

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

- 101 dan kichik 3 ga ham, 5 ga ham, 7 ga ham bo'linmaydigan musbat butun sonlar nechta?
A) 45 B) 46 C) 44 D) 43
- Baliq og'irliklari 14:12:11:8:15 kabi nisbatda bo'lgan besh bo'lakka bo'lindi. Agar beshinchi bo'lakning og'irligi 1,51 kg bo'lsa, butun baliqning og'irligi qancha?
A) 6,04 kg B) 6,72 kg C) 5,48 kg D) 5,64 kg
- Birinchi raqami ikkinchi raqamidan katta bo'lgan nechta ikki xonali natural son mavjud?
A) 24 B) 45 C) 36 D) 50
- Soddalashtirish: $\frac{1}{a^2-ac-ab+bc} + \frac{1}{b^2-ab-bc+ac} - \frac{1}{c^2-ac-bc+ab}$
A) 0 B) $\frac{2}{b^2-ab-bc+ac}$ C) $\frac{2}{ac-a^2+ab-bc}$ D) $\frac{2}{bc-c^2-ab+ac}$
- 202100 sonining nechta natural bo'luvchisi mavjud? A) 16 B) 27 C) 18 D) 36
- Hisoblang: $1 + \frac{2}{2021} + \frac{3}{2021^2} + \frac{4}{2021^3} + \dots$ A) $\frac{2021}{2020}$ B) $\left(\frac{2021}{2020}\right)^2$ C) $\frac{2020}{2021}$ D) $\left(\frac{2020}{2021}\right)^2$
- ABC teng yonli uchburchakning AC asosida D nuqta olingan, bunda $CD = 24$ va CL bissektrisa ($L \in AB$) DL kesmaga perpendikulyar. AL ni toping. A) 6 B) 12 C) 4 D) 8
- $\frac{1}{219!} + \frac{1}{318!} + \frac{1}{417!} + \frac{1}{516!} = \frac{n}{10!}$ bo'lsa, n ni toping (bunda, $a! = 1 \cdot 2 \cdot \dots \cdot a$).
A) 100 B) 92 C) 98 D) 96
- Soddalashtirish: $\frac{(\sqrt{a}+\sqrt{ab}+b+b\sqrt{b})^2(1-b\sqrt{b})^2}{\sqrt[4]{a^{-1}(b+b^{-1}-2)(1+b+\sqrt{b})^2}} - \sqrt[4]{a} \cdot b^3 - b^4\sqrt[4]{a}(a+2\sqrt{ab^2})$
A) 0 B) $\sqrt[4]{a}(ab+a)$ C) $\sqrt[4]{a}(b^2-ab)$ D) $\sqrt[4]{a}(b^2+ab)$
- $\frac{|x^2-1|+x+1}{x^2-2x} \leq 0$ tengsizlikning butun yechimlari nechta?
A) 0 B) 1 C) 2 D) 3

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

- Agar $x^2 + 5y^2 + 4xy + 2y + 1 = 0$ bo'lsa, $x + y$ ni toping. A) 0 B) 1 C) -1 D) 2
- Soddalashtirish: $\frac{\cos^4 \beta - \sin^2 \alpha \cdot \sin^2 \beta + \sin^2 \beta \cdot \cos^2 \beta - \sin^2 \alpha \cdot \cos^2 \beta}{\sin^2 \alpha \cdot \sin^2 \beta - \sin^2 \alpha \cdot \cos^2 \alpha - \cos^4 \alpha + \cos^2 \alpha \cdot \sin^2 \beta}$
A) $tg^2 \alpha + tg^2 \beta$ B) $tg^2 \alpha - tg^2 \beta$ C) 1 D) -1
- $a > 1$ bo'lganda $x \cdot |x+1| = a$ tenglama nechta ildizga ega?
A) 1 B) 2 C) 3 D) 4
- $\log_3 x \leq \frac{2}{\log_3 x - 1}$ tengsizlikning butun yechimlari nechta? A) 4 B) 5 C) 6 D) 7
- $x^3 + mx + n$ ko'phad $x^2 + 3x + 10$ ga bo'linsa. U holda $m + n$ ni toping.
A) 30 B) -30 C) 29 D) -29



16. Hisoblang: $\sin^4 \frac{5\pi}{24} + \sin^4 \frac{7\pi}{24}$. A) $\frac{3-\sqrt{3}}{16}$ B) $\frac{1+\sqrt{3}}{8}$ C) $\frac{6-\sqrt{3}}{8}$ D) $\frac{2+\sqrt{3}}{16}$
17. Agar $1 \cdot 2 \cdot 3 \cdot \dots \cdot 10 \cdot 11 = \overline{x99y68z0}$ bo'lsa, $4x + 3y + 2z$ yig'indini toping.
(bunda, x, y, z - raqamlar) A) 11 B) 12 C) 15 D) 16
18. Agar $x^2 + x = 5$ bo'lsa, $96x + x^6$ ning qiymatini toping. A) 210 B) 295 C) 205 D) 280
19. ABC uchburchakda: $\cos(2C - 1,5B) + \sin(A + C - 0,5B) = 2$ va $AC = 2\sqrt{3}$ bo'lsa, ABC uchburchakka tashqi chizilgan aylana radiusini toping. A) $2\sqrt{3}$ B) $2\sqrt{2}$ C) 2 D) 1
20. Teng yonli uchburchakning asosi va yon tomoniga tushirilgan balandliklari mos ravishda 6 va 4 ga teng. Uchburchak perimetrini toping
A) $12\sqrt{2}$ B) $18\sqrt{2}$ C) $10\sqrt{7}$ D) $8\sqrt{7}$

3-qism: Har bir topshiriq 2,6 ballan baholanadi

21. Tenglamani yeching: $|x - 1| + |x - 3| + \left(x - \frac{\pi^2}{4}\right)^2 = 2$
22. Agar $6 \sin^2 \alpha \geq 4 + \cos \alpha$ va $\cos 2\alpha \geq -\frac{1}{9}$ bo'lsa, $\sqrt{24} \cdot \left|\cos \frac{\alpha}{2}\right|$ ning qiymatini hisoblang.
23. ABCD qavariq to'rtburchakning AB va CD tomonlari o'rtalari orasidagi masofa uning diagonallarining o'rtalari orasidagi masofaga teng. BC va AD to'g'ri chiziqlar kesishishidan hosil bo'lgan burchakni toping.
24. Tenglamani yeching: $\log_4 \left(\frac{65x^2 - 390x + 649}{x^2 - 6x + 10}\right) = 12x - 2x^2 - 15$
25. a ning qanday qiymatlarida $x^2 - (3a + 1)x + (2a^2 + 4a - 6) = 0$ tenglamaning ildizlari -1 dan kichik bo'ladi?
26. Qiymati 5 va 100 orasida bo'lib, maxraji 3 ga teng qisqarmas kasrlarning barchasini yig'indisini toping.
27. Uchburchakning medianalarining uzunliklari $2\sqrt{5}$, 8 va $2\sqrt{11}$ ga teng. Kichik medianalar orasidagi burchakni toping.
28. a, b -haqiqiy sonlar $(3a - 2b - 6)^2 = a^2 - b^2 - 9$ tenglikni qanoatlantirsa, $2a - b$ ning qiymatini toping.
29. ABCD qavariq to'rtburchakda $AD = DC$, $\angle ADB = 50^\circ$, $\angle BDC = 20^\circ$ va $\angle ABC = 145^\circ$. $\angle BCA$ burchakni toping..
30. Hisoblang: $(\operatorname{tg}20^\circ - \operatorname{tg}40^\circ + \operatorname{tg}80^\circ)\operatorname{tg}60^\circ$

