NAMUNAVIY ATTESTATSIYA TESTLARI

1. Agar $x=\sqrt{1+\sqrt{50}}$ bo‘lsa, $\sqrt{200}$ ni x orqali ifodalang.
   A) $4\left(x^2-1\right)$ B) $2\left(x^2-1\right)$
   C) $2\left(1-x^2\right)$ D) $4(x+1)$

2. Agar $N=34\cdot34\cdot63\cdot270$ sonning toq bo‘luvchilari yig‘indisining, juft bo‘luvchilari yig‘indisiga nisbatini toping.
   A) 1:13 B) 1:14 C) 1:15 D) 1:16

3. x, y, z sonlari uchun $x>y>z$ va $x+y+z=18$ munosabatlar o‘rinli. Bu 3 ta son bir-biridan 1, 2 va 3 sonlariga farq qiladi. Shunga ko‘ra x ning mumkin bo‘lgan barcha qiymatlari yig‘indisini toping.
   A) 9 B) 14 C) 15 D) 16

4. a va b natural sonlar. $10!=a\cdot2^b$ tenglikda b ning qabul qilishi mumkin bo‘lgan qiymatlari yig‘indisini toping.
   A) 8 B) 15 C) 21 D) 36

5. Agar $x+\frac{1}{x}=1$ bo‘lsa, $\frac{x^6+x^3+1}{x^4+x^3+x^2}$ ning qiymatini toping.
   A) $-\frac{1}{2}$ B) 2 C) $\frac{1}{3}$ D) 3

6. Tenglamaning haqiqiy ildizlari o‘rta arifmetigini toping: $\frac{x^4+1}{x\left(x^2+1\right)}=\frac{41}{15}$.
   A) $\frac{1}{2}$ B) 1 C) 1,(6) D) 4

7. Quyidagilardan qaysi biri to‘g‘ri?
   A) $5^{2022}+6^{2022}<7^{2022}$
   B) Parallelogrammning diagonallari o‘zaro perpendikulyar bo‘lsa, u kvadrat bo‘ladi.
   C) To‘g‘ri kasrning surat va maxrajiga bir xil son qo‘shib borilsa, kasr kichiklashib boradi.
   D) $\int t\,dx=\frac{t^2}{2}+C$

8. $x^2-(\sin\alpha)x-\frac{1}{4}\cos^2\alpha=0$ tenglamaning ildizlaridan biri $\frac{2}{3}$ bo‘lsa, $\sin\alpha=?$
   A) $\frac{1}{3}$ B) $\frac{5}{3},\frac{1}{3}$ C) $1,\frac{1}{3}$ D) $\frac{2}{5}$

9. Konus asosining markazidan yasovchisigacha bo‘lgan masofa d, yasovchi va balandik orasidagi burchak α bo‘lsa, konus to‘la sirtining yuzini toping.
   A) $\frac{2\pi d^2 tg\alpha}{1+\sin\alpha}$
   B) $\frac{2\pi d^2}{1+\cos\alpha}$
   C) $\frac{\pi d^2}{1+\cos\alpha}$
   D) $\frac{2\pi d^2 ctg\left(\frac{\pi}{4}-\frac{\alpha}{2}\right)}{\sin2\alpha}$

10. Hisoblang
$\left(1-\frac{1}{2^2}\right)\left(1-\frac{1}{3^2}\right)\left(1-\frac{1}{4^2}\right)\ldots\left(1-\frac{1}{2018^2}\right)$.
   A) $\frac{2019}{4036}$ B) $\frac{2019}{2018}$ C) 1 D) 0

11. $f\left(g\left(x\right)\right)=x^2+4x-1$, $g\left(x\right)=x+a$ va $f'\left(0\right)=1$ bo‘lsa, a ni toping.
   A) 3 B) 2 C) 1,5 D) 3,5

12. $ABCD$ trapetsiyaning yuzi 24 ga teng asoslari $DC=6$, $AB=2$, BC tomondan E nuqta olingan bo‘lib, $BE=2EC$ bo‘lsa, ADE uchburchakning yuzini toping.
   A) 12 B) 21 C) 14 D) 16

13. $\frac{3}{1^2\cdot 2^2}+\frac{5}{2^2\cdot 3^2}+\frac{7}{3^2\cdot 4^2}+\ldots+\frac{2n+1}{n^2\cdot(n+1)^2}$ ni hisoblang.

A) $\frac{n^2+2n}{(n+1)^2}$ B) $\frac{n^2-n}{(n+1)^2}$ C) 0 D) 1

14. $ABCD$ to‘g‘ri to‘rtburchakda CD tomonining o‘rtasi E nuqta, EA kesmaning o‘rtasi esa F nuqta. AB=4 va bu to‘g‘ri to‘rtburchakning yuzi 8 ga teng bo‘lsa, BF/FA nisbat nechiga teng bo‘ladi?

A) $\sqrt{2}$ B) $\sqrt{3}$ C) $\sqrt{5}$ D) 1

15. Agar $n=2018$ bo‘lsa,

$$\sqrt[3]{\frac{1\cdot 2\cdot 4+2\cdot 4\cdot 8+\ldots+n\cdot 2n\cdot 4n}{1\cdot 3\cdot 9+2\cdot 6\cdot 18+\ldots+n\cdot 3n\cdot 9n}}$$

ifodaning qiymatini toping.

A) 2/3 B) 2018/2019 C) 3/2 D) 1

16. ΔABC da $\angle BAC=30^\circ$, $AC=f'(3)$ va $AB=f(3)$ bo‘lsa, ΔABC ning yuzini toping. Bunda $f(x)=x^3-5x-4$.

A) 44 B) 42 C) 22 D) 60

17. Agar $a\in[-3;1]$ va $b\in[-2;2]$ bo‘lsa, a^2+b^3 qanday oraliqda bo‘ladi?

A) [–8; 17] B) [–17; 8]
C) [0; 17] D) [–8; 0]

18. $\sqrt[3]{2\sqrt{13}+5}+\sqrt[3]{5-2\sqrt{13}}$ ni hisoblang.

A) $\sqrt[3]{2}$ B) $\frac{\sqrt[3]{65}}{4}$ C) 1 D) 1,5

19. ABC to‘g‘ri burchakli uchburchakda $\angle B=90^\circ$, $BC=28$, $AC=100$ va AB tomonda D nuqta shunday olinganki $BD=21$ bo‘ladi. $\sin(\angle ACD)=?$

A) 0,8 B) 0,6 C) 0,4 D) 0,2

20. Agar $\cos 9\alpha=4\cos\alpha$ bo‘lsa, $(4\cos^2 3\alpha-3)(4\cos^2\alpha-3)$ ning qiymatini toping.

A) 0 B) 4 C) 8 D) 16

21. Ushbu {1, 2, 3, 4, …, 37} to‘plamdan shunday ikkita son tanlanganki, ularning ko‘paytmasi qolgan 35 ta sonning yig‘indisiga teng. Shu ikki sonning farqini toping.

A) 5 B) 8 C) 9 D) 10

22. $f(x)=\log_3(x+3)$ bo‘lsa, $f^{-1}(3)$ ni toping.

A) 1 B) 6 C) 24 D) 30

23. $ABCD$ to‘g‘ri to‘rtburchak bo‘lib, DM kesma to‘rtburchak tekisligiga perpendikulyar. Agar DM kesmaning uzunligi butun son bo‘lib, MA, MC va MB kesma uzunliklari mos ravsihda ketma-ket kelgan toq sonlar bo‘lsa, u holda $MABCD$ piramida hajmini toping.

A) 66 B) $28\sqrt{5}$ C) 60 D) $24\sqrt{5}$

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

A) π B) 2π C) 3π D) 4π

25. Agar $a, b>0$ sonlari uchun $f(a\cdot b)=f(a)+f(b)$ tengligi, p – tub sonlari uchun esa $f(p)=p$ tengligi qanoatlantirilsa, u holda $f\left(\frac{25}{11}\right)$ ning qiymatini toping.

A) 1 B) 11 C) –1 D) 21

26. Arifmetik progressiyada $a_3+a_6+a_9+\ldots+a_{3n}=80$ bo‘lsa, $a_{2n-3}+a_{n+6}=16$ bo‘lsa, n ning qiymatini toping.

A) 11 B) 10 C) 8 D) 5

27. $(a^2+b^2+9)x^2+2(a+b+3)x+3=0$ tenglama haqiqiy yechimlarga ega bo‘lsa, $3a-b$ ni toping.
A) –4 B) –3 C) 3 D) 6

28. Birinchi va oxirgi raqami juft bo‘lgan va 1000 ga bo‘linmaydigan barcha to‘rt xonali sonlar nechta?
A) 1996 B) 1800 C) 1600 D) 960

29. Agar aylananing o‘zaro parallel bo‘lgan uzunliklari 38, 38 va 34 ga teng vatarlari orasidagi masofalar bir xil bo‘lsa, shu masofani toping.
A) 5,5 B) 6 C) 6,5 D) 7

30. 2^{2022} raqamlar yig‘indisidan hosil bo‘lgan sonning raqamlar yig‘indisidan hosil bo‘lgan sonning raqamlar yig‘indisi hosil qilindi va hokazo. Oxirida bitta raqam qolgan bo‘lsa, shu raqamni toping.
A) 0 B) 1 C) 7 D) 8

31. $5^{x-3}=2^{3x-2}$ bo‘lsa, $(2{,}56)^{2-x}$ soni necha xonali son bo‘ladi?
A) 1 xonali B) 2 xonali
C) 3 xonali D) 4 xonali

32. Uchburchakning 10 ga teng balandligi uning asosini 4 va 10 ga teng kesmalarga ajratadi. Uchburchakning qolgan ikki tomonidan kichigiga o‘tkazilgan mediana uzunligini uchdan birini toping.
A) 3 B) 4 C) 4,(3) D) 13

33. Kubning diagonalidan ushbu diagonal bilan kesishmaydigan qirrasigacha bo‘lgan masofa 4 ga teng. Kubning hajmini toping.
A) $128\sqrt{2}$ B) $144\sqrt{2}$
C) $180\sqrt{2}$ D) $240\sqrt{2}$

34. Agar $\int_1^4 f(x)dx=12$ bo‘lsa, $\int_2^5 f(x-1)dx$ ning qiymatini toping.
A) 6 B) 8 C) 12 D) 12,5

35. $x>0$ da $x+\sqrt{x}=3$ bo‘lsa, $\sqrt{x}-\frac{3}{\sqrt{x}}$ ifodaning qiymatini toping.
A) –2 B) –1 C) 0 D) 1