

# MATEMATIKA

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- $\frac{3}{2 - \frac{x-2}{2 - \frac{x+5}{7}}} = 8$  tenglamani yeching.  
A)  $\frac{228}{69}$ .    B)  $\frac{225}{69}$ .    C)  $\frac{229}{69}$ .    D)  $\frac{231}{69}$ .
- $\log_3(\log_3 10 \cdot \lg 27)$  ni hisoblang.  
A)  $\log_3 2$ .    B) 1.    C) 2.    D) 4.
- $y = \log_5(\sin^2 2x + \cos^2 2x)$  funksiyaning ikkinchi tartibli hosilasining qiymatini toping.  
A) 0.    B) 1.    C)  $\log_5 2$ .    D)  $-\log_5 2$ .
- Ushbu  $f(x) = \frac{2x-1}{x^2-x-6}$  funksiyaning boshlang'ich funksiyasini toping.  
A)  $\frac{2x^2}{x-3} + C$ .    B)  $\ln|x+2| + C$ .  
C)  $\ln(|x-3| + |x+2|) + C$ .    D)  $\ln(|x-3| \cdot |x+2|) + C$ .
- Aylanaga o'tkazilgan vatar uni 5:7 nisbatda bo'ladi. Ushbu vatarga tiralgan, aylanaga ichki chizilgan katta burchakni toping.  
A)  $105^\circ$ .    B)  $135^\circ$ .    C)  $120^\circ$ .    D)  $150^\circ$ .
- $\{x|x \in N, -5 < x \leq 5\}$  to'planning nechta qism to'plamlari mavjud?  
A) 32.    B) 16.    C) 10.    D) 5.
- $\log_2 10 \cdot \lg 8$  dan katta bo'lmagan natural sonlar nechta?  
A) 1.    B) 3.    C) 0.    D) 2.
- Hisoblang.  $\sqrt{1-\frac{1}{2}} \cdot \sqrt{1-\frac{1}{3}} \cdot \sqrt{1-\frac{1}{4}} \cdot \sqrt{1-\frac{1}{5}} \cdot \sqrt{1-\frac{1}{6}} \cdot \sqrt{1-\frac{1}{7}} \cdot \sqrt{1-\frac{1}{8}} \cdot \sqrt{1-\frac{1}{9}}$   
A) 3.    B)  $\frac{1}{3}$ .    C)  $-\sqrt{13}$ .    D)  $\frac{\sqrt{2}}{9}$ .
- $\sqrt{x+2} + |x-3| \leq 6$  tengsizlikning butun sonlardan iborat yechimlari yig'indisini toping.  
A) 22.    B) 18.    C) 6.    D) 16.
- Piramidaning asosi tomoni  $4\sqrt{3}$  va o'tkir burchagi  $45^\circ$  ga teng bo'lgan rombdan iborat. Ushbu piramidaga ichki chizilgan konusning yasovchisi asos tekisligi bilan  $60^\circ$  li burchak tashkil etadi. Konusning hajmini toping.  
A)  $6\pi$ .    B)  $6\sqrt{2}\pi$ .    C)  $3\pi$ .    D)  $6\sqrt{3}\pi$ .
- $f(x)$  funksiya berilgan  $(a, b)$  intervalda noldan farqli va differensiallanuvchi bo'lsin.  $(f(x))^{-1}$  funksiyaning  $(a, b)$  intervalda hosilasini toping.

- A)  $-(f(x))^{-2} \cdot f'(x)$ .      B)  $(f(x))^{-2} \cdot f'(x)$ .  
 C)  $(f(x))^{-2}$ .      D)  $2(f(x))^{-2} \cdot f'(x)$ .
12. [200; 1000] kesmada 2, 3, 5 va 7 sonlariga bo'lganda qoldiq 1 ga teng bo'ladigan natural sonlar nechta?  
 A) 2.      B) 3.      C) 4.      D) 1.
13. Ifodaning eng katta qiymatini toping:  $\frac{1}{4} \cos 2\alpha - \sin^2 \alpha$   
 A) 0,75.      B) 1.      C) 0,25.      D) 1,5.
14. Agar  $\int_a^b (3x^2 + 1) dx = 36$  va  $a^2 + ab + b^2 = 17$  bo'lsa,  $b - a$  ni toping.  
 A) 7.      B) 9.      C) 2.      D) 6.
15. Agar  $f(x) = \frac{x^2}{\sqrt{1+x^2}}$  bo'lsa,  $f(\operatorname{ctgx})$  ni toping.  
 A)  $f(\operatorname{ctgx}) = \sin x \operatorname{tgx}$ .      B)  $f(\operatorname{ctgx}) = \cos x$ .  
 C)  $f(\operatorname{ctgx}) = \cos x \operatorname{ctgx}$ .      D)  $f(\operatorname{ctgx}) = \operatorname{tgx}$ .
16. Ushbu  $\begin{cases} y = x^8 \\ y = x + 5 \end{cases}$  tenglamalar sistemasi nechta yechimga ega?  
 A) 0.      B) 2.      C) 4.      D) 1.
17.  $a = -4$  bo'lsa,  $\int_a^{a+1} (\sin^2 2x + \cos^2 2x) dx$  aniq integralni hisoblang.  
 A)  $2\sqrt{2}$ .      B) 1.      C)  $\frac{\sqrt{2}-1}{2}$ .      D)  $\sqrt{2}$ .
18. Tomoni  $8\sqrt{3}$  ga teng ABCDEF muntazam oltiburchakning FD dioganali EA va EC dioganallarini mos ravishda P va K nuqtalarda kesib o'tadi. PK kesma uzunligini toping.  
 A) 8.      B) 16.      C) 9.      D) 12.
19. Keta-ket  $x, y, z$  natural sonlar uchun  $\frac{x}{y} + \frac{y}{x} + \frac{x}{z} + \frac{y}{x} + \frac{x}{z} + \frac{z}{y}$  son butun bo'lsa,  $x+y-z$  ni toping.  
 A) 0.      B) 2.      C) 1.      D) 3.
20. Natural  $n$  sonni kvadrati 10 ga bo'linganda qanday qoldiqlarga ega bo'lishi mumkin?  
 A) 0; 2; 3; 7; 6.      B) 0; 1; 4; 5; 6; 9.      C) 0; 2; 3; 5; 8.      D) 0; 2; 3; 5; 9.
21.  $\log_3 10 \cdot \lg 9$  dan kichik bo'lgan natural sonlar nechta?  
 A) 1.      B) 2.      C) 0.      D) 3.
22.  $\{x | x \in N, 0 \leq x < 5\}$  to'plamning nechta qism to'plamlari mavjud?  
 A) 16.      B) 5.      C) 4.      D) 32.

23.  $\frac{3^x}{3^x - 2^x} < 3$  tengsizlikning eng katta butun manfiy va eng kichik butun musbat yechimlari ko'paytmasini toping.  
A) -2. B) 2. C) 4. D) -1.
24. Agar  $f(x) = \frac{2}{x^2 + 1}$  bo'lsa,  $f'(-4)$  ni toping.  
A)  $\frac{16}{289}$ . B)  $\frac{64}{289}$ . C)  $-\frac{16}{289}$ . D)  $-\frac{4}{289}$ .
25. Yarim sharga silindr shunday ichki chizilganki, silindrning bitta asosi yarim shar asosida yotadi. Agar silindr balandligi yarim shar radiusidan 2 marta kichik bo'lsa, silindr hajmining yarim shar hajmiga nisbatini toping.  
A)  $\frac{3\sqrt{3}}{16}$ . B)  $\frac{3\sqrt{3}}{8}$ . C)  $\frac{9}{16}$ . D)  $\frac{11}{16}$ .
26. ABCD parallelogramm uchta uchining koordinatalari ma'lum: A(0; 1), B(1; 3), C(13; 3). D uchining absissasi ordinatasining yig'indisini toping.  
A) 0. B) 5. C) 13. D) 14.
27.  $y = \sqrt[4]{\frac{7-x}{\sqrt[6]{4x^2 - 19x + 12}}}$  funksiyaning aniqlanish sohasini toping.  
A)  $\left(\frac{3}{7}; 7\right)$ . B)  $\left(-\infty; \frac{3}{4}\right) \cup (4; 7]$ . C)  $\left(\frac{3}{4}; 4\right)$ . D)  $\left[\frac{3}{4}; 7\right]$ .
28.  $y = \log_2(\operatorname{arctg}x + \operatorname{arcctg}x)$  funksiyaning  $x = \frac{1}{2}$  nuqtadagi ikkinchi tartibli hosilasining qiymatini toping.  
A) 1. B) 0. C)  $\log_2 3$ . D)  $-\log_2 2$ .
29. Ko'phadning ozod hadini toping.  $f(x) = (5x^3 - 1)^{2017} \cdot (2016x^7 + 1)^5 + x^{27} + 14$   
A) 12. B) 13. C) 15. D) 14.
30. Ushbu  $f(x) = \frac{x-7}{x-6}$  funksiyaning boshlang'ich funksiyasini toping.  
A)  $x + 2\ln|x-6| + C$ . B)  $\ln(x-6)^2 + C$ .  
C)  $x - \ln|x-6| + C$ . D)  $\frac{2x^2}{(x-6)^2} + C$ .
31.  $y > 0$  bo'lsin. To'rtburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan A(1; 0), B(1; y), C(10; y) va D(12; 0). To'rtburchak dioganallarining o'rtalari orasidagi masofani toping.  
A) 1. B) 2. C) y ga bog'liq. D)  $\sqrt{2}$ .
32. Agar  $a > 0$  bo'lsa,  $y = \frac{a}{|x-a|}$  funksiyaning vertical asimtotasini toping.  
A)  $x=a$ . B)  $y=1-a$ . C)  $y=-a$ . D)  $x=-a$ .

33.  $\frac{1}{4}; -\frac{1}{5}; \frac{1}{6}; -\frac{1}{7}; \dots$  ketma-ketlikning umumiy hadi formulasini ko'rsating.
- A)  $a_n = \frac{(-1)^{n+1}}{n+2}$ .    B)  $a_n = \frac{(-1)^n}{n+3}$ .    C)  $\frac{(-1)^{n+1}}{n+3}$ .    D)  $a_n = \frac{(-1)^n + 1}{n+3}$ .
34.  $|x^2 - 2x| \leq x$  tengsizlikni yeching.
- A)  $\{0\} \cup [1; 3]$ .    B)  $[-1; 3]$ .    C)  $\emptyset$ .    D)  $(-1; 3)$ .
35. Agar  $x = \frac{\sqrt{11} + 1}{2}$  bo'lsa,  $\frac{x^3 - 3x^2 + 6,5x - 2}{x^2 - x + 1}$  kasrning qiymatini hisoblang.
- A)  $1 - \sqrt{11}$ .    B)  $\sqrt{11} - 2$ .    C)  $\sqrt{11} - 1$ .    D)  $\sqrt{11} + 1$ .
36. 1, 2, 3, ..., 9 raqamlaridan nechta har xil to'rt honali sonlar tuzish mumkin (bu yerda to'rt honali sonlar turli raqamlardan tashkil topgan)?
- A) 15120.    B) 3024.    C) 1612.    D) 504.
37. Agar  $f(x) = 2^x \cdot x$  bo'lsa,  $f'(x) > 0$  tengsizlikni yeching.
- A)  $(-\infty; -\log_2 e)$ .    B)  $(-\log_2 e; e)$ .  
 C)  $(-\log_2 e; \infty)$ .    D)  $(-2\log_2 e; \infty)$ .
38.  $|\vec{a}| = 3$  va  $|\vec{b}| = 4$  hamda vektorlar orasidagi burchak  $60^\circ$  ga teng bo'lsa,  $\vec{c} = 3\vec{a} + 2\vec{b}$  vektorning uzunligini toping.
- A)  $\sqrt{215}$ .    B)  $\sqrt{214}$ .    C)  $\sqrt{216}$ .    D)  $\sqrt{217}$ .
39.  $y = \frac{x^3 + 1}{x + 1}$  funksiyaning eng kichik butun qiymatini toping.
- A) 1.    B) 2.    C) 3.    D) 0.
40. ABCD parallelogrammda M nuqta BD dioganalda yotadi. Bunda MD:BM=1:2. Agar ADCM to'rtburchak yuzi 5 ga teng bo'lsa, ABCD parallelogramm yuzini toping.
- A) 14.    B) 20.    C) 10.    D) 15.
41.  $f(x) = -3x^2 + 9x + t - 1$  funksiyaning maksimumi 6 ga teng. t ning qiymatini toping.
- A) 1.    B) 2.    C) 0,75.    D) 0,25.
42. Nomanfiy x, y sonlar uchun  $a = 5x + \frac{1}{5}y$  va  $b = 2\sqrt{xy}$  bo'lsin. Qaysi tengsizlik har doim o'rinli?
- A)  $a < b$ .    B)  $a \geq b$ .    C)  $a > b$ .    D)  $a \leq b$ .
43. a va b natural sonlarning EKUBi 30 ga, ko'paytmasi 36000 ga teng bo'lsa, shu sonlarning EKV ini toping.
- A) 1800.    B) 1000.    C) 1200.    D) 900.
44. Natural n sonning kvadratini 10 ga bo'lgandagi qoldiqlar yig'indisini toping.
- A) 45.    B) 21.    C) 19.    D) 25.
45. Agar  $\vec{a}(6; 2; 1)$  va  $\vec{b}(0; -1; 2 + 2\sqrt{14})$  bo'lsa,  $\vec{c} = 2\vec{a} - \vec{b}$  vektorning uzunligini toping.
- A) 16.    B) 17.    C) 15.    D) 14.

46.  $\alpha = 30^\circ$ ,  $a = (\operatorname{tg}\alpha)^{\operatorname{tg}\alpha}$ ,  $b = (\operatorname{ctg}\alpha)^{\operatorname{ctg}\alpha}$ ,  $c = (\operatorname{ctg}\alpha)^{\operatorname{tg}\alpha}$  bo'lsa, quyidagilardan qaysi biri o'rinli?  
 A)  $b > a > c$ . B)  $a > c > b$ . C)  $c > b > a$ . D)  $b > c > a$ .
47.  $m, n$  natural sonlar  $m^2 = n^2 + 229$  tenglikni qanoatlantirsa,  $2m - n$  ni toping.  
 A) 114. B) 116. C) 115. D) 112.
48. Kvadratga ikkita aylana ichki chizilgan. Radiusi 1 ga teng bo'lgan birinchi aylana kvadratning ikkita qo'shni tomonlariga urinadi, radiusi 3 ga teng bo'lgan ikkinchi aylana kvadratning qolgan ikki tomoni va birinchi aylanag urinadi. Kvadratning diogonalini toping.  
 A)  $2(2 - \sqrt{2})$ . B)  $3(\sqrt{2} + 1)$ . C)  $1,5(\sqrt{2} + 1)$ . D)  $2(2 + 2\sqrt{2})$ .
49. ABCD tetreadrning D uchidagi barcha yassi burchaklar to'g'ri. Shu tetreadrga kub shunday ichki chizilganki, kubning bitta uchi D nuqtada, unga qarama-qarshi uchi esa ABC yoqda yotibdi. Agar  $DA = 5$ ,  $DB = 6$  va  $DC = 10$  bo'lsa, kub qirrasining uzunligini toping.  
 A)  $\frac{15}{7}$ . B)  $\frac{25}{12}$ . C) 2. D)  $2\sqrt{2}$ .
50. Agar  $f(x) = x^3 + 2ax^2 + 3bx + 8$  va  $f''(3) = 22$  bo'lsa,  $a$  ni toping.  
 A) 2. B) 1. C) 4. D) 3.
51.  $\sqrt{2x^3 - 5x^2 - 8x + 2} = \sqrt{2}(x - 1)$  tenglama nechta yechimga ega?  
 A) 1. B) 0. C) 2. D) 3.
52.  $y = \frac{1}{x^2}$ ;  $y = 0$ ;  $x = 1$ ;  $x = 3$  chiziqlar bilan chegaralangan shaklning yuzini toping.  
 A) 0,5. B)  $\frac{2}{3}$ . C) 2. D)  $\frac{1}{3}$ .
53. To'g'ri burchakli uchburchakda gipotenuza va kichik katetning yig'indisi 27 ga teng. Agar katta katetning uzunligi  $9\sqrt{3}$  ga teng bo'lsa, unga tashqi chizilgan doira yuzini toping.  
 A)  $81\pi$ . B)  $36\pi$ . C)  $18\pi$ . D)  $9\pi$ .
54.  $\int_0^1 \frac{2x}{x+1} dx$  integralni hisoblang.  
 A) 1. B)  $\ln 2e$ . C)  $\ln \frac{e}{2}$ . D)  $2\ln \frac{e}{2}$ .
55.  $1 - 2 + 3 - 4 + 5 - 6 + \dots + 2017 - 2018 + 2019$  ni hisoblang.  
 A) 1010. B) -1009. C) -1010. D) 1009.
56.  $a_1, a_2, \dots, a_8$  ketma-ketlikda ixtiyoriy uchta ketma-ket hadining yig'indisi 30 ga teng. Agar ketma-ketlikning uchinchi hadi 5 ga teng bo'lsa, birinchi va sakkizinchi hadlari yig'indisini nimaga teng?  
 A) 5. B) bir qiymatli aniqlab bo'lmaydi. C) 10. D) 25.
57.  $\sqrt{2x+6} = \sqrt{x-1} + \sqrt{3x-11}$  tenglamaning ildizlari yig'indisini toping.  
 A) 6. B) 9. C) 4. D) 5.
58.  $\log_7(\log_2 10 \cdot \lg 2)$  ni hisoblang.  
 A) 1. B) 0. C)  $\log_7 2$ . D) 2.

59.  $\left| \frac{x^2 - 5x + 4}{x^2 - 4} \right| \leq 1$  tengsizlikni qanoatlantirmaydigan tub sonni toping.

A) 5.    B) 7.    C) 2.    D) 3.

60. Agar  $|x + 9| = \frac{x}{2} + a$  tenglama  $a$  parametrning nechta natural qiymatida yechimga ega emas?

A) 3.    B) 2.    C) 4.    D) 1.

61.  $a + b + c = -5$  va  $\frac{1}{a+b} + \frac{1}{b+c} + \frac{1}{c+a} = 1$  bo'lsa,  $a + b + c - \left( \frac{a}{b+c} + \frac{b}{c+a} + \frac{c}{a+b} \right)$

ifodaning qiymatini toping.

A) 3.    B) 8.    C) 6.    D)  $a, b, c$  ga bog'liq.

62. To'g'ri burchakli uchburchakning gipotenuzasi 25 ga, unga ichki chizilgan aylana radiusi 4 ga teng. Uchburchakning perimetrini toping.

A) 51.    B) 48.    C) 45.    D) 58.

63. Agar  $f(x) = x^{\sin 2x}$  bo'lsa,  $f'\left(\frac{\pi}{4}\right)$  ni toping.

A) 0.    B)  $\pi/2$ .    C) 1.    D)  $\pi/4$ .

64.  $y = |x| + |x-1| + |x-2|$  funksiya  $x$  ning qanday qiymatida eng kichik qiymatga erishadi?

A) 0.    B) 2.    C) 3.    D) 1.

65. Akvariumning bo'yi 150 sm, eni 110 sm, balandligi 80 sm. Suv sathi yuqoridan 10 sm pastda bo'lishi uchun akvariumga necha litr suv quyish kerak?

A) 1255.    B) 115,5.    C) 1455.    D) 1155.

66. Agar  $f(2x-1) = 4x^3 - 3x^2 + 10x + 4$  bo'lsa,  $f'(1)$  ni hisoblang.

A) 16.    B) 6.    C) 8.    D) 4.

67. Beshta  $a_1, a_2, a_3, a_4, a_5$  tub son ayirmasi 6 ga teng bo'lgan arifmetik progressiyani tashkil qiladi.  $a_1 + a_3 - a_2$  ni toping.

A) bir qiymatli aniqlab bo'lmaydi.    B) 11.    C) 13.    D) 17.

68. Agar  $\begin{cases} \frac{1}{x} + \frac{4}{y} = \frac{1}{2} \\ \frac{2}{x} + \frac{3}{y} = \frac{4}{5} \end{cases}$  bo'lsa,  $y$  ning qiymatini toping.

A) 50.    B) 20.    C) 75.    D) 25.

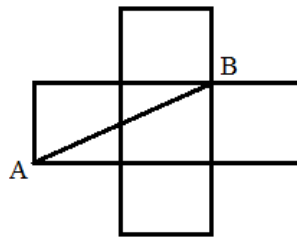
69. Asosining tomoni  $4\sqrt{3}$  ga va balandligi 4 ga teng bo'lgan uchburchakli muntazam piramidaga tashqi chizilgan sharning radiusini toping.

A) 5.    B) 3.    C) 4.    D) 6.

70.  $x^2 - (k+1)x + k^2 + k - 22 = 0$  tenglama ildizlaridan biri 2 dan katta, ikkinchisi esa 2 dan kichik bo'lsa,  $k$  ning butun qiymatlari yig'indisini toping.

A) 2.    B) 4.    C) 5.    D) 0.

71. Beshta bir xil kvadratdan rasmdagidek shakl hosil qilingan. Agar  $AB = 3\sqrt{2}$  bo'lsa, shaklning yuzini toping.



- A) 18.    B) 24.    C) 6.    D) 9.

72. [1; 10] kesmada berilgan  $f(x)$  funksiyaning eng katta va eng kichik qiymatlari teng bo'lsin. U holda  $f(9) - f(5)$  ifodaning eng katta qiymatini toping.

- A) 4.    B)  $f(4)$ .    C) 0.    D) 9.

73. Nomanfiy  $x, y$  sonlar uchun  $a = \frac{x+4y}{2}$  va  $b = 2\sqrt{xy}$ . Qaysi tengsizlik har doim o'rinli?

- A)  $a > b$ .    B)  $a \geq b$ .    C)  $a < b$ .    D)  $a \leq b$ .

74. Dastlabki  $n$  uchta natural sonlar yig'indisining kvadrati 8281 ga teng bo'lsa, shu sonlar kublarining yig'indisini toping.

- A) 1296.    B) 753571.    C) 46656.    D) 8281.

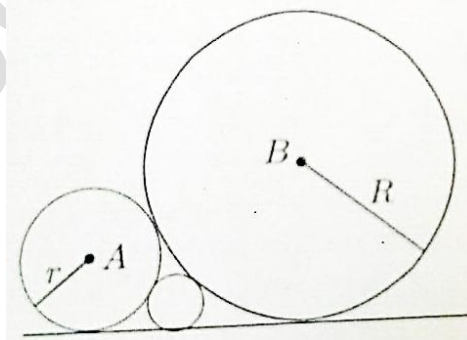
75. Arifmetik progressiyaning ikkinchi va  $n$  yettinchi hadlari yig'indisi 35 ga,  $n$  to'qqizinchi va  $n$  yettinchi hadlari ayirmasi 5 ga teng. Progressiyaning dastlabki yigirmatta hadi yig'indisini toping.

- A) 400.    B) 410.    C) 250.    D) 380.

76.  $\int_2^3 \frac{5x}{x-1} dx$  integralni hisoblang.

- A)  $5 \ln 2e$ .    B) 5.    C)  $5 \ln 4e$ .    D)  $5 \ln 3e^3$ .

77.  $R = 4$  va  $r = 1$  radiusli ikita aylana bir-biriga va to'g'ri chiziqqa urinadi. Shu to'g'ri chiziqqa va aylanalarga urinadigan kichik aylana radiusini toping.



- A)  $\frac{36}{25}$ .    B)  $\frac{9}{16}$ .    C)  $\frac{4}{9}$ .    D)  $\frac{16}{9}$ .

78. 2001 ta butun musbat sonning ko'paytmasi 105 ga, yig'indisi 2021 ga teng. Bu sonlarning eng kattasi nimaga teng?

- A) 15.    B) 105.    C) 21.    D) 35.

79. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyidagicha berilgan:  $A(4; 0)$ ,  $B(1; 3)$ ,  $C(1; 0)$ . O'tkir burchaklar medianalari orasidagi o'tmas burchak kosinusini toping.

A)  $-\frac{4}{5}$ .    B)  $-\frac{4}{7}$ .    C)  $-\frac{5}{7}$ .    D)  $-\frac{3}{5}$ .

80. Asoslarining radiuslari 4 va 5 ga teng bo'lgan kesik konus va unga tengdosh silindrning balandliklari bir xil. Silindr asosining radiusini toping.

A)  $\sqrt{29}$ .    B)  $\sqrt{19}$ .    C)  $\sqrt{20\frac{1}{3}}$ .    D)  $\sqrt{20\frac{2}{3}}$ .

81. Tengsizlikning butun yechimlari yig'indisini toping.

$$2(x-3)^2 - (x-1)(x+3) \leq 0$$

A) 77.    B) 78.    C) 84.    D) 90.

82. To'g'ri burchakli uchburchak gipotenuzasiga tushirilgan balandligi 3 ga, to'g'ri burchak bissektrisasi 4 ga teng. Uchburchakning yuzini toping.

A) 36.    B) 96.    C) 64.    D) 72.

83.  $a, b$  manfiy butun sonlar uchun  $a = b + 2$  va  $a + b - c = 13$  bo'lsa,  $c$  ning eng katta qiymatini toping.

A) -15.    B) -16.    C) -18.    D) -17.

84.  $x^4 - 13x^2 + 36 \leq 0$  tengsizlik nechta butun yechimga ega?

A) 2.    B) 4.    C) 6.    D) ega emas.

85. 9 nafar ishchidan 3 ta kishidan iborat brigada kerak. bu ishni nechta usulda amalga oshirsa bo'ladi.

A) 27.    B) 36.    C) 84.    D) 120.

86. Kvadratning tomonlari koordinata o'qlariga parallel va 6 ga teng. Uning markazi (2; 1) nuqtada joylashgan. Kvadrat tomonlarining absissa o'qi bilan kesishish nuqtalari koordinatalarini toping.

A) (1; 0), (5; 0).    B) (0; 0), (6; 0).    C) (-1; 0), (5; 0).    D) (-1; 0), (0; 5).

87. Agar  $5a^2 - 7ab - 6b^2 = 0$  bo'lsa,  $a$  ni  $b$  orqali ifodalang.

A)  $a = -0,6b; a = 2b$ .    B)  $a = -0,2b; a = b$ .

C)  $a = -0,8b; a = -b$ .    D)  $a = -2b; a = 0,5b$ .

88. Agar  $\int_a^b (4x+5)dx = 225$  va  $a+b=10$  bo'lsa,  $b-a$  ni toping.

A) 9.    B) 2.    C) 7.    D) 6.

89.  $\int \frac{dx}{4+x^2}$  ni hisoblang.

A)  $\frac{1}{2} \arctg \frac{x}{2} + C$ .    B)  $\frac{1}{2} \arctg \frac{x}{4} + C$ .    C)  $\frac{1}{2} \arctg x + C$ .    D)  $\frac{1}{4} \arctg \frac{x}{2} + C$ .

90. "Ikkita irratsional sonlar ayirmasi irratsional son bo'ladi" tasdig'ini qanday inkor etish mumkin?

A) Ikkita irratsional sonlar ayirmasi ratsional son ham bo'lishiga misol keltirish yetarli.

B) "Ixtiyoriy irratsional son ikkita irratsional sonlar ayirmasidir" tasdig'ini isboti yetarli.

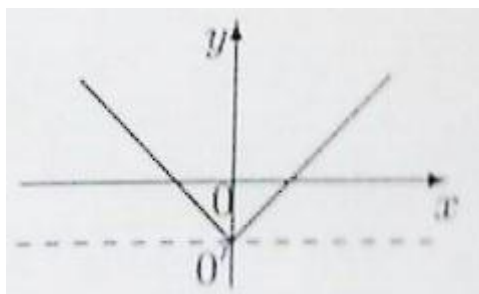
C) Hech qanday. Keltirilga tasdiq to'g'ri.

D) "Ixtiyoriy irratsional son ikkita ratsional sonlar ayirmasidir" tasdig'ining isboti yetarli.



91. Ta'lim muassasasida barcha o'quvchilar kamida bitta – ingliz yoki nemis tilida so'zlasha oladilar, ayrimlari esa ikkala tilni ham biladilar. O'quvchilarning 85% i ingliz tilini, 65% i esa nemis tilini biladilar. Ikkala tilni ham biladigan o'quvchilar barcha o'quvchilarning necha foizini tashkil etadilar?  
A) 45. B) 50. C) 75. D) 60.
92. Raqamlari yig'indisi 2001 ga teng bo'lgan eng kichik natural sonning birinchi raqami nimaga teng?  
A) 4. B) 1. C) 3. D) 2.
93.  $\cos^2 \alpha - \frac{1 + \cos \alpha}{1 - \cos \alpha} \cdot \operatorname{tg}^2 \frac{\alpha}{2}$  ni soddalashtiring.  
A)  $\cos^2 \alpha$ . B)  $-\sin^2 \alpha$ . C)  $\operatorname{tg} \alpha$ . D)  $\sin \alpha$ .
94.  $(\sqrt{5} - 2)^{x^2} < (\sqrt{5} - 2)^{2x}$  tengsizlikning yechimi bo'lmaydigan natural sonlarni toping.  
A) 1; 3. B) 1; 2; 3. C) 2; 3. D) 1; 2.
95.  $y = \sin \frac{x}{2}$ ;  $y = 0$ ;  $x = \frac{\pi}{2}$ ;  $x = \pi$  chiziqlar bilan chegaralangan shaklning yuzini toping.  
A)  $\sqrt{2}$ . B) 1,5. C)  $0,5\sqrt{2}$ . D) 2.
96.  $\log_2^4 x - \log_{0,5}^2 \frac{x^3}{8} + 9 \log_2 \frac{32}{x^2} < 4 \log_{0,5}^2 x$  tengsizlikning eng katta natural yechimini toping.  
A) 7. B) 6. C) 8. D) 5.
97.  $\sin \frac{x-y}{2} \sin \frac{y-z}{2} \sin \frac{z-x}{2} = \frac{1}{4}$  bo'lsa,  $\sin(x-y) + \sin(y-z) + \sin(z-x)$  ning qiymatini toping.  
A) 2. B) 1. C) -1. D) -2.
98. ABCD parallelogrammda CD tomonni D uchidan boshlab hisoblaganda 2:3 nisbatda bo'luvchi AN to'g'ri chiziq o'tkazilgan. Agar AND uchburchakning yuzi 8 ga teng bo'lsa, parallelogrammning yuzini toping.  
A)  $20\sqrt{2}$ . B) 45. C) 40. D) 20.
99. Konusning yasovchisi  $4\sqrt{3}$  ga teng. Konusning uchidan unga ichki chizilgan shar markazigacha bo'lgan masofa 4 ga teng. Konu yasovchisi va asos tekisligi orasidagi burchakni toping.  
A)  $\frac{\pi}{4}$ . B)  $2\operatorname{arctg} 3$ . C)  $\frac{\pi}{3}$ . D)  $2\operatorname{arctg} \frac{1}{3}$ .
100. Agar  $\operatorname{tg} \alpha = -2$  bo'lsa,  $\frac{2\cos 2\alpha + 1}{1 - 3\cos^2 \alpha}$  ning qiymatini toping.  
A) -0,95. B) -1,75. C) -0,5. D) -3,16.
101. Agar  $x=1$  bo'lsa,  $a^2 \frac{(x-b)(x-c)}{(a-b)(a-c)} + b^2 \frac{(x-a)(x-c)}{(b-a)(b-c)} + c^2 \frac{(x-a)(x-b)}{(c-a)(c-b)}$  ning qiymatini toping. (Bu yerda  $(a-b)(a-c)(b-c) \neq 0$ )  
A) 0. B) 2. C) 1. D) a, b, c ga bog'liq.

102. Dastlabki 48 ta natural sonlar orasidan nechitasi 3 yoki 4 ga karrali emas?  
 A) 28 ta. B) 23 ta. C) 24 ta. D) 16 ta.
103. Agar  $x < \frac{a-b}{2}$ ,  $c < a - 2y$ ,  $b > c + 2z$  bo'lsa, u holda  $x+y+z$  ni toping.  
 A)  $x+y+z < a-b-c$ . B)  $x+y+z < a-c$ . C)  $x+y+z < b-c$ . D)  $x+y+z < a+b-c$ .
104.  $3 + 5\sin 2x = \cos 4x$  tenglamani  $[0; \pi]$  kesmadagi ildizlari sonini toping.  
 A) 4. B) 5. C) 3. D) 2.
105. Tenglama ildizlari yig'indisini toping.  $\frac{2x+1}{x} + \frac{4x}{2x+1} = 5$   
 A) -0,4. B) -0,3. C) -0,2. D) -0,5.
106. Agar  $f(x) = mx^2 - (m-12)x - 2$  parabolaning simmetriya o'qi tenglamasi  $x = -1$  bo'lsa,  $m$  ning qiymatini toping.  
 A) 4. B) 3. C) 6. D) 2.
107. Musbat butun sonlar uchun  $H = \frac{2ab}{a+b}$ ,  $G = \sqrt{ab}$ ,  $A = \frac{a+b}{2}$ ,  $Q = \sqrt{\frac{a^2+b^2}{2}}$  kattaliklarni qaraylik. Quyidagi munosabatlardan qaysilari doim o'rinli?  
 A)  $Q \leq G \leq A \leq H$ . B)  $G \leq H \leq A \leq Q$ . C)  $G \leq A \leq H \leq Q$ . D)  $H \leq G \leq A \leq Q$ .
108. ABC uchburchakning BC va AC tomonlarida mos ravishda D va E nuqtalar shunday olindiki, bunda  $\angle BAD = 50^\circ$ ,  $\angle ABE = 30^\circ$  bo'lsa,  $\angle BED$  ni toping.  
 A)  $40^\circ$ . B)  $80^\circ$ . C)  $70^\circ$ . D)  $50^\circ$ .
109. Muntazam to'rtburchakli prizma asosining yuzi 64 ga teng. Agar prizmaning diagonali yon qirrasiga bilan  $30^\circ$  burchak tashkil etsa, prizmaning yon sirti nimaga teng.  
 A)  $204\sqrt{6}$ . B)  $209\sqrt{6}$ . C)  $256\sqrt{6}$ . D)  $210\sqrt{6}$ .
110. Qavariq ABCDEF oltiburchakda ichki burchaklari o'zaro teng. Agar  $AB=3$ ,  $BC=4$ ,  $CD=5$ ,  $EF=2$  bo'lsa, AF tomon uzunligini toping.  
 A) 7. B) 2. C) 6. D) bir qiymatli aniqlab bo'lmaydi.
111. Teng yonli trapetsiya diagonali uning o'tkir burchak bissektrisasidir. Trapetsiyaning asoslarining uzunliklari 2:3 nisbatda, perimetri esa 12 ga teng. Trapetsiyaning o'rta chizig'ini toping.  
 A)  $2\frac{1}{2}$ . B) 3,5. C) 3. D)  $3\frac{1}{3}$ .
112. Agar  $a = 5^{200}$  va  $b = 2^{500}$  bo'lsa, quyidagi munosabatlardan qaysi biri o'rinli bo'ladi?  
 A)  $a < b$ . B)  $a = b$ . C)  $a = b + 1$ . D)  $a > b$ .
113.  $\frac{x+2}{3} = \frac{2x+3}{2} - \frac{5x-2}{3}$  tenglamani yeching.  
 A) -1. B) 1,5. C) 1. D) 0,5.
114. Rasmda  $y = a \cdot \sqrt{(x-b)^2 + c} + d$  funksiya grafigi tasvirlangan. Quyidagi javoblardan qaysi biri doim o'rinli.



- A)  $\frac{dc}{a} < 0$ .      B)  $\frac{bc}{a} < 0$ .      C)  $ad < 0$ .      D)  $abc > 0$ .

115. Teng yonli uchburchak asosidagi burchak tangensi  $\sqrt{3}$  ga teng. Uning yon tomoniga o'tkazilgan medianasi va asosi orasidagi burchakni toping.

- A)  $60^\circ$ .      B)  $30^\circ$ .      C)  $15^\circ$ .      D)  $45^\circ$ .

116.  $f(x)$  funksiya berilgan  $(a, b)$  intervalda differensiallanuvchi bo'lsin.  $(f(x))^4$  funksiyaning  $(a, b)$  intervalda hosilasini toping.

- A)  $3(f(x))^3 \cdot f'(x)$ .      B)  $(f(x))^3 \cdot f'(x)$ .  
 C)  $3(f(x))^3$ .      D)  $4(f(x))^3 \cdot f'(x)$ .

117. Agar  $\sin\left(\frac{\pi}{4} - \alpha\right) = \sqrt{\frac{3}{8}}$  bo'lsa,  $\sin 2\alpha$  ning qiymatini toping.

- A) 0,5.      B) 0,25.      C) -0,5.      D) -0,75.

118. Bir gala chumchuqlar bittadan shoxga qo'nganda bitta chumchuq ortib qoladi, ikkitadan qo'nsa, bitta shox ortib qoladi. Nechta chumchuq va nechta shox bo'lgan?

- A) 6; 8.      B) 8; 6.      C) 4; 3.      D) 3; 4.

119.  $x^3 + x^2 + 18$  ko'phadni ko'paytuvchilarga ajrating.

- A)  $(x+3) \cdot (x^2 - 2x + 6)$ .      B)  $(x+3) \cdot (x^2 - 3x + 6)$ .  
 C)  $(x+3) \cdot (x^2 + 2x + 6)$ .      D)  $(x+3) \cdot (x^2 - x + 6)$ .

120.  $\cos 2x = \sin\left(\frac{\pi}{3} + x\right)$  tenglamaning eng kichik musbat ildizini toping.

- A)  $\frac{\pi}{36}$ .      B)  $\frac{\pi}{6}$ .      C)  $\frac{\pi}{24}$ .      D)  $\frac{\pi}{18}$ .

121.  $\vec{a}$ ,  $\vec{b}$  va  $\vec{c}$  birlik vektorlar  $\vec{a} + \vec{b} + \vec{c} = 0$  shartni qanoatlantiradi.  $\vec{a} \cdot \vec{b} + \vec{b} \cdot \vec{c} + \vec{c} \cdot \vec{a}$  ni hisoblang.

- A) 1,5.      B) 3.      C) -1,5.      D) -3.

## INFORMATIKA

122. To'g'ri tenglikni ko'rsating:  
A) 1 Kbit=1024 bayt.      B) 1 Kbit=1000 bit.  
C) 1 Kbit=1024 bit.      D) 1 Kbit=1 bayt.
123. Quyidagi mulohazalardan rost qiymatga egalarini aniqlang:  
1) Axborot ikki turga bo'linadi.  
2) Web-sahifalarni hosil qilish vositasi-brauzerlar.  
3) Plotter-chizmalarni qog'ozga chiqaruvchi qurilma.  
4) [www.uz](http://www.uz) – milliy qidiruv tizimi emas.  
A) 1, 3.      B) 4, 2.      C) 1, 4.      D) 2, 3.
124. Informatika o'rganadigan asosiy ashyoni aniqlang.  
A) algoritm.      B) dastur.      C) kompyuter.      D) axborot.
125. Ikkilik sanq sistemasida amallarni bajaring:  $11100 \cdot (1 \cdot 2^5 + 1 \cdot 2^4 + 1 \cdot 2^2 + 1 \cdot 2^1)$   
A) 1111101000.      B) 10111101000.      C) 10110101100.      D) 10100101000.
126. Faylga yo'l berilgan: C: \My pictures\klass\picture.bmp Bosh katalogni ko'rsating.  
A) my pictures.      B) picture.      C) C: .      D) klass.
127. MS Excel. A1=10; B1=14; B2=6 bo'lsa, =CUMM(A1-B2; A2-B1) funksiyaning javobi 5 ga teng. Bo'lishi uchun A2 katakda qanday son bo'lishi kerak?  
A) 16.      B) 15.      C) 17.      D) 14.
128. Web brauzerda matnning ko'rinishi quyidagicha bo'lishi uchun uning HTML kodi qanday bo'lishi kerak? **6. Chala kvadrat tenglama  $ax^4+c=0$  ko'rinishida bo'lmaydi.**  
A) `<ul type="circle"> <li> <b> Chala kvadrat tenglama <s> <i> ax <sup>4</sup> +c=0 </i> </s> ko'rinishida bo'lmaydi. </b> </ul>`  
B) `<ol start="6"> <li> <b> Chala kvadrat tenglama <i> ax <sup>4</sup> +c=0 </i> </s> ko'rinishida bo'lmaydi. </b> </ol>`  
C) `<ol start="6"> <em> <b> Chala kvadrat tenglama <s> <strong> ax <sup>4</sup> +c=0 </strong> </s> ko'rinishida bo'lmaydi. </em> </ol>`  
D) `<ul> <s> <site> Chala kvadrat tenglama <strong> ax <sup>2</sup> +c=0 </strong> ko'rinishida bo'lmaydi. </site> </s> </ul>`
129. Paskal tilida quyidagi dastur qismining bajarilishi natijasida ekranga chiqariladigan axborotni aniqlang: a:= 'Uzbekistan'; K:=Length(a); write (k, a);      A) 10Uzbekistan.  
B) K = 10.      C) Uzbekistan10.      D) 10 Uzbekistan.
130. Axborotni uzatish o'lchov birligi sifatida ... qabul qilingan.  
A) 1 megabit.      B) 1 bit.      C) 1 bot.      C) 1 bayt.
131. 240, 301, 220, 332 butun sonlarni barchasini yozish mumkin bo'lgan eng kichik asosli sanoq sistemasida shu sonlar yig'indisini aniqlang.  
A) 2143.      B) 1535.      C) 3013.      D) 1423.
132. Qaysi javobda faqat qobiq dasturlar keltirilgan?  
A) Norton Commander, MS DOS, Volkov Commander.  
B) Vista, DOS3.3, Total Commander.  
C) Linux, Norton Commander.  
D) Total Commander, Norton Commander.

133.  $A_1 = -7$ ,  $B_1 = 8$ ,  $B_2 = 4$  bo'lsin. Quyidagi formula natijasi  $-23$  ga teng bo'lishi uchun  $A_2$  katakka kiritilishi kerak bo'lgan qiymatni aniqlang.  
 $=\text{ЕСЛИ}(\text{ИЛИ}(A_1+B_2 \leq A_2*B_1; A_1*B_1 > 0); A_1*B_2+B_1-A_2; A_1*B_1+B_2+A_2)$   
 A) 3. B) 1. C) 0. D) 5.
134. Raqamli signalni analogli signalga va aksinchaga aylantirib beruvchi qurilma nomini toping.  
 A) deshifратор. B) telefaks. C) modem. D) shifратор.
135. Paskal. Quyidagi dastur natijasini aniqlang.  
 vara, b, c: integer;  
 Begin a := 30; b := 6; a := a / \*b;  
 if a > b then c := a+4 \* b else c := a-4 \* b;  
 write(c; 1); end.  
 A) 114. B) Kompilyatsiyada xatolik xabari chiqadi. C) 66. D) 6.
136. Paskal tilida quyidagi dastur lavhasi bajarilgach b o'zgaruvchi qiymatini aniqlang:  
 $x := -1$ ;  $y := -1$ ;  $a := 0,1$ ; IF  $(x*x+y>0)$  AND  $(a=1/10)$  THEN  $b := \text{true}$  else  $b := \text{false}$ ;  
 A) 1. B) false. C) -1. D) true.
137. Bir terabayt necha gigabaytga teng?  
 A)  $2^{25}$  gigabayt. B)  $2^{10}$  gigabayt. C)  $2^{30}$  gigabayt. D)  $2^{20}$  gigabayt.
138. Rim sanoq sistemasida to'g'ri tenglikni aniqlang.  
 A)  $CLXXXIII + XXIX = CCXIII$ . B)  $XXX \cdot XXIX = DCCCLXVIII$ .  
 C)  $CCIII : XXIX = VII$ . D)  $CCLXXVII - LXXXVIII = CXC$ .
139. Windows operatsion tizim (Sistema) ida fayl nomi noto'g'ri berilgan javobni toping.  
 A) (Informatika).doc B) [Informatika].doc C) Informatika.doc D) <Informatika>.doc
140. Nashriyot tizim(Sistema)larida qaysi dasturlar ishlatiladi?  
 A) Adobe Page Maker, MS Acces, MathCAD.  
 B) Adobe Page Maker, Latex, Tex, Quark Xpress.  
 C) Adobe Page Maker, Latex, MS Word, MS Excel.  
 D) Adobe Page Maker, Quark Xpress, MS Excel.
141. Internet qanday tarmoq turiga mansub?  
 A) mintaqaviy B) korporativ C) global D) local
142. Paskal tilining quyidagi takrorlash operatorlaridagi takrorlanishlar sonini aniqlang:  
 $I := 2014$ ; While  $i \leq 1997$  do  $i := i - 1$ ;  
 A) 18. B) 0. C) 1. D) 17.
143. Qaysi atamalar axborotni turlari hisoblanadi?  
 A) ishonchli, analog. B) analog diskret.  
 C) diskret, qimmatli. D) qisqa foydali.
144. Bir nechta bola 36 dona olmani yeyishmoqchi edi. Ali "Men olmalarni shunday taqsimlay olmanki, har birimizda 5 tadan ko'p olma bo'lmaydi" dedi. Vali esa "Men olmalarni shunday taqsimlay olamanki, hech birimiz olmasiz qolmaymiz va barchamizda olmalar soni turlicha bo'ladi". bolalar sonini aniqlang.  
 A) 10 ta. B) 11 ta. C) 8 ta. D) 9 ta.
145. Faqat arxivlangan fayllar kengaytmasi kengaytmasi berilgan javobni ko'rsating.  
 A) .zip, .rar, .atj B) .htm, .arj, .txt C) .zip, .jpg, .rar D) .avi, .com, .bac

**XURMATLI ABITURIENTLAR !!!**

Ushbu testlarda, imlo hatolar va juz'iy kamchiliklar bo'lishi mumkin. Bularni to'g'ri tushunasiz degan umiddaman.

Oldindagi imtihonlarda barchangizga **OMAD YOR BO'LSIN.**

Farohidin ABDUHAMIDOV