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

1. $a<b<0<c$ bo‘lsa, quyidagilardan qaysi biri *a,b, c* haqiqiy sonlarning ixtiyoriy qiymatida doimo musbat boladi? A)$a+5b-6c$ B) $a-3b-4c$ C) $5a-4b+3c$ D) $-4a+3b+2c$
2. Kolbaga 60 litr suv va 15 litr spirt quyildi. Keyin aralashmaning $\frac{1}{3}$ qismi to’kib tashlandi va qanchadir toza suv quyildi. Shundan so‘ng aralashmadagi spirtning foiz miqdori ikki barobar kamaygan bo‘lsa, aralashmaga necha litr toza suv quyilgan? A) 20 B) 40 C) 50 D) 25
3. $a(x-1)^2+b(x-c)=2(x^2-4x+17)$ tenglik ayniyat bo‘lsa, $a+b+c$ ni toping.
   A) 6 B) 5 C) 10 D) 8
4. $9\cdot 3^{2x+2}+3\cdot 3^{2x+1}-9^x \leqslant 89$ yeching. A) $(-\infty,0]$ B) $(-\infty,1]$ C) $[0;+\infty)$ D) $[1;+\infty)$
5. MNP uchburchakning N burchagining bissektrisasi MP tomonni uzunliklari 28 va 12 ga teng kesmalarga ajratadi. Agar $MN-NP=18$ bo‘lsa, MNP uchburchak perimetrini toping.
   A) 68 B) 75 C) 80 D) 85
6. $\log_{\frac{3}{4}}(3x+4)<\log_{\frac{3}{4}}x^2$ tengsizlikni yeching.
   A) $(-\frac{4}{3};0)\cup(0;4)$ B) $(-1;1)\cup(1;4)$ C) $(-1;4)$ D) $(-1;0)\cup(0;4)$
7. $x*y=\begin{cases} x+y, & agar\ xy>31 \\ xy-y, & agar\ \ xy\leq 31 \end{cases}$, $(5*(5*6))$ ni toping. A) 115 B) 30 C) 29 D) 96
8. Kamayuvchi geometrik progressiyaning birinchi, ikkinchi va uchinchi hadlari yig‘indisi (-7) ga teng. Beshinchi hadi ikkinchi hadidan 14 ga kam. Progressiyaning maxrajini toping.
   A) 2,5 B) 3 C) 2 D) 1,5
9. Agar $f\left(\frac{5x^2-1}{3}\right)=\frac{5x^2+5}{3}$ bo‘lsa, $f(3)-f(1)$ ni toping. A) 1 B) 2 C) 3 D) 0
10. Uchta sonning yig‘indisi 28 ga teng. Bu sonlarni 4 asosga ko‘ra logarifmlari o‘suvchi arifmetik progressiyani tashkil qiladi va uning dastlabki uchta hadi yig‘indisi 4,5 ga teng. Arifmetik progressiyaning ayirmasini toping. A) 0,2 B) 1,5 C) 2 D) 0,5

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

11. Quyidagilardan qaysi biri musbat son?
    A) $log_9^2 2-log_3 4$ B) $log_5^2 3-log_3 7$ C) $log_5^2 19-log_2 19$ D) $log_4^2 18-log_3 25$
12. Kubchaning yoqlariga 6 dan 11 gacha bo'lgan 6 ta natural sonlar yozilgan. Kubcha ikki marta tashlandi. Birinchi marta to'rt yon yog‘idagi sonlar yig'indisi 36 ga, ikkinchi marta esa 33 ga teng bo‘ldi.10 soni yozilgan yoqga qarama-qarshi yoqda qanday son yozilgan? A) 9 B) 7 C) 11 D) 8
13. Yuzi 48 ga teng $ABCD$ trapetsiyada AD va BC asoslar $(AD>BC)$. O nuqta - diagonallari kesishgan nuqta. AOB uchburchak yuzi 9 ga teng bo‘lsa, $AD:BC$ nisbatni toping.
    A) 3 B) 2 C) 4 D) 1,5

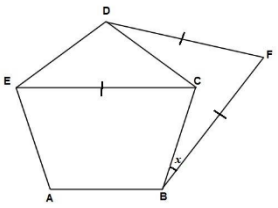
14. $\sqrt{(3x-x^2)^2}+\sqrt[3]{(4x-6)^3}+\sqrt[4]{(3x-x^2)^4}\le 4x$ tengsizlik nechta butun yechimga ega?

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

15. $\begin{cases} u-v=140 \\ uv=1 \end{cases}$ bo'lsa, $\sqrt[3]{u}-\sqrt[3]{v}$ ni toping. A) 6 B) 5 C) $\sqrt[3]{9}$ D) $\sqrt[3]{25}$

16. ABCDE -muntazam beshburchak, *x* burchakni toping.(*chizmaga qarang)*

A) 24 B) 32 C) 30 D) 36



17. $cos\left(x-\frac{\pi}{3}\right)=sin\left(2x+\frac{\pi}{2}\right)$ tenglama $(-90^{\circ};90^{\circ})$ oraliqda nechta yechimga ega? A) 3 B) 2 C) 1 D) 0

18. Tenglamaning haqiqiy ildizlari yig'indisini toping:

$1+log_6\frac{x+3}{x+7}=\frac{1}{4}log_{\sqrt{6}}(x-1)^2$ A) 4 B) -12 C) -6 D) -7

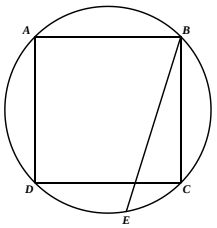
19. Agar $\overline{ab}+a^b=155$ bo'lsa, bu yerda a,b −raqamlar, $7a+6b$ ni toping. ($\overline{ab}$ −ikki xonali son)

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

20. $y=3x+12$ va $y=0{,}5x-3$ to'g'ri chiziqlar va absissa o'qi bilan chegaralangan uchburchak yuzini toping. A) 36 B) 30 C) 28 D) 24

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

21. Agar $f(x+\sqrt{x^2+1})=\frac{x}{x+1}$ bo'lsa, $\left(12-\frac{1}{3}\right)\cdot f(1+f(1-f(1)))$ ni toping



22. Chizmada $ABCD$ kvadrat aylanaga ichki chizilgan. E nuqta aylanada olingan nuqta bo'lib, bunda $EB=3\sqrt{2}$ bo'lsa, $AE+EC$ yig'indini toping.

23. $x^4-2ax+b$ ko'phad x^2-2x-1 ko'phadga bo'linsa, $a+b$ ni toping.

24. Hisoblang: $\left(\frac{3}{1!+2!+3!}+\frac{4}{2!+3!+4!}+\frac{5}{3!+4!+5!}+\ldots+\frac{2021}{2019!+2020!+2021!}+\frac{2022}{2022!}\right)\cdot 100$

25. $ABCD$ qavariq to'rtburchakning diagonallari kesishgan nuqta M bo'lsin. Agar AB, AD va BC kesma uzunliklari o'zaro teng va $DM=MC$, $\angle CAB\neq\angle DBA$ shartlar bajarilsa, CMD burchakni toping.

26. $3-\sqrt{4-\sqrt{3x^2+4\sqrt{3}\cdot x+4}}$ ifoda qanday eng kichik qiymatni qabul qila oladi?

27. $ab=600$ shartni qanoatlantiradigan a va b natural sonlarning eng katta umumiy bo'luvchisining eng katta qiymati nimaga teng bo'lishi mumkin?

28. ABC uchburchakning BC tomonida D nuqta, AD kesmada E, BD kesmada esa F nuqtalar shunday olinganki, bunda $AE=1, BF=DE=2$ va $CD=3$. Agar $AB=CE$ bo'lsa, AF ni toping.

29. n sonining natural bo'luvchilari sonini $\tau(n)$ orqali belgilaymiz.

Agar $\tau(\overline{ababab})=36$ bo'lsa, $a+b$ yig'indining eng katta qiymatini toping. ($\overline{ababab}$ −olti xonali son)

30. $f(x)=(4-x)(1-x)(x+4)(x+7)$ funksiyaning eng kichik qiymatini toping.