

4

IV variant

1. Agar a natural sonni 36 ga bo'lganda bo'linma n , qoldiq n^2 ga teng bo'lsa, a sonining eng katta qiymatini toping.
A) 160 B) 432 C) 205 D) 117
2. a, b, c musbat butun sonlar uchun $x = 3a + 2 = 5b + 4 = 7c + 6$ tengliklar bajarilsa, x uch xonali sonning eng katta qiymatini toping.
A) 999 B) 944 C) 945 D) 976
3. Hisoblang:
$$\left(\frac{\sqrt{6} + \sqrt{5}}{\sqrt{2} + 1} \cdot \frac{\sqrt{6} - \sqrt{5}}{\sqrt{2} - 1} \right) : \left(\frac{1}{\sqrt{3}} - \frac{\sqrt{3}}{9} + \frac{1}{\sqrt{27}} \right)$$

A) 1 B) $3\sqrt{3}$ C) $\sqrt{3}$ D) $\frac{\sqrt{3}}{3}$
4. Agar $27,3 \cdot 10^n = 0,0000273$ bo'lsa, n ni toping.
A) -6 B) -7 C) -5 D) -4

5. Ahmad bir kun, Arslon ikki kun ishlaganda bir ishning $\frac{3}{8}$ qismini bajarishadi. Agar Ahmad uch kun, Arslon ikki kun ishlasa, aynan o'sha ishning $\frac{5}{8}$ qismini bajarishadi. Ahmad bir o'zi ushbu ishni necha kunda tamomlaydi?
A) 4 B) 10 C) 8 D) 9
6. Hisoblang: $(2^2 + 6^2 + 10^2 + 14^2 + 18^2) - (1 + 5^2 + 9^2 + 13^2 + 17^2)$.
A) 144 B) 95 C) 104 D) 128
7. Hisoblang: $1 \cdot 4 + 2 \cdot 7 + 3 \cdot 10 + \dots + 8 \cdot 25$.
A) 720 B) 640 C) 648 D) 900
8. Hisoblang: $\arcsin \sin 3$.
A) $\frac{\pi}{2} - 3$ B) $\pi - 3$ C) 3 D) 0
9. Hisoblang: $\cos 1^\circ + \cos 2^\circ + \cos 3^\circ + \dots + \cos 179^\circ$.
A) 1 B) -1 C) 0 D) $\cos 89^\circ$
10. $a \cdot b \cdot c = 4$ bo'lsa,
 $\left(\frac{1}{a} - b \cdot c\right) \cdot \left(\frac{2}{b} - a \cdot c\right) \cdot \left(\frac{3}{c} - a \cdot b\right)$
ko'paytmaning qiymatni toping.
A) $\frac{2}{3}$ B) $-\frac{3}{2}$ C) 1 D) $-\frac{5}{3}$
11. Agar a, b, c manfiy butun sonlar bo'lib,
 $\frac{1}{a} > \frac{1}{b} > \frac{1}{c}$ tengsizliklar bajarilsa,
 $|a + b| - |b - c| + |a - c|$ ifodani soddalashtiring.
A) $-2a$ B) $-2a - 2c$ C) 0 D) $b - a$
12. Agar $x^2 - 5x + 2 = 0$ bo'lsa, $x^2 + \frac{4}{x^2}$ ning son qiymatini toping.
A) 15 B) 23 C) 21 D) 18
13. Agar $x = \sqrt{42 - \sqrt{42 - \sqrt{42 - \dots}}}$,
 $y = \sqrt{x + \sqrt{x + \sqrt{x + \dots}}}$,
 $z = \sqrt{y \cdot \sqrt{y \cdot \sqrt{y \cdot \dots}}}$ bo'lsa, $x + y + z$ ning qiymatini toping.
A) 11 B) 14 C) 10 D) 12
14. Agar $x\sqrt{x} - 9\sqrt{x} = 8$ bo'lsa, $x - \sqrt{x}$ ning qiymatini toping.
A) 3 B) 7 C) 6 D) 8
15. Juft sonning o'zidan keyin keluvchi juft sonning uchlangani bilan yig'indisi 70 dan kichik. Ushbu shartni qanoatlantiruvchi juft sonlardan eng kattasini toping.
A) 12 B) 16 C) 14 D) 8
16. $f(x) = \begin{cases} 4x + 1, & x < 0 \\ -x^3 + 5, & x \geq 0 \end{cases}$ funksiya berilgan.
 $f(f(2))$ ni toping.
A) -13 B) -7 C) -11 D) -3
17. $y = x^4 - 4 \ln x$ funksiyaning minimum nuqtasini toping.
A) $x = 2$ B) $x = 1$ C) mavjud emas D) $x = 0$
18. $y = x^2 - |2x - 4|$ funksiya grafigiga $x = 3$ va $x = -3$ nuqtalarda o'tkazilgan urinmalarining kesishish nuqtasi absissasini toping.
A) 3 B) 1 C) -2 D) -1
19. $\int \frac{2dx}{x \cdot \ln 2x}$ ni hisoblang.
A) $4 \ln \ln 2x + C$ B) $2 \ln 2x + C$
C) $1,5 \ln \ln 2x + C$ D) $2 \ln \ln 2x + C$
20. $ABCD$ to'rtburchak aylanaga ichki chizilgan. Agar $\angle ABC = 105^\circ$, $\angle CAD = 35^\circ$ bo'lsa, $\angle ABD$ ni toping.
A) 75° B) 60° C) 70° D) 80°
21. ABC to'g'ri burchakli uchburchakda E nuqta BC tomonni $BE : EC = 3 : 1$ kabi nisbatda bo'ladi, D nuqta esa AB gipotenuzada yotadi. Agar $BD = 8$, $AC = 12$ va $\angle BAC = 60^\circ$ bo'lsa, BDE uchburchak yuzini toping.
A) 36 B) 48 C) $18\sqrt{3}$ D) $24\sqrt{3}$
22. Uchburchakning 10 ga teng balandligi uning asosini 10 va 4 ga teng kesmalarga ajratadi. Uchburchakning qolgan ikki tomonidan kichigiga o'tkazilgan mediana uzunligini toping.
A) 11 B) 14 C) 13 D) 12
23. $A(0; 1)$ va $B(5; -3)$ nuqtalar berilgan. Agar B nuqta AC kesmaning o'rtasi bo'lsa, C nuqta koordinatalari yig'indisini toping.
A) 2 B) 2,5 C) 3 D) 4
24. Quyidagi javoblardan qaysi biri bo'sh to'plam?
A) $A = \{x : x^2 \leq 0, x \in R\}$
B) $A = \{x : 3x + 5 = 0, x \in R\}$
C) $A = \{x : x^2 < x, x \in R\}$
D) $A = \{x : |2x - 3| = -4, x \in R\}$
25. Agar $a - b = |3x|^{-1}$ bo'lsa, a va b lar uchun to'g'ri munosabatni aniqlang.
A) $a < b$ B) $a \leq b$ C) $a > b$ D) $a = b + 1$

26. Uchburchakning katetlaridan biri 1D (14 lik sanoq sistema), ikkinchisi 28 (14 lik sanoq sistema). Uchburchakning gipotenuzasini 14 lik sanoq sistemasida toping.
A) 32 B) 35 C) 36 D) 33
27. A nuqtaning koordinatalari (46; 44) (8 lik sanoq sistema) va B nuqtaning koordinatalari (26; 31) (10 lik sanoq sistema). A va B nuqtalar orasidagi eng qisqa masofani 2 lik sanoq sistemasida toping.
A) 1100 B) 1110 C) 13 D) 1101
28. Quyida keltirilgan mulohazani inobatga olib, mantiqiy tenglamaning yechimlar sonini aniqlang. $(X \text{ AND } Y) \text{ OR NOT } (X \text{ OR } A) = \text{ROST}$.
A="Word, Excel, Access, MS DOS dasturlarining barchasi amaliy dasturlarga kiradi".
A) 0 B) 3 C) 2 D) 1
29. Quyida HTML kodining bir qismi berilgan:

2	1
-2	2
1	

 Birlashgan kataklardagi sonlar yig'indisini kataklar soniga ko'paytmasini toping.
A) 12 B) 36 C) 15 D) 18
30. Paskal. Quyidagi dastur bajarilishi natijasida S o'zgaruvchining maksimal qiymati qaysi eng qisqa oraliqqa tegishli ekanligini ko'rsating.
 Var S, k:longint;
 Begin S:=random(random(2)) -1952;
 for k:=1+random(1) to 7 do
 S:=S+random(2*k);
 Write(S); End.
 A) [-2004;-1908] B) [-2024;-1898]
 C) [-1914;-1703] D) [-2014;-1892]