2

II variant

1. $a = 1 \cdot 2 + 2 \cdot 3 + 3 \cdot 4 + \cdots + 40 \cdot 41$,
$b = 5 \cdot 4 + 10 \cdot 6 + 15 \cdot 8 + \cdots + 200 \cdot 82$ bo'lsa,
$\frac{a}{b}$ ning qiymatini toping.

A) $\frac{1}{12}$ B) $\frac{1}{6}$ C) $\frac{1}{10}$ D) $\frac{1}{8}$

2. $\frac{7}{1+\frac{2}{x-1}}$ kasr ma'noga ega bo'lmaydigan barcha x lar yig'indisini toping.

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

3. Agar $x < -1$, $y > 1$ bo'lsa, quyidagi javoblardan qaysi biri har doim o'rinli?

A) $x^4 > y$ B) $y^3 > x^3$ C) $x^2 < y^2$
D) $y^2 > x^6$

4. Hisoblang: $\left(1\frac{1}{7}\right) \cdot \left(1\frac{1}{8}\right) \cdot \left(1\frac{1}{9}\right) \cdot \ldots \cdot \left(1\frac{1}{69}\right)$

A) 7 B) $\frac{10}{7}$ C) $\frac{69}{7}$ D) 10

5. 180 gramm suvga 70 gramm tuz aralashtirildi. Hosil bo'lgan aralashmaning necha foizi tuzdan iborat bo'ladi?

A) 28 B) 25 C) 30 D) 22

6. Agar $\sqrt[3]{a+\sqrt[3]{a+\sqrt[3]{a+\ldots}}} = 2$ bo'lsa,
$\sqrt{a-\sqrt{a-\sqrt{a-\ldots}}}$ ning qiymatini toping.

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

7. Hisoblang: $1 \cdot 4 + 2 \cdot 7 + 3 \cdot 10 + \ldots + 9 \cdot 28$.

A) 900 B) 740 C) 1210 D) 960

8. Agar $ctg\alpha = -\frac{1}{2}$ bo'lsa, $tg3\alpha$ ning qiymatini toping.

A) $-\frac{1}{11}$ B) 5,5 C) $-\frac{2}{11}$ D) $\frac{1}{6}$

9. Hisoblang: $\sin 2° + \sin 3° + \sin 4° + \ldots + \sin 358°$.

A) 1 B) $\sin 179°$ C) 0 D) -1

10. Agar $x < -2$ bo'lsa, $\sqrt{x^2+5x+2+\sqrt{4-4x+x^2}}$ ifodani soddalashtiring.

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

11. x, y, z butun sonlar bo'lib, $y<0$ va $\frac{2}{3x} = -\frac{3}{4y} = \frac{4}{5z}$ bo'lsa, x, y, z sonlarini o'sish tartibida joylashtiring.

A) $x<y<z$ B) $z<y<x$ C) $y<x<z$
D) $y<z<x$

12. Ifodani soddalashtiring:

$$\frac{\frac{1}{a}+\frac{1}{b+c}}{\frac{1}{a}-\frac{1}{b+c}} \cdot \left(1+\frac{b^2+c^2-a^2}{2bc}\right) : \frac{(a+b+c)^2}{bc}$$

A) 1 B) 0,5 C) $b+c-a$ D) $a+b+c$

13. Agar $x \neq 0$ bo'lsa, $5+5^{2x+y}-5^{x+1}-5^{x+y}=0$ tenglamadagi x ni y orqali ifodalang.

A) $x=-1-y$ B) $x=1-y$ C) $x=y-1$
D) $x=y+1$

14. Agar $x\sqrt{x}-7\sqrt{x}=6$ bo'lsa, $x-\sqrt{x}$ ning qiymatini toping.

A) 7 B) 6 C) 8 D) 3

15. Agar $x^2+(k+2)^2\cdot x+2k-4=0$ tenglamaning ildizlari 2 dan kichik bo'lsa, k ning eng katta butun manfiy qiymatini toping.

A) -2 B) -4 C) -1 D) -5

16. $\left|\frac{4-2x}{1+3x}\right| > 0$ tengsizlikni yeching.

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

17. Agar $f(2x-3)=3x+5$ bo'lsa, $f(f(1))$ ni toping.

A) 11 B) 38 C) 26 D) 16

18. $y=\cos^2\left(\frac{x}{3}-\frac{\pi}{4}\right)+2\sin x$ funksiyaning eng kichik musbat davrini toping.

A) 2π B) 6π C) 3π D) *davriy emas*

19. $x=1, y=e^x$ va $y=e^{-x}$ funksiyalar bilan chegaralangan soha yuzini toping.

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

20. Muntazam ko'pburchak tomoni unga tashqi chizilgan aylananing 36° li yoyini tortib turadi. Muntazam ko'pburchakning tomonlari sonini toping.

A) 12 B) 10 C) 6 D) 8

21. ABC uchburchakda D va E nuqtalar BC tomonni uchta teng qismlarga bo'ladi $(BD=DE=EC)$, F va G nuqtalar esa AD kesmani uchta teng qismlarga bo'ladi $(AF=FG=GD)$. AFE uchburchak yuzining ABC uchburchak yuziga nisbatini toping.

A) $\frac{1}{12}$ B) $\frac{1}{4}$ C) $\frac{1}{3}$ D) $\frac{1}{9}$

22. $ABCDEF$ muntazam oltiburchakda AC, CE, BF, FD diagonallar o'tkazilgan. AC va BF diagonallar L nuqtada, CE va FD diagonallar K nuqtada kesishadi. Agar oltiburchak tomoni $2\sqrt{3}$ ga teng bo'lsa, $LCKF$ to'rtburchak yuzini toping.

A) $5\sqrt{3}$ B) $8\sqrt{3}$ C) $9\sqrt{3}$ D) $6\sqrt{3}$

23. $ABCD$ trapetsiyaning yuzi 24 ga teng, asoslari $DC=6$, $AB=2$. BC tomondan E nuqta olingan bo'lib, $BE=2EC$ bo'lsa, ADE uchburchak yuzini toping.

A) 12 B) 21 C) 14 D) 16

24. $A(3;0)$ va $B(-1;2)$ nuqtalardan o'tuvchi hamda markazi $y=x+2$ to'g'ri chiziqda yotgan aylana tenglamasini toping.

A) $(x-3)^2+(y-5)^2=25$
B) $(x-4)^2+(y-5)^2=25$
C) $(x-3)^2+(y-4)^2=25$
D) $(x-5)^2+(y-3)^2=25$

25. $A=\{1;3;5;6;8;10\}$ va $B=\{5;6;7;8;10\}$ to'plamlar berilgan. $A\cup B$ to'plam elementlari sonini toping.

A) 8 B) 11 C) 7 D) 6

26. «ALGORITHM» so'zi harflarini kodlash uchun eng kam bit talab etiladigan ikkilikda tekis kodlash usulidan foydalanilgan. Shu bilan birga, ikkilikdagi kodlar o'sib borish tartibi ingliz alifbosi harflarining o'sish tartibiga moslashtirilgan. M harfi kodini toping.

A) *0101* B) *0111* C) *1000* D) *0011*

27. Toirda 11011100 (2 lik sanoq sistema) dona va Zoirda bir necha dona olma bor edi. Zoir Toirdan 36 (16 lik sanoq sistema) dona olma oldi. Natijada ularda olmalar soni tenglashdi. Zoirda boshida 8 lik sanoq sistemasida necha dona olma bo'lgan?

A) *156* B) *160* C) *167* D) *163*

28. 10 lik sanoq sistemasidagi juft sonlar barcha sanoq sistemalarida juftligini e'tiborga olib, [DDA; 1003] oraliqdagi barcha juft sonlar yig'indisini toping. (Barcha sonlar 14 lik sanoq sistemasida qaraladi).

A) $3DDA$ B) $3DDDA$ C) $3DDD$
D) $3DAA$

29. `MS Excel`. Berilgan: `A1=52, C1=A1+5, A2=A1+B2, B2=МИН(A1; C1), C2=B2*B1.` `A2:C2` blok asosida gistogramma tuzilgan. `A2` katakka mos gistogramma qismi `B2` va `C2` kataklarga mos gistogramma qismlarining har biridan ikki marta uzun. Shulardan kelib chiqib, quyidagi formulaning natijasini aniqlang: `=3*КОРЕНЬ(B1)*A1+9*C2`.

A) *684* B) *624* C) *621* D) *645*

30. `Paskal`. Agar quyidagi dastur qismining bajarilishi natijasida `S` ning qiymati 78 ga teng bo'lsa, takrorlanishlar sonini aniqlang:

```
S:=random(random(2)); For i:=-3
+random(1) to X do S:=S+2*i;
```

A) *11* B) *9* C) *15* D) *13*