,005\cdot 0,081\cdot 3,2}{0,09\cdot 0,0025\cdot 6,4}$ ning qiymatini toping.
    A) 0,3 B) 3 C) 0,9 D) 30

14. Mahsulotning narxi ketma-ket ikki marta 20% dan oshirildi. Keyinchalik bu mahsulotga talabning kamligi tufayli uning narxi 40% ga kamaytirildi. Mahsulotning keyingi bahosi dastlabki bahosiga qaraganda qanday o'zgargan?
    A) 1,2% *ga ortgan* B) *o'zgarmagan*
    C) 8,64% *ga kamaygan*
    D) 13,6% *ga kamaygan*

15. $\frac{\sqrt[3]{\left(5+2\sqrt{6}\right)^2}}{\sqrt[3]{5-\sqrt{24}}}-6-\sqrt{24}$ ni hisoblang.
    A) -3 B) -1 C) -8 D) -7

16. $2^{10}+3^{12}$ yig'indining oxirgi raqamini toping.
    A) 9 B) 15 C) 1 D) 4

17. $\frac{0,4^2-1}{2,8\cdot 0,4-2,8}$ ni hisoblang.
    A) $-\frac{1}{2}$ B) $\frac{1}{2}$ C) 5 D) -5

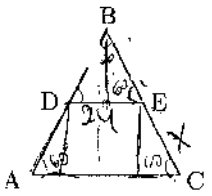
18. Ikki sonning ayirmasi 5 ga teng. Agar shu sonlardan kattasining 20% i kichigining $\frac{7}{30}$ qismiga teng bo'lsa, shu sonlarni toping.
    A) 36 va 41 B) 30 va 35 C) 63 va 68
    D) 45 va 50

19. $\frac{x^3-8}{x-2}=9-2x$ tenglamaning ildizlari yig'indisini toping.
    A) 4 B) 6 C) 3 D) -4

20. Dastlabki yettita hadining yig'indisi -280 ga va hadlarining ayirmasi -2 ga teng bo'lgan arifmetik progressiyaning birinchi hadini toping.
    A) -42 B) -32 C) -36 D) -34

21. $y = x^2 - 5$ egri chiziqqa o'tkazilgan urinma $y = 2x + 3$ to'g'ri chiziqqa parallel. Urinish nuqtasining ordinatasini toping.
A) 2 B) 0 C) -4 D) 4

22. Chizmada $\angle DEB = 60°$, BE=6 va DE=4 (uchburchakning o'rta chizig'i) bo'lsa, AB ni toping.



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

23. Romb diagonallarining tomonlari bilan hosil qilgan burchaklari kattaliklarining nisbati 4:5 ga teng. Rombning kichik burchagini toping.
A) 50° B) 80° C) 60° D) 40°

24. $\sin x \cdot \cos x < \frac{\sqrt{2}}{4}$ tengsizlikni yeching.
A) $\frac{\pi}{4} + \pi k < x < \frac{3\pi}{4} + \pi k,\ k \in Z$
B) $-\frac{5\pi}{8} + \pi k < x < \frac{\pi}{8} + \pi k,\ k \in Z$
C) $\frac{\pi}{8} + \pi k \le x \le \frac{3\pi}{8} + \pi k,\ k \in Z$
D) $\frac{\pi}{8} + \pi k < x < \frac{3\pi}{8} + \pi k,\ k \in Z$

25. $\frac{n^2 - 24}{n}$ ifoda natural son bo'ladigan n ning barcha natural qiymatlari yig'indisini toping.
A) 54 B) 44 C) 48 D) 50

26. 15 kg eritmaning 40 foizi tuzdan iborat. Tuzning miqdori 25 foiz bo'lishi uchun eritmaga necha kg chuchuk suv qo'shish kerak?
A) 6 B) 9 C) 8 D) 10

27. $\frac{x^3 + 1}{x^4 + x^2 + 1}$ kasrni qisqartiring.
A) $\frac{x}{x+2}$ B) $\frac{x-1}{x^2 - x + 1}$ C) $\frac{x-2}{x^2 - x - 1}$
D) $\frac{x+1}{x^2 + x + 1}$

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

29. $x^2 + 5x - \sqrt{x^2 + 5x + 25} = 17$ tenglamaning ildizlari ko'paytmasini toping.
A) 12 B) -24 C) -8 D) -16

30. $x^2 \le 2x + 15$ tengsizlikning butun sonlardan iborat yechimlari yig'indisini toping.
A) 9 B) 4 C) 5 D) 7

31. Cheksiz kamayuvchi geometrik progressiyaning yig'indisi 9 ga, maxraji esa $\frac{1}{3}$ ga teng. Uning birinchi hamda to'rtinchi hadlarining ayirmasini toping.
A) $4\frac{2}{9}$ B) $5\frac{1}{3}$ C) $5\frac{7}{9}$ D) $5\frac{2}{3}$

32. $a = 0,2^{-0,7} \cdot 0,3^{-0,6}$; $b = 0,8^{-1/3} \cdot 3^{0,4}$; $c = 1,2^{0,4} \cdot 1,1^{1,5}$ va $d = 2^{-0,7} \cdot 0,2^{0,1}$ sonlardan qaysi biri 1 dan kichik?
A) b B) a C) d D) c

33. Teng yonli trapetsiyaning asoslari 8 va 26 ga, yon tomoni esa 15 ga teng. Trapetsiyaning yuzini hisoblang.
A) 102 B) 184 C) 255 D) 204

34. Muntazam to'rtburchakli kesik piramida asoslarining tomonlari 3 va 7 sm, diagonali $\sqrt{82}$ sm. Kesik piramidaning balandligi necha sm?
A) $5\sqrt{2}$ B) 5 C) 4 D) $4\sqrt{2}$

35. Balandligi 9 ga, yasovchisi 15 ga teng konusga ichki chizilgan sharning sirtining yuzini toping.
A) 72π B) 56π C) 48π D) 64π

36. $2\sin 43° \cos 17° + 2\sin^2 32° - 1$ ni hisoblang.
A) $\frac{\sqrt{2}}{2}$ B) $\frac{1}{2}$ C) 1 D) $\frac{\sqrt{3}}{2}$

Matematika

1. $\frac{15}{56}\cdot 1\frac{1}{7}:\frac{2}{15}\cdot 24\frac{1}{2}:7\frac{1}{2}$ ni hisoblang.

A) 11 B) $10\frac{1}{2}$ C) $7\frac{1}{2}$ D) 21

2. $\frac{x^3-8}{x^2+2x+4}-\frac{x^3+8}{x^2-2x+4}$ ni soddalashtiring.

A) $4x$ B) -4 C) 0 D) $-2x$

3. Agar $f(x)=(2x+3)(\frac{3}{x}-3)$ bo'lsa, $f(-1)$ ni toping.

A) 6 B) 0 C) -3 D) -6

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?
1) $(x+a)\cdot(x-b)=x^2-(a-b)x-ab$;
2) $(x-c)\cdot(x-d)=x^2-(c+d)x+cd$;
3) $(x-e)\cdot(x+d)=x^2-(e-d)x-ed$;
4) $6ab+(2a^3+b^3-(3ab^2-(a^3+2ab^2-b^3)))=3a^3-ab^2+6ab$.

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

5. $\frac{x^2+4xy}{-16y^2+x^2}$ kasrni qisqartiring.

A) $-\frac{x}{x+4y}$ B) $\frac{x}{x+4y}$ C) $\frac{y}{4y-x}$ D) $\frac{x}{x-4y}$

6. $\begin{cases} y+4=2 \\ xy^2=4 \end{cases}$ tenglamalar sistemasini yeching.

A) $(-1;-2)$ B) $(1;-2)$
C) $(-1;-2);(1;-2)$ D) $\emptyset$

7. $f(x)=x^3+3x-5$ funksiyaning $[-1;1]$ kesmadagi eng katta va eng kichik qiymatlari orasidagi ayirmani toping.

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

8. Aylananing kesishuvchi ikki vatari orasidagi burchaklardan biri 100° ga teng. Shu burchakka qo'shni bo'lgan burchaklarning yig'indisini toping.

A) 90° B) 100° C) 160° D) 200°

9. P(0;3) nuqtani koordinata boshi atrofida 90° ga burganda hosil bo'ladigan nuqtaning koordinatalarini toping.

A) $(0;-3)$ B) $(3;0)$ C) $(3;3)$
D) $(-3;0)$

10. Tekislikka og'ma va perpendikulyar tushirilgan. Og'maning tekislikdagi proyeksiyasi 60 ga, perpendikulyarning uzunligi 11 ga teng. Og'ma va perpendikulyar orasidagi burchakni toping.

A) $arccos\frac{11}{60}$ B) $arcsin\frac{60}{61}$ C) $arcsin\frac{11}{60}$
D) $arctg\frac{11}{61}$

11. Quyidagi nuqtalardan qaysi biri Oxz tekislikda yotadi?

A) $(0;-7;0)$ B) $(-4;3;0)$ C) $(2;-4;6)$
D) $(2;0;-8)$

12. Quyidagi formulalardan qaysilari to'g'ri?
1) $cos(x-y)=sinx\cdot cosy-cosx\cdot siny$;
2) $cos^2\frac{x}{2}=\frac{1+cosx}{2}$;
3) $cosx+cosy=2cos\frac{x+y}{2}cos\frac{x-y}{2}$;
4) $tgx+tgy=\frac{sin(x+y)}{cosx\cdot cosy}$,
$x,y\neq\frac{\pi}{2}+\pi n, n\in Z$.

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

13. 0,26·0,00015 ko'paytma quyidagi sonlardan qaysi biriga teng emas?

A) $390\cdot 10^{-7}$ B) $3,9\cdot 10^{-5}$ C) $3,9\cdot 10^{-6}$
D) $39\cdot 10^{-6}$

14. Mis va qo'rg'oshindan iborat qotishmaning 60% i mis bo'lib, mis qo'rg'oshindan $1\frac{5}{6}$ kg ko'p. Qotishmada qancha mis bor?

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

15. $(a+b)(a+b+1)-(a-b)(a-b-1)$ ni ko'paytuvchilarga ajrating.

A) $4a(b+1)$ B) $2(a+b)(b+1)$
C) $2a(2b+1)$ D) $2a(b-1)$

16. Agar $a=3, b=5$ bo'lsa, $\sqrt[3]{a^b+b^a-152}$ ni hisoblang.

A) $\sqrt[3]{200}$ B) $\sqrt[3]{150}$ C) 6 D) 5

17. Amallarni bajaring:
$\frac{9}{5-\sqrt{7}}-\frac{22}{7+\sqrt{5}}+\frac{1}{\sqrt{7}+\sqrt{5}}$.

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

18. Ikki sonning yig'indisi 24 ga teng. Agar shu sonlardan birining 60% i ikkinchisining $\frac{3}{10}$ qismiga teng bo'lsa, shu sonlarni toping.

A) 20 va 4 B) 18 va 6 C) 8 va 16
D) 7 va 17

19. a ning qanday qiymatida $x^2-(a-1)x+32=0$ tenglamaning ildizlaridan biri 4 ga teng bo'ladi?
A) 12 B) 13 C) 14 D) 11

20. 160 dan katta bo'lmagan 7 ga karrali barcha natural sonlarning yig'indisini toping.
A) 1617 B) 1470 C) 1624 D) 1771

21. Qaysi nuqtada $y=x^2+2x-8$ funksiyaning grafigiga o'tkazilgan urinma $y+2x-8=0$ to'g'ri chiziqqa parallel bo'ladi?
A) $(2;8)$ B) $(-2;8)$ C) $(2;-8)$
D) $(-2;-8)$

22. Uchburchakning tomonlari 4; 5 va 6 ga teng. 5 ga teng bo'lgan tomon qarshisidagi burchakning kosinusini toping.
A) $\frac{9}{16}$ B) $\frac{7}{16}$ C) $\frac{1}{8}$ D) $\frac{7}{8}$

23. To'rtburchakka diagonal o'tkazish natijasida u perimetrlari 25 va 27 ga teng bo'lgan ikkita uchburchakka ajratildi. Agar to'rtburchakning perimetri 36 ga teng bo'lsa, o'tkazilgan diagonalning uzunligini hisoblang.
A) 8 B) 6 C) 11 D) 10

24. k ning quyida ko'rsatilgan qiymatlaridan qaysi birida $cos kx \cdot cos 4x - sin kx \cdot sin 4x = \frac{\sqrt{3}}{2}$ tenglamaning ildizlari $\pm\frac{\pi}{30}+\frac{2\pi n}{5}$ $(n\in Z)$ bo'ladi?
A) 3 B) 2 C) 1 D) 4

25. Tomoni 1000 dm ga teng bo'lgan kvadrat tomoni 5 sm ga teng bo'lgan kvadratchalarga ajratildi. Shu kvadratchalar kengligi 10 sm bo'lgan tasma shaklida joylashtirilsa, uning uzunligi qancha bo'ladi?
A) 200 km B) 100 km C) 1 km
D) 20 km

26. Birinchi son 80 ga teng. Ikkinchi son birinchi sonning 80% ini, uchinchisi esa birinchi va ikkinchi son yig'indisining 50% ini tashkil qiladi. Bu sonlarning o'rta arifmetigini toping.
A) 64 B) 80 C) 54 D) 72

27. Agar $\sqrt{13+z^3}-\sqrt{z^3-14}=3,375$ bo'lsa, $\sqrt{13+z^3}+\sqrt{z^3-14}$ ning qiymati nechaga teng bo'ladi?
A) 6 B) 5 C) 8 D) 7

28. Agar $a=8\sqrt{2}$ va $b=4\sqrt{2}$ bo'lsa, $\frac{a^{\frac{3}{2}}-b^{\frac{3}{2}}}{a^{\frac{1}{2}}-b^{\frac{1}{2}}}-a^{\frac{1}{2}}\frac{a^{\frac{1}{2}}+b^{\frac{1}{2}}}{a^{\frac{1}{2}}+b^{\frac{1}{2}}}$ ning qiymati nechaga teng bo'ladi?
A) 6 B) 16 C) 12 D) 8

29. Agar $m-n=(4x+y)^2$ va $n-m=(4x-y-24)^2$ bo'lsa, $y-x$ ning qiymatini hisoblang.
A) -6 B) -9 C) 9 D) -15

30. Quyidagilardan qaysi biri $(x-4)\cdot\sqrt{x^2+x-2}\le 0$ tengsizlikning yechimi?
A) $(-\infty;-2]\cup[1;4]$ B) $(-\infty;4]$
C) $[-1;2]\cup[4;\infty)$ D) $[-2;4]$

31. Arifmetik progressiyaning oltinchi hadi 10 ga, dastlabki 16 ta hadining yig'indisi 200 ga teng. Bu progressiyaning 9-hadini toping.
A) 14 B) 16 C) 13 D) 18

32. $\log_{\frac{2}{3}}\frac{x}{4}\le\log_{\frac{4}{3}}(x-3)$ tengsizlikni yeching.
A) $(3;\ 4]\cup[12;\ \infty)$ B) $(-\infty;\ 4]\cup[12;\ \infty)$
C) $(0;\ 3)\cup(3;\ 4]$ D) $(-\infty;\ 3)\cup(3;\ \infty)$

33. Ikki tomoni yig'indisi 1,8 ga va ular orasidagi burchagi 150^0 ga teng bo'lgan uchburchaklar ichida yuzasi eng katta bo'lgan uchburchakning yuzini toping.
A) $\frac{4}{25}$ B) $\frac{9}{10}$ C) $\frac{81}{400}$ D) $\frac{81}{100}$

34. Muntazam to'rtburchakli prizmaning asosi 8 ga va balandligi 12 ga teng. Prizma parallel yon yoqlarining o'zaro ayqash diagonallari orasidagi o'tkir burchakni toping.
A) $arcsin\frac{2}{\sqrt{13}}$ B) $arcsin\frac{8}{13}$ C) $arcsin\frac{12}{13}$
D) $arccos\frac{3}{\sqrt{13}}$

35. Konusning yasovchisi 20 ga, asosining diametri 24 ga teng. Unga ichki chizilgan shar sirtining yuzini toping.
A) 156π B) 169π C) 289π D) 144π

36. $arccos(sin(-41^\circ))$ necha gradus?
A) 41° B) -41° C) 139° D) 131°

Matematika

1. $(\frac{5}{9}-1\frac{1}{6}\cdot\frac{1}{2}):\frac{5}{9}+\frac{17}{60}$ ni hisoblang.
   A) $\frac{17}{60}$ B) $\frac{3}{20}$ C) $\frac{37}{60}$ D) $\frac{7}{30}$

2. $\sqrt{\sqrt{56}+2\sqrt{5}}\cdot\sqrt{\sqrt{56}-2\sqrt{5}}$ ni hisoblang.
   A) 6 B) 2 C) 4 D) 3

3. Quyidagi nuqtalarning qaysi biri $f(x)=-2x+9$ funksiyaning grafigiga tegishli?
   A) $(2;5)$ B) $(-1;1)$ C) $(1;-1)$
   D) $(-5;2)$

4. Quyida keltirilgan tengliklardan qaysilari ayniyat?
   1) $(x-e)\cdot(x+d)=x^2-(e-d)x-ed$;
   2) $12x^2+y^2-(8x^2-5y^2-(-10x^2+(5x^2-6y^2)))=-x^2$;
   3) $6ab+(2a^3+b^3-(3ab^2-(a^3+2ab^2-b^3)))=3a^3-ab^2+6ab$;
   4) $5a^2-3b^2-((a^2-2ab-b^2)-(5a^2-2ab-b^2))=9a^2+4ab-3b^2$.
   A) 1;3;4 B) 1;2;3 C) 1;2;4 D) 2;3;4

5. $\frac{0,4^2+2\cdot0,04+0,1^2}{0,5-0,5^2}$ ning qiymatini hisoblang.
   A) -1 B) 1 C) 10 D) $-0,1$

6. $\begin{cases}x+2=0\\x^2y=8\end{cases}$ tenglamalar sistemasini yeching.
   A) $(-2;2)$ B) $(-2;-2)$ C) $\emptyset$
   D) $(-2;2),(-2;-2)$

7. $F(x)=-3ctgx-2x+C$ funksiya quyidagi funksiyalardan qaysi birining boshlang'ich funksiyasi bo'ladi?
   A) $f(x)=\frac{3}{\cos^2x}-2$ B) $f(x)=-\frac{3}{\sin^2x}+2$
   C) $f(x)=-\frac{3}{\cos^2x}+2$ D) $f(x)=\frac{3}{\sin^2x}-2$

8. Qo'shni burchaklardan biri ikinchisidan besh marta kichik bo'lsa, shu burchaklardan kattasini toping.
   A) 130° B) 150° C) 144° D) 140°

9. $x^2+y^2+4x+6y-3=0$ tenglama bilan berilgan aylananing radiusini toping.
   A) 6 B) 3 C) 5 D) 4

10. Tekislikka tushirilgan og'ma va perpendikulyar orasidagi burchak $arcsin\frac{12}{13}$ ga teng. Og'maning uzunligi 39 ga teng. Perpendikulyarning uzunligini toping.
    A) 36 B) 15 C) 30 D) $16\frac{1}{4}$

11. Quyidagi nuqtalardan qaysi biri Oyz tekislikda yotadi?
    A) $(2;0;-5)$ B) $(2;-3;0)$ C) $(0;9;-7)$
    D) $(1;0;-4)$

12. Quyidagi formulalardan qaysilari to'g'ri?
    1) $sin(x-y)=sinx\cdot cosy-cosx\cdot siny$;
    2) $sin^2\frac{x}{2}=\frac{1+cosx}{2}$;
    3) $sinx+siny=2sin\frac{x+y}{2}cos\frac{x-y}{2}$;
    4) $tgx+tgy=\frac{sin(x+y)}{cosx\cdot cosy}$,
    $x,y\neq\frac{\pi}{2}+\pi n, n\in Z$.
    A) 1;2;4 B) 2;3;4 C) 1;3;4 D) 1;2;3

13. Quyidagi oddiy kasr ko'rinishida berilgan sonlardan qaysilarini chekli o'nli kasr ko'rinishiga keltirib bo'lmaydi:
    1) $\frac{2}{34}$; 2) $\frac{14}{625}$; 3) $\frac{4}{90}$; 4) $\frac{11}{125}$?
    A) *2; 3* B) *1; 3* C) *4; 1* D) *3; 4*

14. Agar A, B, C va D sonlarning nisbati $2:3:4:2\frac{3}{4}$ kabi bo'lsa, $\frac{A+B}{C+D}$ ning qiymatini aniqlang.
    A) $\frac{3}{4}$ B) $\frac{20}{27}$ C) $\frac{9}{5}$ D) $\frac{5}{9}$

15. $\frac{19}{\sqrt{20}-1}-2\sqrt{5}+4$ ni soddalashtiring.
    A) 5 B) 6 C) 4 D) $2\sqrt{5}+4$

16. $\sqrt[3]{2\sqrt[3]{2\sqrt{2}}}:2^{\frac{1}{18}}$ ni hisoblang.
    A) $\sqrt[3]{16}$ B) $\sqrt[3]{32}$ C) $\sqrt[3]{64}$ D) $\sqrt[3]{8}$

17. Agar $a=6+\sqrt{3}$ va $b=6-\sqrt{3}$ bo'lsa, $\frac{a^3-b^3}{a^2-b^2}:\frac{a^2+ab+b^2}{a^3+3a^2b+3ab^2+b^3}$ ning qiymatini hisoblang.
    A) 198 B) 144 C) 169 D) 196

18. k ning qanday qiymatlarida $k(x+1)=4$ tenglamaning ildizi musbat bo'ladi?
    A) $(0;4)$ B) $(0;\infty)$ C) $(4;\infty)$
    D) $(-4;0)$

19. k ning qanday qiymatlarida $(2k+5)x^2+7x-2k^2=0$ tenglama $x=1$ yechimga ega?
    A) $1;-3$ B) $1;3$ C) $-2;3$ D) $-1;3$

20. Geometrik progressiyaning maxraji 3 ga, dastlabki to'rtta hadining yig'indisi 120 ga teng. Birinchi hadining qiymatini toping.
    A) 2 B) 1 C) 4 D) 3

21. $f(x) = -\frac{1}{3}x^3 - \frac{1}{6}x + \frac{1}{3}$ funksiyaning $[-1; 1]$ kesmadagi eng katta va eng kichik qiymatlari yig'indisini hisoblang.
A) 0 B) $-\frac{1}{3}$ C) $\frac{2}{3}$ D) $\frac{1}{3}$

22. To'g'ri burchakli uchburchakning o'tkir burchaklari uchidan tushirilgan balandliklari 7 va 24 ga teng. Shu uchburchakning yuzini toping.
A) 84 B) 168 C) 56 D) 175

23. a ning qanday qiymatlarida $ax + 3y = 8$ va $y - x = 4$ to'g'ri chiziqlar parallel bo'ladi ?
A) $a = 2$ B) $a = 1$ C) $a \in R$ D) $a = -3$

24. $4cos5x = 6 + 3cos(\frac{\pi}{2} + 5x)$ tenglama $[-\pi;\ 2\pi]$ kesmada nechta ildizga ega?
A) 1 B) $\emptyset$ C) 3 D) 2

25. 1 dan 126 gacha bo'lgan sonlar orasida 2 ga ham, 7 ga ham bo'linmaydiganlari nechta?
A) 64 B) 54 C) 45 D) 50

26. Agar kubning qirrasi 10% ga kamaytirilsa, uning hajmi necha foizga kamayadi?
A) 30 B) 27,1 C) 30,8 D) 26,1

27. $\left(\frac{\sqrt{y} - \sqrt{x}}{y - \sqrt{xy} + x} + \frac{x}{x\sqrt{x} + y\sqrt{y}}\right) \cdot \frac{x\sqrt{x} + y\sqrt{y}}{y}$ ni soddalashtiring.
A) $\sqrt{x} - \sqrt{y}$ B) $\sqrt{x} + \sqrt{y}$ C) $\sqrt{y}$ D) 1

28. $\sqrt{\frac{9 + \sqrt{65}}{2}} + \sqrt{\frac{9 - \sqrt{65}}{2}}$ ni hisoblang.
A) $9 - \sqrt{10}$ B) $\sqrt{13}$ C) $7 - \sqrt{2}$ D) $\sqrt{5}$

29. Agar $\begin{cases} x - y = 27, \\ \sqrt{x} - \sqrt{y} = 3 \end{cases}$ bo'lsa, $x + 2y$ ning qiymatini toping.
A) 72 B) 54 C) 45 D) 63

30. $|3 - x| \leq 4$ tengsizlikning butun sonlardan iborat yechimlari nechta?
A) 9 B) 4 C) 7 D) 8

31. Geometrik progressiyada $b_1 + b_5 = 51$ va $b_2 + b_6 = 102$. Shu progressiyaning dastlabki yettita hadi yig'indisini toping.
A) 765 B) 361 C) 399 D) 381

32. $4^{log_2 x} + x^2 < 50$ tengsizlikning barcha butun sonlardan iborat yechimlari yig'indisini toping.
A) 10 B) 6 C) 7 D) 15

33. Muntazam oltiburchakka tashqi chizilgan aylananing radiusi $4\sqrt{3}$ ga teng. Uning kichik diagonalini toping.
A) 12 B) $6\sqrt{6}$ C) $3\sqrt{6}$ D) 6

34. Muntazam to'rtburchakli kesik piramidaning balandligi 8 ga, asoslarining tomonlari 12 va 20 ga teng. Kesik piramidaning diagonalini toping.
A) 24 B) 48 C) 40 D) 36

35. Qirrasi 12 ga teng bo'lgan kub yoqlarining markazlari tutashtirildi. Hosil bo'lgan jismning hajmini toping.
A) 144 B) 288 C) 216 D) 169

36. Agar $tg\alpha = 2$ bo'lsa, $\frac{2}{3 + 4cos2\alpha}$ ning qiymatini toping.
A) $-3\frac{1}{3}$ B) $\frac{10}{27}$ C) $\frac{10}{27}$ D) $3\frac{1}{3}$