## 1-qism: Har bir topshiriq 0,9 balldan baholanadi

1. $A(2;-1)$ va $B(3;4)$ nuqtalardan o'tuvchi to'g'ri chiziq tenglamasini tuzing.
   A) $y=-5x+11$ B) $y=5x-11$ C) $y=-x+1$ D) $y=x+1$
2. Agar $\frac{7ab+9bc-ac}{ab+bc+ca}=4$ bo'lsa, $\frac{c}{a}\cdot\left(1-\frac{a}{b}\right)$ ifodaning qiymatini toping.
   A) 0,6. B) $-0,6$. C) 0,4 D) $-0,4$
3. $a,b,c,d$ natural sonlar berilgan va $a+b+c+d=23$ bo'lsa, $abcd$ ning qabul qilishi mumkin bo'lgan eng katta qiymatini toping
   A) 720 B) 1080 C) 1260 D) 1050
4. $ABCDE$ beshburchakka tashqi aylana chizish mumkin. Agar $EA=AB$, $AD\perp CE$, $\angle DAE=30°$ va $\angle ADB=40°$ bo`lsa, $\angle BAD$ ning qiymatini toping.
   A) 65° B) 70° C) 75° D) 80°
5. Birinchi va oxirgi raqamlari yig'indisi toq son bo'ladigan barcha to`rt xonali sonlar sonini toping.
   A) 4500 B) 4000 C) 2500 D) 6725
6. $y=x+2$ to'g'ri chiziqdagi $M(x_1;y_1)$ nuqta uchun $\sqrt{y_1^2-8x_1}+\sqrt{y_1^2+2x_1+5}$ ifodaning qiymatini toping, bunda $1<y_1<3$.
   A) 5 B) 4 C) 1 D) $-1$
7. Uchi $(-3;6)$ nuqtada bo'lgan parabolaning grafigi va absissa o'qi bilan kesishgan nuqtasidan biri $\left(-\frac{17}{4};0\right)$ bo'lsa, ikkinchi kesishish nuqtasining absissasini toping.
   A) $-\frac{29}{4}$ B) $-\frac{7}{4}$ C) $\frac{5}{4}$ D) $\frac{17}{4}$
8. $ABCD$ to'rtburchak berilgan va $\angle CBD=2\angle BDA$ va $\angle ABD=2\angle ADB$, $AB=CB$ va $BD$ va $AC$ kesmalar $O$ nuqtada kesishsa, $\angle BOC$ burchakning qiymatini toping.
   A) 90° B) 120° C) 30° D) 60°
9. 3 ta aylana va 3 ta to'g'ri chiziq eng ko'pi bilan nechta nuqtada kesishadi?
   A) 24 B) 18 C) 27 D) 30
10. $f(x)=\sqrt{4-x^2}$ bo'lsin, u holda $f^{2024}(-1)-f^{2024}(\sqrt{3})$ ning qiymatini toping, bunda $f^n(k)=\underbrace{f(f(f(\dots f}_{n}(k)\dots)))$
    A) $1-\sqrt{3}$ B) $\sqrt{3}-1$ C) 0 D) 1

## 2-qism: Har bir topshiriq 1,5 balldan baholanadi

11. Agar $sin2x=-\frac{1}{3}$ bo'lsa, $\frac{tg\left(\frac{3\pi}{4}-x\right)}{ctg\left(\frac{3\pi}{4}-x\right)}$ ifodaning qiymatini toping.
    A) 2 B) 1 C) 0,2 D) 0,5
12. $f(x)=x^3+\alpha x^2+\beta x+\gamma$ uchun $f(1)=f(7)=f(10)=a$ va $f(2)=f(5)=f(11)=b$ shartlar o'rinli bo'lsa, $a-b$ ning qiymatini toping.
    A) 40 B) $-40$ C) 20 D) $-20$

13. $ABC$ to'g'ri burchakli uchburchakning $BC$ katetida $D$ nuqta shunday olinganki, bunda $AB$ gipotenuza $BD$ kesmadan 2 sm uzun. Agar $\angle ABC = 20°$, $\angle DAC = 10°$ bo'lsa, $CD$ kesmaning uzunligini toping.

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

14. Hisoblang: $\frac{\sin 385° \cdot \sin 55° - \cos 125° \cdot \cos 25°}{\sin 77° \cdot \cos 377° - \sin 13° \cdot \sin 17°}$

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

15. Qavariq to'rtburchakning diagonallari yig'indisi 8 ga teng. To'rtburchak yuzining eng katta qiymatini toping.

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

16. $\begin{cases} x + 3^{y-1} = 2 \\ 3x + 9^{y} = 18 \end{cases}$ bo'lsa, $x \cdot 3^{y+1}$ ni qiymatini toping

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

17. $tg60^{\circ} \cdot ctg160^{\circ} + 8cos60^{\circ} \cdot sin110^{\circ}$ hisoblang.

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

18. $\{1,2,3 \ldots 2025\}$ to'plamning eng ko'p elementli qism to'plamining elementlari sonini toping, bunda bu qism to'plamdagi hech qaysi ikkita elementning yig'indisi 2025 ga ham 2026 ham teng bo'lmasin.

A) 1012 B) 1013 C) 1620 D) 1011

19. $ABC$ teng yonli uchburchakda $AB = BC$. Ushbu uchburchakning $AD$ medianasi $CE$ bissektrisasiga perpendikulyar bo'lsa, $cos\angle ADC$ ning qiymatini toping.

A) $\frac{\sqrt{2}}{4}$ B) $\frac{\sqrt{3}}{4}$ C) $\frac{\sqrt{6}}{4}$ D) $\frac{\sqrt{10}}{4}$

20. $\overline{A0B}$ – uch xonali son $\overline{AB}$ - ikki xonali songa bo'linadigan barcha $\overline{AB}$ ikki xonali sonlar sonini toping.

A) 11 B) 9 C) 10 D) 13

## ***3-<u>qism: Har bir topshiriq 2,6 balldan baholanadi</u>***

21. $f(x) = \frac{x+1}{x-1}$ bo'lsa, $f\big(f(x+100)\big) - f\big(f(x+99)\big) + f\big(f(x+98)\big) - f\big(f(x+97)\big) + \ldots + f\big(f(x+2)\big) - f\big(f(x+1)\big)$ ning qiymatini toping.

22. $N = 2^{12} \times 3^{12} \times 5^{5}$ natural sonni necha xil usulda $a^2 \times b^3$ ko'rinishda tasvirlash mumkin, bunda $a, b$ natural sonlar.

23. $ABCDE$ qavariq beshburchakda $\angle EAB = \angle ABC = 108°, \angle BCD = 168°$ va $EA = AB = BC = CD$ bo'lsa, $\angle ADE$ ning qiymatini toping.

24. 5 ta bola kinoteatrga borishdi va hammasi birinchi qatorda o'tirmoqchi lekin hech qaysi ikkitasi yonma-yon o'tirmoqchi emas. Agar bir qatorda 15 ta o'rindiq bo'lsa bolalar necha xil usulda bu o'rindiqlarga o'tira oladi?

25. Barcha $p$ tub sonlarni yig'indisini toping, bunda $p-1$ sonining 10 ta bo'luvchisi va $p+1$ sonining 6 ta bo'luvchisi bo'lsin.

26. $ABC$ teng yonli uchburchakda $AB=AC$, $D$ va $E$ nuqtalar mos ravishda $AB$ va $AC$ tomonlarda olingan, bunda $AD=CE$ va $DE=BC$. Agar $\angle AED=20°$ bo'lsa $\angle BDE$ ning qiymatini toping.

27. Agar tub sonning ketma-ket kelgan raqamlaridan tashkil topgan barcha sonlar ham tub son bo'lsa, bu tub son ***supertub*** son deyiladi. Nechta bunday ***supertub*** sonlar mavjud? (Misol uchun 237 sonning qismlari: $2, 3, 7, \overline{23}, \overline{37}$ va $\overline{237}$ bo'ladi).

28. $ABCD$ kvadratda $M$ nuqta $CD$ tomon o'rtasi va $E$ nuqta $AD$ tomonda $\angle BEM=\angle MED$ shart o'rinli bo'ladigan qilib tanlangan. Agar $AM$ va $BE$ to'g'ri chiziqlar $P$ nuqtada kesishgan bo'lsa, $\frac{PE}{BP}$ nisbatning qiymatini toping.

29. $x^2+4[x]+4=0$ tenglamaning haqiqiy ildizlari ko'paytmasini toping, bunda [x] - x ning butun qismi.

30. Qavslarni ochib chiqib, o'xshash hadlarni ixchamlashdan hosil bo'lgan ifoda nechta haddan iborat?

$$(xyz+xy+yz+zx+x+y+z)^{10}$$