



2017+2018+2019

BAZA

Axborotnoma + Harbiy akademiya tushgan savollar



2 МАЯ 2019 Г.

SULTONOBOD

MATEMATIKA

1. a – raqamlari yig'indisi 12 ga teng bo'lgan olti xonali son bo'lsa, $999999 - a$ sonining raqamlari yig'indisini toping.
A) 42. B) 48. C) 36. D) 24.
2. 3^{2^6} ning oxirgi raqamini toping.
A) 3. B) 9. C) 1. D) 7.
3. $2016 \cdot (2017 \cdot 2018 + 1)$ ifoda quyidagilardan qaysi biriga teng?
A) $2017^2 - 1$. B) $2017^3 - 1$.
C) $2017^3 + 1$. D) $2017 \cdot 2018$.
4. a va b natural sonlar bo'lib, ularning eng katta umumiy bo'luvchisi 9 ga teng. Agar $4a = 5b$ tenglik bajarilsa, $a + b$ yig'indisini hisoblang.
A) 72. B) 81. C) 54. D) 63.
5. Agar a natural sonni 36 ga bo'lganda bo'linma n , qoldiq n^2 ga teng bo'lsa, a sonining eng katta qiymatini toping.
A) 160. B) 432. C) 205. D) 117.
6. 36 ga bo'linadigan $\overline{72X5Y}$ ko'rinishdagi barcha besh xonali sonlar orasida X ning eng katta qiymatini toping.
A) 5. B) 7. C) 6. D) 8.
7. 45 ga bo'linadigan $\overline{64X5Y}$ ko'rinishidagi barcha besh xonali sonlar orasida, X ning eng katta qiymatini toping.
A) 7. B) 5. C) 9. D) 8.
8. Besh xonali $\overline{x734y}$ sonini 55 ga bo'lganda natural son hosil bo'ladi. x ning barcha qiymatlari yig'indisini toping.
A) 3 B) 11 C) 9 D) 14
9. a va b natural sonlarning EKUBi 30 ga, ko'paytmasi 36000 ga teng bo'lsa, shu sonlarning EKUK ini toping.
A) 1800. B) 1000. C) 1200. D) 900.
10. $[200; 1000]$ 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.
11. Natural n sonning kvadratini 10 ga bo'lgandagi qoldiqlar yig'indisini toping.
A) 45. B) 21. C) 19. D) 25.
12. Agar \overline{abc} , \overline{bca} , \overline{cab} uch xonali natural sonlar yig'indisi 777 ga teng bo'lsa, $a + b + c$ ni toping.
A) 7. B) 6. C) 8. D) 2.
13. Agar $x < -1$, $y > 1$ bo'lsa, quyidagi jadvaldan qaysi biri har doim o'rinli?
A) $x^4 > y$. B) $y^3 > x^3$.
C) $x^2 < y^2$. D) $y^2 > x^6$.
14. Juft raqam bilan tugaydigan har qanday natural son qanday natural songa bo'linadi?
A) uch. B) besh. C) ikki. D) to'rt.
15. Sonning biror qismini topish uchun, son va qism bilan qanday amal bajariladi?
A) bo'lish. B) ko'paytirish.
C) qo'shish. D) ayirish.
16. Tenglamani to'g'ri tenglikka aylantiradigan harf (noma'lum) ning qiymati nima deb ataladi?
A) tenglamaning ildizi.
B) tenglamaning koeffitsienti.
C) tenglamaning qiymati.
D) tenglamaning darajasi.
17. Agar $27,3 \cdot 10^n = 0,0000273$ bo'lsa, n ni toping.
A) -6. B) -7. C) -5. D) -4.
18. $a = 1 \cdot 2 + 2 \cdot 3 + 3 \cdot 4 + \dots + 40 \cdot 41$,
 $b = 5 \cdot 4 + 10 \cdot 6 + 15 \cdot 8 + \dots + 200 \cdot 82$
bo'lsa, $\frac{a}{b}$ ning qiymatini toping.
A) $\frac{1}{12}$. B) $\frac{1}{10}$. C) $\frac{1}{6}$. D) $\frac{1}{8}$.
19. Hisoblang: $1 \cdot 4 + 2 \cdot 7 + 3 \cdot 10 + \dots + 8 \cdot 25$
A) 720. B) 640. C) 648. D) 900.
20. Hisoblang: $1 \cdot 4 + 2 \cdot 7 + 3 \cdot 10 + \dots + 9 \cdot 28$
A) 900. B) 740. C) 1210. D) 960.
21. Hisoblang: $1 \cdot 4 + 2 \cdot 7 + 3 \cdot 10 + \dots + 10 \cdot 31$
A) 1210. B) 1200. C) 1440. D) 900.
22. $\frac{7}{1 + \frac{2}{x-1}}$ kasr ma'noga ega bo'lmaydigan barcha x lar yig'indisini toping.
A) 1. B) 0. C) -1. D) -2.

23. Hisoblang:
 $\left(1 + \frac{2}{3}\right) \cdot \left(1 + \frac{2}{4}\right) \cdot \left(1 + \frac{2}{5}\right) \cdot \left(1 + \frac{2}{6}\right) \cdot \dots \cdot \left(1 + \frac{2}{70}\right)$
 A) 1. B) 414. C) 426. D) 440.
24. Hisoblang:
 $\left(1\frac{1}{7}\right) \cdot \left(1\frac{1}{8}\right) \cdot \left(1\frac{1}{9}\right) \cdot \dots \cdot \left(1\frac{1}{62}\right)$
 A) 9. B) $\frac{11}{7}$. C) 7. D) $\frac{10}{7}$.
25. Hisoblang:
 $\left(1\frac{1}{7}\right) \cdot \left(1\frac{1}{8}\right) \cdot \left(1\frac{1}{9}\right) \cdot \dots \cdot \left(1\frac{1}{69}\right)$
 A) 7. B) $\frac{10}{7}$. C) $\frac{69}{7}$. D) 10.
26. 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.
27. Toq sonning o'zidan keyin keluvchi uchta toq son bilan yig'indisi 52 dan katta. Ushbu shartni qanoatlantiruvchi eng kichik toq sonni toping.
 A) 13. B) 15. C) 11. D) 9.
28. Ikki sonning yig'indisi 242 ga, shu sonlardan kattasini kichigiga bo'lganda bo'linma 4ga, qoldiq esa 22 ga teng. Sonlardan kichigini toping.
 A) 36. B) 44. C) 52. D) 42.
29. Ketma-ket kelgan ikkita musbat juft sonlar kvadratlarining ayirmasi 116 ga teng. ushbu sonlardan kichigini toping.
 A) 26. B) 30. C) 28. D) 32.
30. a dan b 20% ko'p bo'lsa, b dan a necha foiz kam bo'ladi?
 A) 15. B) $16\frac{1}{3}$. C) $16\frac{2}{3}$. D) 20.
31. 210 gramm suvga 40 gramm tuz aralashtirildi. Hosil bo'lgan aralashmaning necha foizi tuzdan iborat bo'ladi?
 A) 15. B) 16. C) 12. D) 22.
32. 180 gramm suvga 70 gramm tuz aralashtirildi. Hosil bo'lgan aralashmaning necha foizi suvdan iborat bo'ladi?
 A) 75. B) 78. C) 72. D) 70.
33. 190 gramm suvga 60 gramm tuz aralashtirildi. Hosil bo'lgan aralashmaning necha foizi tuzdan iborat bo'ladi?
 A) 30. B) 22. C) 24. D) 25.
34. Velosipedchi 5 km masofani 15 minutda bosib o'tadi. Odam 3 km masofani 55 minutda bosib o'tsa, odamning tezligi velosiped tezligining nechi foiziga teng.
 A) $16\frac{4}{11}$. B) $18\frac{7}{11}$. C) $14\frac{4}{15}$. D) $21\frac{7}{15}$.
35. Yengil avtomobil 64 km masofani 40 minutda bosib o'tadi. Avtobus 40 km masofani 28 minutda bosib o'tsa, avtobusning tezligi yengil avtomobil tezligining necha foiziga teng?
 A) $85\frac{4}{9}$. B) $89\frac{2}{7}$. C) $78\frac{1}{4}$. D) $91\frac{3}{5}$.
36. Soatiga 40 km tezlik bilan kelayotgan poyezddagi kishi qarshi tomondan kelayotgan poyezd uning yonidan 3 sekundda o'tib ketganini aniqladi. Qarshi tomondan kelayotgan poyezdning uzunligi 75 m bo'lsa, uning tezligini (km/soat) toping.
 A) 45. B) 60. C) 50. D) 40.
37. Mobil telefon to'liq quvvatlantirilganda 4 soat suhbatlashish yoki 12 soat kutish holatiga yetadigan quvvat oladi. Yo'lovchi poyezdga chiqishdan oldin mobil telefonini to'liq quvvatlantirib oldi va yo'lda yurgan vaqtning yarmida telefon orqali suhbatlashib ketdi. Agar mobil telefondagi quvvat to'liq yo'lga yetadigan va poyezddan tushayotgan paytda tugagan bo'lsa, yo'lovchi poyezdda qancha vaqt yurgan?
 A) 5 soatu 30minut. B) 8 soat.
 C) 4 soat 30 minut. D) 6 soat.
38. Ahmad bir kun, Arslon 2 kun ishlaganda 1 ishning $\frac{3}{8}$ qismini bajarishadi. Agar Ahmad 3 kun Arslon 2 kun ishlasa aynan o'sha ishning $\frac{5}{8}$ qismini bajarishadi, Ahmad bir o'zi ushbu ishni necha kunda tamomlaydi?
 A) 4. B) 10. C) 8. D) 9.
39. Madina olma, nok va mandarinni yemoqchi, ammo bu ishni qanday ketma-ketlikda amalga oshirish yuzasidan hech qanday qarorga kelmadi. Madina bunday ketma-ketlikni nechta usul bilan tanlashi mumkin?
 A) 9. B) 3. C) 1. D) 6.
40. Birinchi quvurdan ikkinchi quvurga qaraganda ikki barobar ko'p suv oqadi. Ikkalasi birgalikda bo'sh hovuzning 12 soatda to'ldiradi. Birinchi quvur hovuzning uchdan bir qismini necha soatda

to'ldiradi?

A) 12. B) 4. C) 6. D) 9.

41. Uchta yashikda 64,2 kg meva bor. 2-yashikdagi meva 1-yashikdagi mevaning 0,8 qismini tashkil qiladi, 3-yashikda esa 2-yashikdagi mevaning 42,5% miqdoricha meva bor. Birinchi yashikda qancha meva bor?

A) 36 kg B) 30 kg C) 28 kg D) 24 kg

42. Uchta insonning uchinchi ikkinchisidan nechta ortiq bo'lsa, ikkinchi birinchisidan shuncha ortiq. Bu sonlardan ikkita kichigining ko'paytmasi 85, ikkita kattasining ko'paytmasi 115 ekanligi ma'lum. Shu uchta sondan ikkinchisini toping.

A) 10,5 B) 9,5 C) 11 D) 10

43. To'g'ri javobni toping.

1) agar $a > 0$ bo'lsa, $a + \frac{1}{a} \geq 2$ bo'ladi;

2) agar $a < 0$ bo'lsa, $a + \frac{1}{a} \leq -2$ bo'ladi.

3) agar a va b bir-xil ishorali bo'lsa, $\frac{a}{b} + \frac{b}{a} \geq 2$ bo'ladi.

A) 1; 2; 3. B) 2; 3. C) 1; 3. D) 1; 2.

44. $4,8 = x + \frac{y}{5}$ tenglikda x va y sonlar 5 dan kichik natural sonlar bo'lsa, y ning qiymatini toping.

A) 1. B) 3. C) 4. D) 0.

45. a, b, c musbat butun sonlar uchun

$$x = 3a + 2 = 5b + 4 = 7c + 6$$

tengliklar bajarilsa, x uch xonali sonning eng katta qiymatini toping.

A) 999. B) 944. C) 945. D) 976.

46. Agar $a+b$ va $12a-b$ tub sonlar bo'lib,

$$\frac{a+b}{12a-b} = \frac{21}{57} \text{ tenglik bajarilsa, } a \text{ sonini toping.}$$

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

47. $2 < a < 6$ va $2 < b < 10$ bo'lsa, a va b butun

sonlar uchun quyidagi $\frac{1+\frac{a}{b}}{1+\frac{b}{a}}$ kasrning eng katta

qiymatini toping.

A) 7. B) $\frac{7}{3}$. C) $\frac{5}{3}$. D) 15.

48. Agar $a \cdot b \cdot c = 4$ bo'lsa,

$$\left(\frac{1}{a} - b \cdot c\right) \cdot \left(\frac{2}{b} - a \cdot c\right) \cdot \left(\frac{3}{c} - a \cdot b\right)$$

ko'paytmaning qiymatini toping.

A) $\frac{2}{3}$. B) $-\frac{3}{2}$. C) 1. D) $-\frac{5}{3}$.

49. a ning qanday qiymatida

$$\frac{9x^2 - 6x + 1}{9} = (x+a)^2$$

tenglik ayniyat bo'ladi?

A) $-\frac{1}{4}$. B) -1. C) $-\frac{1}{3}$. D) $-\frac{1}{2}$.

50. m, n natural sonlar $m^2 = n^2 + 229$ tenglikni qanoatlantirsa, $2m - n$ ni toping.

A) 114. B) 116. C) 115. D) 112.

51. Hisoblang:

$$(2^2 + 6^2 + 10^2 + 14^2 + 18^2) - (1^2 + 5^2 + 9^2 + 13^2 + 17^2)$$

A) 144. B) 95. C) 104. D) 128.

52. Agar $x^2 - 4x + 2 = 0$ bo'lsa, $x^2 + \frac{4}{x^2}$ ning son qiymatini toping.

A) 13. B) 15. C) 12. D) 18.

53. Agar $x^2 - 5x + 2 = 0$ bo'lsa, $\frac{x^4 + 4}{x^2}$ ning son qiymatini toping?

A) 15. B) 23. C) 21. D) 18.

54. 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.

55. $x^3 + x^2 + 18$ 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) $(x+3) \cdot (x^2 - x + 6)$.

56. 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) $a = -2b$; $a = 0,5b$.

57. $\frac{x^2y^2 + 2xy - 3}{x^2y^2 - 1}$ kasrni qisqartiring.
 A) $\frac{xy+3}{xy-1}$. B) $\frac{xy-3}{xy+1}$. C) $\frac{xy+3}{xy+1}$. D) $\frac{xy-3}{xy-1}$.

58. $\frac{100 - 4c^2 - 4cd - d^2}{20c + 10d - 4c^2 - 4cd - d^2}$ kasrni qisqartiring.
 A) $\frac{10+2c+d}{2c-d}$. B) $\frac{10-2c-d}{2c-d}$.
 C) $\frac{10-2c-d}{2c+d}$. D) $\frac{10+2c+d}{2c+d}$.

59. Ifodani soddalashtiring:

$$\frac{a^4 - 10a^2 + 169}{a^2 + 6a + 13}$$

- A) $a^2 - 5a + 13$. B) $a^2 + 13$.
 C) $a^2 - 6a + 13$. D) $a^2 - 3a + 13$.

60. $a^2 - b^2 + a + 7b - 12$ ko'phadning ko'paytuvchilaridan birini toping.

- A) $a+b+3$ B) $a+b+4$
 C) $a-b+3$ D) $a-b+4$

61. Ifodani soddalashtiring:

$$\frac{2a^2 + ab - b^2}{a+b} - 3a + b$$

- A) 0. B) $-a$. C) $1+b$. D) $1-a$.

62. Ifodani soddalashtiring:

$$\frac{2a^2 + ab - b^2}{a+b} - 2a + 1$$

- A) $1-b$. B) $b-a$. C) $-b$. D) $1+b$.

63. Ifodani soddalashtiring:

$$\frac{\frac{1}{a} + \frac{1}{b+c}}{\frac{1}{a} - \frac{1}{b+c}} \cdot \left(1 + \frac{b^2 + c^2 - a^2}{2bc}\right) \cdot \frac{(a+b+c)^2}{bc}$$

- A) 0,5. B) $b+c-a$. C) $a+b+c$. D) 1.

64. $(a^2 - b^2 - c^2 + 2bc) : \frac{a+b-c}{a+b+c}$ ifodaning

$a=3, b=3^{0,5}, c=-1$ dagi qiymatini toping.

- A) 9. B) 2. C) 1. D) 3.

65. $\frac{x}{ax-2a^2} - \frac{2}{x^2+x-2ax-2a} \cdot \left(1 + \frac{3x+x^2}{3+x}\right)$

ifodani $a=0,25$ dagi qiymatini toping.

- A) $\frac{1}{16}$. B) 4. C) $\frac{1}{4}$. D) 16.

66. Ifodani soddalashtiring:

$$\frac{x^3 + 27}{2x - 2} \cdot \frac{x^2 - 1}{x^2 + 4x + 3} \cdot \frac{6x + 12}{3x^2 - 9x + 27}$$

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

67. $a+b+c=-5$ 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.

68. Agar $|a| \neq |b| \neq |c|$ va $\frac{a}{b+c} + \frac{b}{c+a} + \frac{c}{a+b} = 1$

bo'lsa, $\left(\frac{a^2}{b+c} + \frac{b^2}{c+a} + \frac{c^2}{a+b}\right) : (a+b+c)$ ning

qiymatini toping.

- A) 1. B) 0,5. C) 0. D) 2.

69. 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.

70. "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.

71. $\sqrt{9+\sqrt{77}} + \sqrt{9-\sqrt{77}}$ ni soddalashtiring.

- A) $2\sqrt{8}$. B) $2\sqrt{11}$. C) $\sqrt{22}$. D) $\sqrt{18}$.

72. $\frac{\sqrt{8} + \sqrt{\frac{7}{2}}}{\sqrt{8} + \sqrt{4+\sqrt{7}}} + \frac{\sqrt{8} - \sqrt{\frac{7}{2}}}{\sqrt{8} - \sqrt{4-\sqrt{7}}}$ ni hisoblang.

- A) $\frac{14}{9}$. B) 1. C) $\frac{4}{3}$. D) $\frac{13}{9}$.

73. Hisoblang:

$$\left(\frac{\sqrt{6} + \sqrt{5}}{\sqrt{2} + 1} \cdot \frac{\sqrt{6} - \sqrt{5}}{\sqrt{2} - 1}\right) : \left(\frac{1}{\sqrt{3}} - \frac{\sqrt{3}}{9} + \frac{1}{\sqrt{27}}\right)$$

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

74. Hisoblang:

$$\sqrt{1-\frac{1}{2}} \cdot \sqrt{1-\frac{1}{3}} \cdot \sqrt{1-\frac{1}{4}} \cdot \sqrt{1-\frac{1}{5}} \cdot \sqrt{1-\frac{1}{6}} \times \\ \times \sqrt{1-\frac{1}{7}} \cdot \sqrt{1-\frac{1}{8}} \cdot \sqrt{1-\frac{1}{9}}$$

A) 3. B) $\frac{1}{3}$. C) $-\sqrt{13}$. D) $\frac{\sqrt{2}}{9}$.

75. Ifodani soddalashtiring:

$$\frac{x+y}{x-y} \cdot \left(\frac{3\sqrt{x}}{\sqrt{x}-\sqrt{y}} - \frac{3\sqrt{y}}{\sqrt{x}+\sqrt{y}} \right)$$

A) 2. B) $\frac{1}{2}$. C) 3. D) $\frac{1}{3}$.

76. Ifodaning qiymatini toping:

$$\frac{(\sqrt{5}-\sqrt{11})(\sqrt{33}+\sqrt{15}-\sqrt{22}-\sqrt{10})}{\sqrt{75}-\sqrt{50}}$$

- A) -1,2. B) -2,4. C) 1,2. D) 2,4.

77. $\sqrt{2^{20}+2^{11}+1}-\sqrt{2^{20}-2^{12}+4}$ ni hisoblang.

- A) 4. B) 2. C) 1. D) 3.

78. Agar $n+\sqrt{n-1}\sqrt{81}=4\sqrt{9}$ bo'lsa, n^2+1 ni toping.

- A) 26. B) 5. C) 17. D) 10.

79. Agar $a \in (-1; 1)$ bo'lsa, ifodani soddalashtiring:

$$\sqrt[4]{(1-2a+a^2)(a^2-1)(a-1)} : \frac{a^2+2a-3}{\sqrt[4]{a+1}}$$

- A) $-\frac{\sqrt{a+1}}{a+3}$. B) $-\frac{\sqrt{a+1}}{\sqrt{a+3}}$.
C) $\frac{\sqrt{a+1}}{\sqrt{a+3}}$. D) $\frac{\sqrt{a+1}}{a+3}$.

80. 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) $\sqrt{11}+1$.

81. M natural sonni 3 ga bo'lganda qoldiqda

$$\frac{(3a+1)^{40}+1}{(3a+1)^{20}}$$

qoladi. a ning eng kichik qiymati nimaga teng?

- A) 0 B) 1 C) $-2/3$ D) $-1/2$

82. Ifodani soddalashtiring:

$$\sqrt[5]{b^5} - \sqrt[4]{b^4} + \sqrt[6]{b^6} - \sqrt[7]{b^7}$$

Bu yerda $b \geq 0$

- A) 0; $-4b$ B) 0 C) $4b$ D) 0; $4b$

83. -1 dan katta a, b, c sonlari uchun $ab+a+b=11$,
 $bc+b+c=5$, $ca+c+a=1$

tengliklar o'rinli bo'lsa,

$$abc+ab+bc+ca+a+b+c$$

ifodaning qiymatini toping.

- A) 12. B) 11. C) 9. D) 18.

84. x, y, z butun sonlar bo'lib $y < 0$ va $\frac{2}{3x} = -\frac{3}{4y} = \frac{4}{5z}$

bo'lsa, x, y, z sonlarini o'sish tartibida joylashtiring.

- A) $x < y < z$. B) $z < y < x$. C) $y < x < z$. D) $y < z < x$.

85. 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.

86. $\frac{3}{2 - \frac{x-2}{2 - \frac{x+5}{7}}} = 8$ tenglamani yeching.

- A) $\frac{228}{69}$. B) $\frac{225}{69}$. C) $\frac{229}{69}$. D) $\frac{231}{69}$.

87. $\frac{x+2}{3} = \frac{2x+3}{2} - \frac{5x-2}{3}$ tenglamani yeching.

- A) -1. B) 1,5. C) 1. D) 0,5.

88. 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.

89. $(a^2-2a+1)x = a^2+2a-3$ tenglama a ning

qanday qiymatida cheksiz ko'p yehimga ega?

- A) $a = -3$. B) $a = 1$, $a = -3$. C) $a = 1$. D) $a \neq 1$.

90. $2x^2 - (2\sqrt{3} + 3\sqrt{2})x + \sqrt{6} + 2 = 0$ tenglamaning kichik ildizini toping.

- A) $\frac{\sqrt{2}}{2}$. B) $-\frac{\sqrt{2}}{2}$. C) $\sqrt{3} - \sqrt{2}$. D) $\sqrt{3} + \sqrt{2}$.

91. Ildizlari $\frac{1}{10-\sqrt{72}}$ va $\frac{1}{10+6\sqrt{2}}$ ga teng bo'lgan

ratsional koeffitsiyentli kvadrat tenglamani

toping.

A) $7x^2 - 20x + 1 = 0$. B) $7x^2 - 50x + 1 = 0$.

C) $28x^2 - 20x + 1 = 0$. D) $28x^2 - 20x + 0,25 = 0$.

92. $\frac{4}{x-1} - \frac{1}{2x-1} = \frac{x+3}{x-1}$ tenglama nechta ildizga ega?

A) cheksiz ko'p. B) 2 ta. C) 1 ta. D) \emptyset .

93. $\frac{2}{x^2-4} + \frac{x-4}{x^2+2x} = \frac{1}{x^2-2x}$ tenglamaning barcha ildizlari yig'indisini (Agar u bitta bo'lsa, shu ildizning o'zini) toping.

A) -5. B) 5. C) 3. D) 4.

94. Agar $a > 0$, $b > 0$, $c < 0$ va $b^2 - 4ac > 0$ bo'lsa, $ax^4 + bx^2 + c = 0$ bikvadrat tenglama nechta haqiqiy ildizga ega bo'ladi?

A) 2 ta. B) 4 ta. C) 1 ta. D) 3 ta.

95. $\frac{4}{(x-1)(x+2)} + \frac{12}{(x-3)(x+4)} + 1 = 0$ tenglama ildizlarining musbat ayirmasini toping.

A) 5. B) 3. C) 4. D) 7.

96. $(x-3)^6 + (x^2 - 2x - 1)^3 = 0$ tenglamaning ildizlari yig'indisini (agar u bitta bo'lsa, shu ildizni o'zini) toping.

A) 4. B) 1. C) 2. D) 3.

97. $x^4 - 2x^3 + x^2 - 9 = 0$ tenglamaning ildizlari yig'indisi a va ildizlari soni b bo'lsa, $a+b$ ni toping.

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

98. $2x^3 + 3x^2 - 1 = 0$ tenglama katta ildizining kichik ildiziga nisbatini toping.

A) -2. B) -0,5. C) 2. D) 0,5.

99. $6x^3 - 7x^2 - 16x + m = 0$ tenglamaning ildizlaridan biri 2 ga teng bo'lsa, qolgan ildizlari ko'paytmasi ni toping.

A) 1. B) 2. C) -1. D) -2.

100. $\frac{x^7 - 4x^5 + 4x^2 - 7x - 2}{x^7 - 4x^5 + 3x^2 - 4x - 4} = 1$ tenglamaning barcha ildizlari yig'indisini (Agar u bitta bo'lsa, shu ildizning o'zini) toping.

A) 1. B) 2. C) -1. D) 3.

101. 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.

102. $\begin{cases} x^2 - y^2 = 6x - 6y \\ 3x - 2y = 12 \end{cases}$

tenglamalar sistemasini qanoatlantiruvchi barcha haqiqiy x va y lar yig'indisini toping.

A) 6. B) 36. C) 30. D) 12.

103. Tenglamalar sistemasini yeching:

$$\begin{cases} (x + xy^2 + y^2)(x + y^2)^2 = 225 \\ (x - xy^2 + y^2)(x + y^2)^2 = 25 \end{cases}$$

A) (4;1), (4; -1).

B) (-4;1), (4; -1), (1;2), (1; -2).

C) (4;1), (4; -1), (1;2), (1; -2).

D) (1;2), (1; -2).

104. Tenglamalar sistemasini yeching:

$$\begin{cases} x + y + xy = 0 \\ x^3 + y^3 + x^3y^3 = 12 \end{cases}$$

A) $(1 + \sqrt{3}; 1 - \sqrt{3})$, $(1 - \sqrt{3}; 1 + \sqrt{3})$.

B) $(1; \sqrt{3})$, $(\sqrt{3}; 1)$

C) $(1 - \sqrt{3}; 1 + \sqrt{3})$.

D) $(1 + \sqrt{3}; 1 + \sqrt{3})$, $(1 - \sqrt{3}; 1 - \sqrt{3})$.

105. Ushbu $\begin{cases} y = x^8 \\ y = x + 5 \end{cases}$ tenglamalar sistemasi nechta yechimga ega?

A) 0. B) 2. C) 4. D) 1.

106. Tengsizlikni yeching: $7 + 3x \leq 5(x - 2)$

A) $x \geq 7$. B) $x \geq 8,5$. C) $x \geq 7,5$. D) $x \geq 8$.

107. $(1 - x) \cdot (x + 2) > 0$ tengsizlikning butun yechimlari yig'indisini toping.

A) 2. B) 0. C) -3. D) -1.

108. Tengsizlikni yeching:

$$5 + 4x - x^2 \geq 2(x^2 + 3,5x - 0,5)$$

A) [-1; 1]. B) [-2; 2]. C) [1; 2]. D) [-2; 1].

109. $\frac{(8-x)^2}{x-3} > 0$ tengsizlikning $[-1; 9]$ oraliqda yotuvchi butun yechimlari yig'indisini toping.
A) 17 B) 31 C) 42 D) 39

110. Tengsizlikning barcha butun yechimlari yig'indisini toping.

$$\frac{2x-7}{x^2+2x-8} > 1$$

A) -1. B) -2. C) -3. D) -5.

111. Tengsizlikning barcha butun yechimlari yig'indisini toping.

$$\frac{x^2+4x-1}{x^2+4x+3} \leq \frac{1}{x+1}$$

A) 1. B) 2. C) -7. D) -3.

112. Tengsizlikning butun yechimlari yig'indisini toping.

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

A) 77. B) 78. C) 84. D) 90.

113. $x^4 - 13x^2 + 36 \leq 0$ tengsizlik nechta butun yechimga ega?
A) 2. B) 4. C) 6. D) butun yechimga ega emas.

114. a ning qanday eng kichik butun qiymatida $-2x^2 + 20x + 4 < a$ tengsizlik x ning barcha qiymatlarida o'rinli bo'ladi?
A) 54. B) 53. C) 56. D) 55.

115. a ning qanday eng katta butun qiymatida $3x^2 - 18x - 3 > a$ tengsizlik x ning barcha butun qiymatlarida o'rinli bo'ladi?
A) -29 B) -32 C) -30 D) -31

116. Keta-ket x, y, z natural sonlar uchun

$$\frac{x}{y} + \frac{y}{x} + \frac{x}{z} + \frac{y}{z} + \frac{x}{y} + \frac{z}{y}$$

son butun bo'lsa, $x + y - z$ ni toping.

A) 0. B) 2. C) 1. D) 3.

117. Agar $a - b = |x| + 3$ bo'lsa, a va b lar uchun to'g'ri munosabatni aniqlang.
A) $a < b$. B) $a = b + 1$.
C) $a > b$. D) $a \leq b$

118. Agar $a - b = |3x|^{-1}$ bo'lsa, a va b lar uchun to'g'ri munosabatni aniqlang.
A) $a < b$. B) $a \leq b$. C) $a > b$. D) $a = b + 1$.

119. Agar a, b, c manfiy butun sonlar bo'lib,

$$\frac{1}{a} > \frac{1}{b} > \frac{1}{c}$$
 tengsizliklar bajarilsa,

$|a+b| - |b-c| + |a-c|$ ifodani soddalashtiring.

A) $-2a$. B) $-2a-2c$. C) 0. D) $b-a$.

120. Agar $a < 0, b < 0, c > 0$ bo'lsa,

$$\sqrt{b^2} + |b-c| - |c-a| + b$$

ifodani soddalashtiring.

A) $-a$. B) $a-b$. C) $a-2b+c$. D) $a-2b$.

121. 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) $H \leq G \leq A \leq Q$.

122. 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) $a \leq b$.

123. 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) $a \leq b$.

124. 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) $x+y+z < a+b-c$.

125. 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.

126. 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.

127. Raqamlari yig'indisi 2001 ga teng bo'lgan eng kichik natural sonning birinchi raqami nimaga teng?

A) 4. B) 1. C) 3. D) 2.

128. $|5x-3|+|3x-5|=9x-10$ tenglamaning ildizlari 9 dan qancha kam?

- A) 7. B) 8. C) 5. D) 6.

129. Agar $|x+9|=\frac{x}{2}+a$ tenglama a parametrning

nechta natural qiymatida yechimga ega emas?
A) 3. B) 2. C) 4. D) 1.

130. $x^7 \cdot |x^2+8x+7| < 0$ tengsizlik $[-8; 1]$ kesmada nechta yechimga ega?

- A) 8. B) 6. C) 7. D) 5.

131. $\frac{4-2x}{1+3x} > 0$ tengsizlikni yeching.

A) $(-\infty; -\frac{1}{3}) \cup (2; \infty)$.

B) $(-\infty; -\frac{1}{3}) \cup (-\frac{1}{3}; \infty)$.

C) $(-\infty; -\frac{1}{3}) \cup (-\frac{1}{3}; 2) \cup (2; \infty)$.

D) $(-\infty; \infty)$.

132. $\frac{5}{|x+2|+2} > |x+2|-2$ tengsizlikni

qanoatlantiruvchi butun sonlar nechta?

- A) 4 ta B) 7 ta C) 5 ta D) 6 ta

133. $|x^2-2x| \leq x$ tengsizlikni yeching.

- A) $\{0\} \cup [1; 3]$. B) $[-1; 3]$. C) \emptyset . D) $(-1; 3)$.

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

- A) 5. B) 7. C) 2. D) 3.

135. Agar $x\sqrt{x}-7\sqrt{x}=6$ bo'lsa, $x-\sqrt{x}$ ning qiymatini toping.

- A) 3. B) 8. C) 7. D) 6.

136. Agar $x < -2$ bo'lsa,

$$\sqrt{x^2+6x+1} + \sqrt{9-12x+4x^2}$$

ifodani soddalashtiring.

- A) $2-x$. B) $x+2$. C) $-2x$. D) $-x-2$.

137. $\sqrt{x+3-4\sqrt{x-1}} + \sqrt{x+8-6\sqrt{x-1}} = 1$ ($5 \leq x \leq 10$) bo'lsa, tenglamaning butun ildizlari yig'indisini toping.

- A) 15. B) 45. C) 20. D) 10.

138. Tenglamani yeching: $\frac{x-1}{1+\sqrt{x}} = 4 - \frac{1-\sqrt{x}}{2}$

- A) 49. B) 81. C) 64. D) 25.

139. $x^2-11+\sqrt{x^2+11}=20$ tenglama ildizlari nisbatini toping.

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

140. $\sqrt{2x^3-5x^2-8x+2} = \sqrt{2}(x-1)$ tenglama nechta yechimga ega?

- A) 1. B) 0. C) 2. D) 3.

141. $\sqrt{2x+6} = \sqrt{x-1} + \sqrt{3x-11}$ tenglamaning ildizlari yig'indisini toping.

- A) 6. B) 9. C) 4. D) 5.

142. Agar $\sqrt[3]{a+\sqrt[3]{a+\sqrt[3]{a+\dots}}} = 2$ bo'lsa,

$\sqrt{a-\sqrt{a-\sqrt{a-\dots}}}$ ning qiymatini toping.

- A) 3. B) 1. C) 4. D) 2.

143. Agar

$$x = \sqrt{42 - \sqrt{42 - \sqrt{42 - \dots}}},$$

$$y = \sqrt{x + \sqrt{x + \sqrt{x + \dots}}},$$

$$z = \sqrt{y \cdot \sqrt{y \cdot \sqrt{y \cdot \dots}}}$$

bo'lsa, $x+y+z$ ning qiymatini toping.

- A) 10. B) 12. C) 11. D) 14.

144. Agar $\sqrt{3x+2y-13} + \sqrt{4x-y-10} = 0$ bo'lsa, x va y sonlarining ko'paytmasini toping.

- A) 8. B) -2. C) -4. D) 6.

145. 1, 8, 27, 64, 125, ... ketma-ketlikning 10-hadini toping.

- A) 512. B) 729. C) 1000. D) 1331.

146. n -hadining formulasi $a_n = \frac{13-n}{6}$ bo'lgan

arifmetik progressiyaning ayirmasini toping.

- A) $\frac{1}{2}$. B) $\frac{1}{4}$. C) $-\frac{1}{6}$. D) $\frac{1}{6}$.

147. $\frac{1}{4}; -\frac{1}{5}; \frac{1}{6}; -\frac{1}{7}; \dots$ ketma-ketlikning umumiy hadi formulasini ko'rsating.

- A) $a_n = \frac{(-1)^{n+1}}{n+2}$. B) $a_n = \frac{(-1)^n}{n+3}$.

$$C) a_n = \frac{(-1)^{n+1}}{n+3} \quad D) a_n = \frac{(-1)^n + 1}{n+3}$$

148. 162 va 2 sonlari orasidan shunday 3 ta sonni topingki, ular barchasi geometrik progressiyani tashkil etsin.

- A) 54, 18, 6. B) 84, 26, 13.
C) 80, 40, 20. D) 81, 27, 9.

149. 729 va 9 sonlari orasidan shunday 3 ta sonni topingki, ular barchasi geometrik progressiyani tashkil etsin.

- A) 27, 81, 243. B) 243, 81, 27.
C) 81, 27, 9. D) 729, 243, 81.

150. 1 va 1997 sonlari orasida raqamlari yig'indisi 5 ga karrali bo'lgan butun sonlar nechta?

- A) 358 ta. B) 399 ta. C) 400 ta. D) 360 ta.

151. Arifmetik progressiyada $a_7 + a_{13} = 34$ va

- $a_7 + a_5 = 18$ bo'lsa, a_{19} ni toping.
A) 39 B) 37 C) 33 D) 35

152. Arifmetik progressiyada $a_{19} = 9 \cdot a_{11}$ uning dastlabki o'n to'qqizta hadi yig'indisini toping.

- A) 4 B) 38 C) 0 D) 19

153. 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.

154. 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.

155. $1 - 2 + 3 - 4 + 5 - 6 + \dots + 2017 - 2018 + 2019$ ni hisoblang.

- A) 1010. B) -1009. C) -1010. D) 1009.

156. Dastlabki o'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.

157. Arifmetik progressiyaning ikkinchi va o'n yettinchi hadlari yig'indisi 35 ga, o'n to'qqizinchi va o'n yettinchi hadlari ayirmasi 5 ga teng. Progressiyaning dastlabki yigirmatta hadi

yig'indisini toping.

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

158. $(x^2 + x) + (x^2 + 2x) + \dots + (x^2 + 19x) = 1425$ tenglikni qanoatlantiruvchi x natural sonni toping.

- A) 8. B) 10. C) 5. D) 6.

159. Agar geometrik progressiyada $b_5 - b_1 = 18$ va

$b_3 - b_1 = 12$ bo'lsa, b_{11} ni toping.

- A) -16/27 B) -4/94 C) -3/4 D) -3/8

160. Tenglamani yeching: ($a \neq 1$)

$$1 + a + a^2 + a^3 + \dots + a^{x-1} + a^x = (1+a)(1+a^2)(1+a^4)(1+a^8)$$

- A) 14 B) 15 C) 16 D) 17

161. 1,2,2,3,3,3,4,4,4,5,5,5,5,6... kamaymaydigan sonlar ketma-ketligida har bir son o'zining qiymati necha bo'lsa, shuncha marta takrorlanadi. Bu ketma-ketlikda 2017-o'rinda turgan sonni toping.

- A) 65 B) 62 C) 63 D) 64

162. $y = \sqrt{3x-7} + \frac{\sqrt{4-x}}{x-3}$ funksiyani aniqlanish sohasini toping.

- A) $\left(-\infty; \frac{7}{3}\right] \cup [43; \infty)$. B) $\left[\frac{7}{3}; 4\right]$.
C) $\left[\frac{7}{3}; 3\right) \cup (3; 4]$. D) $\left(\frac{7}{3}; 3\right) \cup (3; 4)$.

163. $y = \sqrt[4]{\frac{7-x}{\sqrt[6]{4x^2-19x+12}}}$ funksiyani 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) $\left[\frac{3}{4}; 7\right]$.

164. $y = \sqrt{\log_{\frac{1}{3}}(x^2 - 2x) + 1}$ funksiyani aniqlanish sohasini toping.

- A) $[-1; 3]$. B) $(-\infty; 0) \cup (2; \infty)$.
C) $(-\infty; -1] \cup [3; \infty)$. D) $[-1; 0) \cup (2; 3]$.

165. $f(x) = \left(\frac{1}{3}\right)^{x^2-6x+11}$ funksiyani aniqlanish sohasini toping.

A) $(0; 9]$. B) $[-9; \infty)$.

C) $\left(0; \frac{1}{9}\right]$. D) $(-9; \infty)$.

166. $[1; 10]$ 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.

167. $y = \frac{x^3 + 1}{x + 1}$ funksiyaning eng kichik butun qiymatini toping.

A) 1. B) 2. C) 3. D) 0.

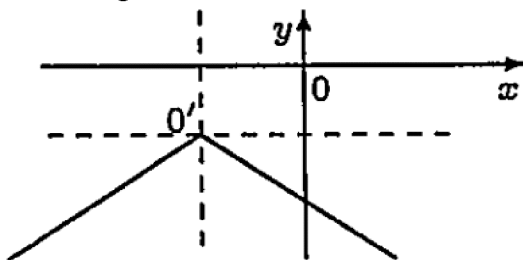
168. $y = |x| + |x - 1| + |x - 2|$ funksiya x ning qanday qiymatida eng kichik qiymatga erishadi?

A) 0. B) 2. C) 3. D) 1.

169. b ning qanday qiymatlarida $M(2; 1)$ nuqtadan $4x - 3y + b = 0$ to'g'ri chiziqqacha masofa 2 ga teng bo'ladi?

A) 5 yoki -15. B) 4 yoki -12.
C) 3 yoki -8. D) 6 yoki -18.

170. Rasmda $y = a \cdot \sqrt{(x - b)^2 + 3c} + d$ funksiya grafigi tasvirlangan. Quyidagi javoblardan qaysi biri doim noto'g'ri?



A) $ac + d \leq 0$. B) $(a + b)c \leq 0$.
C) $a\sqrt{c} + d \geq 0$. D) $(a - b)c \leq 0$.

171. 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.

172. Agar $f(2x - 3) = 3x + 5$ bo'lsa, $f(f(1))$ ni toping.

A) 26. B) 38. C) 16. D) 11.

173. $f(2x - 1) = \frac{18 - x}{7}$ va $g(3x - 1) = x^2 - 1$ bo'lsa

$f(g(2))$ ni hisoblang.

A) 2,5 B) 2 C) 3 D) $\frac{16}{7}$

174. Agar $f(x) = \begin{cases} -x + 2, & x < 2 \\ \frac{x - 1}{2}, & x \geq 2 \end{cases}$ bo'lsa, $f(f(-1))$ ni

toping.

A) -1. B) 3. C) 1. D) -2.

175. $f(x) = \begin{cases} 4x + 1, & x < 0 \\ -x^3 + 5, & x \geq 0 \end{cases}$ funksiya berilgan.

$f(f(2))$ ni toping.

A) -13. B) -7. C) -11. D) -3.

176. $f(x)$ funksiya uchun quyidagi tenglik o'rinli

$f(x + 1) = f(x) + 2x + 1$. Agar $f(0) = -5$ bo'lsa, $f(18)$ ni toping.

A) 324. B) 320. C) 329. D) 319.

177. Agar $f(x) = (a + b - 4) \cdot x^3 + 2x^2 + (b - 1) \cdot x$ juft funksiya berilgan bo'lsa, $f(a)$ ning qiymatini toping.

A) 20. B) 18. C) 12. D) 14.

178. $y = x^2$ funksiya grafigini ikki birlik o'ngga, uch birlik yuqoriga ko'chirish natijasida hosil bo'lgan grafik tenglamasini toping.

A) $y = x^2 - 4x + 7$ B) $y = x^2 - 4x + 3$
C) $y = 2x^2 + 3$ D) $y = x^2 + 4x + 7$

179. k ning qanday eng kichik manfiy qiymatida

$$x^2 + (k + 2)^2 x + 2k - 4 = 0$$

tenglamaning ildizlari 2 dan kichik bo'ladi?

A) -1. B) -2. C) -5. D) -4.

180. $x^2 - (k + 1)x + k^2 + k - 22 = 0$

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.

181. Agar $a > 0$ bo'lsa, $y = \frac{a}{|x - a|}$ funksiyaning

vertikal asimtotasini toping.

A) $x = a$. B) $y = 1 - a$. C) $y = -a$. D) $x = -a$.

182. 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)** $a > b$.

183. Agar $25^x = 12$ bo'lsa, 5^x ning qiymatini toping.
A) $2\sqrt{5}$. **B)** $2\sqrt{2}$. **C)** $3\sqrt{2}$. **D)** $2\sqrt{3}$.

184. Agar $81^x = 16$ bo'lsa, 9^x ning qiymatini toping.
A) 4. **B)** $\frac{4}{3}$. **C)** ± 4 . **D)** $\frac{4}{9}$.

185. Agar $2^a = 81$, $3^b = 8$ bo'lsa, $a \cdot b$ qiymatini toping.
A) 14. **B)** 12. **C)** 15. **D)** 18.

186. Agar $x \neq 0$ bo'lsa, $5 + 5^{2x+y} - 5^{x+1} - 5^{x+y} = 0$ tenglamadagi x ni y orqali ifodalang.
A) $x = -1 - y$. **B)** $x = 1 - y$.
C) $x = y - 1$. **D)** $x = y + 1$.

187. Tenglamani yeching: $\sqrt{6^x - 2} = 8 - 6^x$
A) 2. **B)** 1. **C)** 3. **D)** 0.

188. $\frac{(5^x - 25)(7^x - 7)}{\sqrt{7 - 5x}} = 0$ tenglamaning ildizi 5 dan qancha kam?
A) 8 **B)** 6 **C)** 10 **D)** 4

189. $\frac{13^{x^2+3x+2} - 11^{x^2+3x+2}}{x+1} = 0$ tenglamaning ildizi 8 dan qancha kam?
A) 12 **B)** 8 **C)** 6,9 **D)** 10

190. Tenglamalar sistemasini yeching:

$$\begin{cases} x^{13} = 12^y \\ x^2 - 11x - 12 = 0 \end{cases}$$

A) (12; 13). **B)** (12; 13), (-12; -13).
C) (-12; -13). **D)** (12; 13), (13; 12).

191. Tenglamalar sistemasini yeching:

$$\begin{cases} 2^x - 3^y = 1 \\ 2^{x+2} - 3^{y+1} = 7 \end{cases}$$

A) (2; -1). **B)** (2; 1), (-2; -1).
C) (2; 1). **D)** (2; 1), (1; 2).

192. Tenglamalar sistemasini yeching:

$$\begin{cases} x \cdot 2^x - y \cdot 4^y = x \cdot 4^y - y \cdot 2^x \\ 3^x \cdot 9^y = 81 \end{cases}$$

A) (-4; -4), (2; 1). **B)** (-4; 4), (-2; 1).
C) (-4; 4), (2; 1). **D)** (4; -4), (-2; -1).

193. Tenglamalar sistemasini yeching:

$$\begin{cases} y - \log_3 x = 1 \\ x^y = 3^{12} \end{cases}$$

A) $\left(\frac{1}{81}; 3\right)$, (27; 4). **B)** $\left(\frac{1}{81}; -3\right)$, (27; 2).
C) $\left(\frac{1}{81}; -3\right)$, (81; 4) **D)** $\left(\frac{1}{81}; -3\right)$, (27; 4).

194. $2^{\sqrt{x+1}} - 6 < 2^{4-\sqrt{x+1}}$ tengsizlikni qanoatlantiruvchi eng katta va eng kichik butun sonlar ayirmasini toping.
A) 6 **B)** 7 **C)** 9 **D)** 8

195. $\frac{3^x}{3^x - 2^x} < 3$ tengsizlikning eng katta butun manfiy va eng kichik butun musbat yechimlari ko'paytmasini toping.
A) -2. **B)** 2. **C)** 4. **D)** -1.

196. $\log_2 10 \cdot \lg 8$ dan katta bo'lmagan natural sonlar nechta?
A) 1. **B)** 3. **C)** 0. **D)** 2.

197. $\log_3 10 \cdot \lg 9$ dan kichik bo'lgan natural sonlar nechta?
A) 1. **B)** 2. **C)** 0. **D)** 3.

198. $\log_7 (\log_2 10 \cdot \lg 2)$ ni hisoblang.
A) 1. **B)** 0. **C)** $\log_7 2$. **D)** 2.

199. $\log_3 (\log_3 10 \cdot \lg 27)$ ni hisoblang.
A) $\log_3 2$. **B)** 1. **C)** 2. **D)** 4.

200. $\left\{ \frac{\{\lg 200\}}{\{\lg 50\}} \right\} + \{\log_5 12, 5\}$ ni hisoblang.

Bunda $\{a\}$ - a sonining kasr qismi.

A) $\frac{1}{2}$. **B)** $\log_5 2$. **C)** 1. **D)** $\log_5 4$.

201. $\frac{5^{\sqrt{\log_5 a+1}} - 2a^{\sqrt{\log_a 5}}}{a^{\sqrt{\log_a 5}}}$ ni hisoblang.

A) 4. **B)** 5. **C)** 1. **D)** 3.

202. a, b musbat sonlar uchun $a^2 + b^2 = 14ab$ tenglik

o'rinli bo'lsa, $\frac{4 \lg \frac{a+b}{4}}{\lg \frac{1}{a} + \lg \frac{1}{b}}$ ifodaning qiymatini

toping.

A) 1. B) -2. C) 2. D) -1.

203. a, b musbat sonlar uchun $\lg(a-b), \lg 2\sqrt{ab+b^2}$

va $\lg(a+b)$ sonlari ko'rsatilgan tartibda arifmetik progressiyaning ketma-ket hadlari bo'lsa, $\log_b a^2 - \log_b 25$ ifodaning qiymatini toping.

A) 1. B) 2. C) -1. D) -2.

204. $\frac{\lg\left(1 + \frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \dots\right)}{\lg\left(2 + \frac{2}{3} + \frac{2}{9} + \dots\right)} \cdot (\log_2 3 + \log_4 3 + \log_{16} 3 + \dots + \log_{2^{2^n}} 3 + \dots)$

ni hisoblang.

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

205. Agar $a=8$ bo'lsa, ifodani soddalashtiring:

$$\frac{\left(25^{\frac{1}{2 \log_4 25}} + 2 \log_2 \log_2 \log_2 a^{2 \log_4 a}\right) \cdot 4^{\frac{2}{\log_3 4}} - a^2}{1-a}$$

A) 10 B) 8 C) 9 D) 4,5

206. Ifodani soddalashtiring:

$$\frac{1 - \log_a^3 b}{(\log_a b + \log_b a + 1) \cdot \log_a \left(\frac{a}{b}\right)} \cdot \log_b a$$

A) 3 B) 0 C) 2 D) 1

207. $\log_4^2 x - \log_4 \sqrt{x} - 1,5 = 0$ tenglamaning eng katta va eng kichik ildizlari nisbatini toping.

A) 16 B) 64 C) 32 D) 2

208. $\log_{(x-1)} x^2 = \log_{(x-1)} (6x-8)$ tenglamaning

ildizlari soni n bo'lsa, $n+5$ ni toping.

A) 7 B) 8 C) 9 D) 6

209. Tenglamaning ildizlari yig'indisini toping:

$$4^{\log_4^2(x+2)} + 2 \cdot (x+2)^{\log_4 \sqrt{x+2}} = 8$$

A) $\frac{3}{4}$ B) $\frac{5}{4}$ C) $\frac{1}{4}$ D) $\frac{15}{4}$

210. $2^{\log_{0,4}(x) \cdot \log_{0,4}(2,5x)} > 1$ tengsizlikning eng kichik natural yechimini toping.

A) 2 B) 4 C) 3 D) 1

211. $\log_{0,2}^2(x-1) > 4$ tengsizlikni yeching.

A) $(0; 1,04) \cup (5; \infty)$. B) $(26; \infty)$.
C) $(1; 26)$. D) $(1; 1,04) \cup (26; \infty)$.

212. Agar $\cos \alpha = \frac{5}{13}$ va $0 < \alpha < \frac{3\pi}{2}$ bo'lsa, $\sin \alpha$ va $\operatorname{tg} \alpha$ ni toping.

A) $\pm \frac{12}{13}, \pm \frac{12}{5}$. B) $\frac{12}{13}; -\frac{12}{5}$.
C) $\frac{12}{13}; \frac{12}{5}$. D) $-\frac{12}{13}; \frac{12}{5}$.

213. Ifodani soddalashtiring:

$$\cos^2 \alpha + \operatorname{tg}^2 \alpha \cdot \cos^2 \alpha$$

A) 0,7. B) 4. C) 2. D) 1.

214. Agar $\operatorname{ctg} \alpha = -\frac{1}{2}$ bo'lsa, $\operatorname{tg} 3\alpha$ ning qiymatini toping.

A) $-\frac{1}{11}$. B) 5,5. C) $-\frac{2}{11}$. D) $\frac{1}{6}$.

215. 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.

216. Hisoblang:

$$\cos 10^\circ - 2 \cos 50^\circ - \cos 70^\circ$$

A) $-\cos 50^\circ$. B) $\sin 40^\circ$.
C) $\cos 50^\circ$. D) $-\sin 50^\circ$.

217. Hisoblang:

$$\cos 1^\circ + \cos 2^\circ + \cos 3^\circ + \dots + \cos 179^\circ$$

A) 1. B) -1. C) 0. D) $\cos 89^\circ$.

218. Hisoblang:

$$\sin 2^\circ + \sin 3^\circ + \sin 4^\circ + \dots + \sin 358^\circ$$

A) -1. B) 1. C) 0. D) $\sin 179^\circ$.

219. Soddalashtiring:

$$\operatorname{tg} \alpha \cdot \operatorname{tg} \beta + (\operatorname{tg} \alpha + \operatorname{tg} \beta) \cdot \operatorname{ctg}(\alpha + \beta)$$

A) -1. B) 1. C) 2. D) 0.

220. Hisoblang: $\operatorname{tg} 20^\circ + 4 \sin 20^\circ$

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

221. Hisoblang:

$$\operatorname{ctg}15^\circ + \operatorname{ctg}30^\circ + \operatorname{ctg}45^\circ + \dots + \operatorname{ctg}165^\circ$$

- A) 0. B) $\operatorname{ctg}89^\circ$. C) -1. D) 1.

222. Ifodani soddalaashtiring: $\frac{1 - \sin^2 \alpha}{1 - \cos^2 \alpha} + \operatorname{tg} \alpha \cdot \operatorname{ctg} \alpha$

- A) $\sin^2 \alpha$. B) $\cos^2 \alpha$. C) $\frac{1}{\cos^2 \alpha}$. D) $\frac{1}{\sin^2 \alpha}$.

223. Agar $\sin x = 0,5$ bo'lsa, $6,8 + 2 \cos^2 x$ ifodaning qiymatini toping.

- A) 6,8 B) 7,8 C) 8,3 D) 9,3

224. Ifodani soddalaashtiring: $\cos^4 \alpha + \sin^2 \alpha \cdot \cos^2 \alpha$

- A) $\cos 2\alpha$ B) $2 \sin 2\alpha$ C) $\cos^4 \alpha$ D) $\cos^2 \alpha$

225. Agar $12 \cdot \sin 5^\circ \cdot \cos 5^\circ \cdot \cos 10^\circ = m$ tenglik bajarilsa, $\operatorname{tg}70^\circ$ ni m orqali ifodalang.

- A) $\frac{\sqrt{9-m^2}}{3}$ B) $\frac{\sqrt{9-m^2}}{9m}$
 C) $\frac{\sqrt{9-m^2}}{m}$ D) $\frac{\sqrt{3-m^2}}{m}$

226. 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.

227. 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.

228. $\sin \frac{x-y}{2} \sin \frac{y-z}{2} \sin \frac{z-x}{2} = \frac{1}{4}$

bo'lsa, $\sin(x-y) + \sin(y-z) + \sin(z-x)$ ning qiymatini toping.

- A) 2. B) 1. C) -1. D) -2.

229. $\cos^2 \alpha - \frac{1 + \cos \alpha}{1 - \cos \alpha} \cdot \operatorname{tg}^2 \frac{\alpha}{2}$ ni soddalaashtiring.

- A) $\cos^2 \alpha$. B) $-\sin^2 \alpha$. C) $\operatorname{tg} \alpha$. D) $\sin \alpha$.

230. $\alpha = 30^\circ$, $a = (\operatorname{tg} \alpha)^{\operatorname{tg} \alpha}$, $b = (\operatorname{ctg} \alpha)^{\operatorname{ctg} \alpha}$, $c = (\operatorname{ctg} \alpha)^{\operatorname{tg} \alpha}$

bo'lsa, quyidagilardan qaysi biri o'rinli?

- A) $b > a > c$. B) $a > c > b$. C) $c > b > a$. D) $b > c > a$.

231. Agar $f(x) = \frac{x^2}{\sqrt{1+x^2}}$ bo'lsa, $f(\operatorname{ctg} x)$ ni toping.

- A) $f(\operatorname{ctg} x) = \sin x \cdot \operatorname{tg} x$. B) $f(\operatorname{ctg} x) = \cos x$.

- C) $f(\operatorname{ctg} x) = \cos x \operatorname{ctg} x$. D) $f(\operatorname{ctg} x) = \operatorname{tg} x$.

232. Ifodani soddalaashtiring:

$$\sin \alpha + \sin\left(\alpha + \frac{2\pi}{3}\right) + \sin\left(\alpha + \frac{4\pi}{3}\right)$$

- A) 1 B) 0 C) $1 + \sin \alpha$ D) $\sin \alpha$

233. Ifodani soddalaashtiring:

$$\left(2(\sin \alpha)^{-1} + 2(\operatorname{tg} \alpha)^{-1}\right) : \left(\operatorname{tg} \frac{\alpha}{2}\right)^{-1}$$

- A) $\operatorname{tg} \frac{\alpha}{2}$ B) 4 C) $\operatorname{ctg} \frac{\alpha}{2}$ D) 2

234. Ifodani soddalaashtiring:

$$\left((\sin a)^{-1} + (\operatorname{tga})^{-1}\right) : \left(\operatorname{tg} \frac{a}{2}\right)^{-1}$$

- A) $\operatorname{tg} \frac{\alpha}{2}$ B) 1 C) 2 D) $\operatorname{tg}^2 \frac{\alpha}{2}$

235. Ifodani soddalaashtiring:

$$\frac{1}{2}(\cos \alpha - \cos \beta)^2 + \frac{1}{2}(\sin \alpha - \sin \beta)^2 - 2 \sin^2\left(\frac{\alpha - \beta}{2}\right)$$

- A) $4 \cdot \sin^2\left(\frac{\alpha - \beta}{2}\right)$ B) 1

- C) $4 \cdot \sin\left(\frac{\alpha - \beta}{2}\right)$ D) 0

236. Ifodani soddalaashtiring:

$$5 - \left((\cos \alpha - \cos \beta)^2 + (\sin \alpha - \sin \beta)^2\right) : \left(2 \sin^2\left(\frac{\alpha - \beta}{2}\right)\right)$$

- A) $\sin^2\left(\frac{\alpha - \beta}{2}\right)$ B) 3

- C) $2 \cdot \sin^2\left(\frac{\alpha - \beta}{2}\right)$ D) 2

237. Hisoblang: $\arcsin \sin 3$

- A) 3. B) $\frac{\pi}{2} - 3$. C) \emptyset . D) $\pi - 3$.

238. Hisoblang:

$$2 \arcsin\left(-\frac{\sqrt{3}}{2}\right) + \operatorname{arcctg}(-1) +$$

$$+ \arccos\left(\frac{1}{\sqrt{2}}\right) + \frac{1}{2} \arccos(-1)$$

- A) $\frac{5\pi}{12}$ B) $\frac{5\pi}{3}$ C) $\frac{11\pi}{12}$ **D) $\frac{5\pi}{6}$**

239. Hisoblang: $\sin\left(\frac{1}{2}\arcsin\left(-\frac{2\sqrt{2}}{3}\right)\right)$

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

240. Ifodaning qiymatini toping:

$$\frac{\left|\log_{0,5}\left(\operatorname{tg}\frac{\pi}{3}\right)\right|}{\log_{0,5}\left(\operatorname{tg}\frac{\pi}{3}\right)} + \frac{3|3\sqrt{3}-2\sqrt{7}|}{3\sqrt{3}-2\sqrt{7}} + \frac{9\left|\arccos(-0,5)-\frac{\pi}{2}\right|}{\arccos(-0,5)-\frac{\pi}{2}}$$

- A) 10 B) 4 **C) 5** D) 6

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

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

242. $\sin x + \sqrt{3}\cos x = 1$ tenglamaning $(-\pi; \pi)$ intervalga tegishli ildizlari yig'indisini toping.

- A) 90° B) 120° C) 135° **D) 60°**

243. Tenglamani yeching:

$$\sin x + \cos x = \sqrt{2}$$

- A) $x = \frac{\pi}{4} + 2\pi n; n \in Z$**
 B) $x = \frac{3\pi}{4} + 2\pi n; n \in Z$
 C) $x = \frac{3\pi}{4} + \pi n; n \in Z$
 D) $x = \frac{\pi}{4} + \pi n; n \in Z$

244. Tenglamani yeching:

$$\sin^{100} x + \cos^{100} x = 1$$

- A) $\left\{\frac{\pi n}{2}; n \in Z\right\}$** B) $\left\{\frac{\pi n}{4}; n \in Z\right\}$
 C) $\left\{\frac{\pi n}{3}; n \in Z\right\}$ D) $\left\{\frac{2\pi n}{3}; n \in Z\right\}$

245. Tenglamani yeching:

$$2^{\sin^2 x} + 2^{\cos^2 x} = 3$$

- A) $\pi k, k \in Z$ **B) $\frac{\pi k}{2}, k \in Z$**

- C) $\frac{\pi k}{4}, k \in Z$ D) $\frac{\pi k}{3}, k \in Z$

246. Tenglamani yeching:

$$6\sin^2 x + 13\sin x + 5 = 0$$

- A) $x = -\frac{\pi}{3} + \frac{\pi n}{2}, n \in Z; x = \frac{7\pi}{6} + \pi n, n \in Z$
 B) $x = -\frac{\pi}{6} + \pi n, n \in Z; x = \frac{\pi}{6} + 2\pi n, n \in Z$
C) $x = -\frac{\pi}{6} + 2\pi n, n \in Z; x = \frac{7\pi}{6} + 2\pi n, n \in Z$
 D) $x = -\frac{\pi}{3} + 2\pi n, n \in Z; x = \frac{7\pi}{5} + 2\pi n, n \in Z$

247. Tenglamani yeching:

$$\cos^2 2x + \cos^2 3x + \cos^2 4x = \frac{3}{2}$$

- A) $x = \frac{\pi}{12} + \frac{\pi n}{6}, n \in Z; x = \pm \frac{\pi}{3} + 2\pi k, k \in Z$
B) $x = \frac{\pi}{12} + \frac{\pi n}{6}, n \in Z; x = \pm \frac{\pi}{3} + \pi k, k \in Z$
 C) $x = \frac{\pi}{12} + \frac{\pi n}{6}, n \in Z; x = \pm \frac{2\pi}{3} + \pi k, k \in Z$
 D) $x = \frac{\pi}{12} + \frac{\pi n}{3}, n \in Z; x = \pm \frac{\pi}{3} + 2\pi k, k \in Z$

248. Tenglamani yeching:

$$4\cos^2 x - 2\sin^2 x - 5\cos x - 4 = 0$$

- A) $x = \arccos\left(-\frac{2}{3}\right) + \pi n, n \in Z$
 B) $x = \pm \arccos\frac{2}{3} + \pi n, n \in Z$
 C) $x = \pm \arccos\left(-\frac{2}{3}\right) + \pi n, n \in Z$
D) $x = \pm \arccos\left(-\frac{2}{3}\right) + 2\pi n, n \in Z$

249. $3 + 5\sin 2x = \cos 4x$ tenglamani $[0; \pi]$ kesmadagi ildizlari sonini toping.

- A) 4. B) 5. C) 3. **D) 2.**

250. k ning qanday qiymatlarida

$$\cos(\alpha + \pi k) = -\cos \alpha$$

tenglik bajariladi?

- A) $2n, n \in N$ B) $n, n \in N$
C) $2n+1, n \in N$ D) $n+2, n \in N$

251. $y = \cos^2\left(\frac{x}{3} - \frac{\pi}{4}\right) + 2\sin x$ funksiyaning eng kichik musbat davrini toping.

- A) 6π . B) 2π . C) 3π . D) davriy emas.
252. $y = (1 + \operatorname{ctg}^2 x) \sin^2 x + \frac{2 \sin 2x}{\cos x}$ funksiyaning qiymatlar sohasini toping.
 A) $[-3; 5]$. B) $[-1; 1) \cup (1; 3]$.
 C) $[-1; 3]$. D) $(-3; -1) \cup (1; 5)$.
253. $y = \frac{\sin x \cdot (\operatorname{ctgx} + 1) + \cos x \cdot (\operatorname{tgx} + 1)}{2}$ funksiyaning qiymatlari sohasini toping.
 A) $[-\sqrt{2}; \sqrt{2}]$.
 B) $[-\sqrt{2}; -1) \cup (-1; 0) \cup (0; 1) \cup (1; \sqrt{2}]$.
 C) $[-\sqrt{2}; 0) \cup (0; \sqrt{2}]$.
 D) $[-\sqrt{2}; -1) \cup (-1; 1) \cup (1; \sqrt{2}]$.
254. $y = \arcsin \left(\left| x - \frac{1}{2} \right| + |x| \right)$ funksiyaning qiymatlari sohasini toping.
 A) $\left[\frac{\pi}{6}; \frac{\pi}{2} \right]$. B) $\left[0; \frac{\pi}{2} \right]$.
 C) $\left[-\frac{\pi}{2}; \frac{\pi}{2} \right]$. D) $\left[-\frac{\pi}{2}; \frac{\pi}{6} \right]$.
255. $y = \log_5 (\sin^2 2x + \cos^2 2x)$ funksiyaning ikkinchi tartibli hosilasining qiymatini toping.
 A) 0. B) 1. C) $\log_5 2$. D) $-\log_5 2$.
256. Agar $f(x) = \frac{e^x}{\ln x} + \sqrt{\lg 2}$ bo'lsa, $f'(e)$ ni toping.
 A) $\frac{e^{e-1} \cdot (e-1)}{e}$. B) e .
 C) e^e . D) $e^{e-1} \cdot (e-1)$.
257. Agar $f(x) = 4 + 3 \operatorname{tg}^2 2x$ bo'lsa, $f'(\pi)$ ni toping.
 A) 0. B) 2. C) 3. D) 1.
258. 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) $-\frac{4}{289}$.
259. Agar $f(2x-1) = 4x^3 - 3x^2 + 10x + 4$ bo'lsa, $f'(1)$ ni hisoblang.

- A) 16. B) 6. C) 8. D) 4.
260. $f(x)$ 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) $2(f(x))^{-2} \cdot f'(x)$.
261. $f(x)$ 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) $4(f(x))^3 \cdot f'(x)$.
262. $y = \log_2 (\operatorname{arctgx} + \operatorname{arcctgx})$ funksiyaning $x = \frac{1}{2}$ nuqtadagi ikkinchi tartibli hosilasining qiymatini toping.
 A) 1. B) 0. C) $\log_2 3$. D) $-\log_2 2$.
263. 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.
264. Agar $f(x) = x^{\sin 2x}$ bo'lsa, $f'\left(\frac{\pi}{4}\right)$ ni toping.
 A) 0. B) $\pi/2$. C) 1. D) $\pi/4$.
265. $y = x^4 - 4 \ln x$ funksiyaning minimum nuqtasini toping.
 A) $x=2$. B) $x=1$. C) $x=0$. D) mavjud emas.
266. $f(x) = -3x^2 + 9x + t - 1$ funksiyaning maksimumi 6 ga teng. t ning qiymatini toping.
 A) 1. B) 2. C) 0,75. D) 0,25.
267. 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) $(-2 \log_2 e; \infty)$.
268. $y = e^x - x - 1$ funksiyaning o'sish oralig'ini toping.
 A) $(0; \infty)$. B) $(0; 1)$. C) $(1; \infty)$. D) $[e; \infty)$.
269. $y = 4x^5 - 15x^4 - 3$ funksiyaning $(-1; 1)$ oralig'dagi eng katta qiymatini toping.

A) -1. B) -3. C) -2. D) -115.

270. $y = x^2 - |2x - 4|$ grafigiga $x = 3$ va $x = -3$ nuqtalarda o'tkazilgan urinmalarning kesishish nuqtasi ordinatasini toping.

A) -9. B) -5. C) -12. D) -6.

271. 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) $\ln(|x-3| \cdot |x+2|) + C$.

272. $f(x) = \frac{x^2}{x^2+1}$ funksiyaning $(\sqrt[3]{e-1}; 2)$ nuqtadan o'tuvchi boshlang'ich funksiyasini toping.

A) $F(x) = \frac{1}{3} \ln(x^2+1) + 2$.

B) $F(x) = \frac{1}{3} \ln(x^2+1) - \frac{5}{3}$.

C) $F(x) = \frac{1}{3} \ln(x^2+1) - 2$.

D) $F(x) = \frac{1}{3} \ln(x^2+1) + \frac{5}{3}$.

273. 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) $\frac{2x^2}{(x-6)^2} + C$.

274. $a = -4$ bo'lsa, $\int_a^{a+1} (\sin^2 2x + \cos^2 2x) dx$ aniq integral ni hisoblang.

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

275. 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.

276. 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.

277. $\int \frac{dx}{4+x^2}$ 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) $\frac{1}{4} \arctg \frac{x}{2} + C$.

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

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

279. $\int_0^1 \frac{2x}{x+1} dx$ integralni hisoblang.

A) 1. B) $\ln 2e$. C) $\ln \frac{e}{2}$. D) $2 \ln \frac{e}{2}$.

280. Hisoblang: $\int_1^2 \left(e^x + \frac{1}{x} + 1 \right) dx$

A) $e^2 - e + \ln 2 + 1$. B) $e^2 - e + 3 + \ln 2$.

C) $e^2 - e + \ln 2$. D) $e^2 + e - \ln 2$.

281. Hisoblang: $\int_1^2 \left(e^x + \frac{1}{x} \right) dx$

A) $e^2 + e - \ln 2$. B) $e^2 - e + \ln 2$.

C) $e^2 + e + \ln 2$. D) $e^2 - e - \ln 2$.

282. $\int \frac{3dx}{x \cdot \ln 2x}$ ni hisoblang.

A) $3 \ln 2x + C$. B) $6 \ln 2x + C$.

C) $1,5 \ln 2x + C$. D) $3 \ln \ln 2x + C$.

283. $\int_{\frac{\pi}{6}}^{\frac{\pi}{3}} \frac{\sin^3 x + 1}{\sin^2 x} dx$ integralni hisoblang.

A) $\frac{7\sqrt{3}-3}{3}$. B) $\frac{7\sqrt{3}+3}{6}$.

C) $\frac{7\sqrt{3}+3}{3}$. D) $\frac{7\sqrt{3}-3}{6}$.

284. $\int_{-5}^3 |x-1| dx$ aniq integraning qiymatini toping.

A) -4,5. B) 20. C) 16. D) 18.

285. a ning qanday qiymatlarida $\int_3^a (3x-1)dx = 4$

tenglik o'rinli bo'ladi?

- A) $\frac{1 \pm 2\sqrt{22}}{3}$. B) ± 3 .
 C) ± 5 . D) $\frac{2 \pm 2\sqrt{22}}{3}$.

286. $f(x) = A \cdot 2^x + B$ funksiya uchun $f'(1) = (\ln 2)^2$ va $\int_0^2 f(x)dx = 0,5$ tengliklar o'rinli bo'lsa, B ni toping.

- A) -0,5. B) $\ln 2$. C) -1. D) -2.

287. $y = \frac{1}{x^2}$; $y = 0$; $x = 1$; $x = 3$ chiziqlar bilan chegaralangan shaklning yuzini toping.

- A) 0,5. B) $2/3$. C) 2. D) $1/3$.

288. $y = \sin \frac{x}{2}$; $y = 0$; $x = \frac{\pi}{2}$; $x = \pi$ chiziqlar bilan chegaralangan shaklning yuzini toping.

- A) $\sqrt{2}$. B) 1,5. C) $0,5\sqrt{2}$. D) 2.

289. $x = 1$, $y = 2^x$ va $y = 2^{-x}$ funksiyalar bilan chegaralangan soha yuzini toping.

- A) $\log_2 2e$. B) $\log_4 e$.
 C) $-\log_4 e$. D) $\log_2 e$.

290. Do'konda 7 ta pidjak, 5 xil shim va 4 xil galstuk sotilmoqda. Pidjak, shim va galstukdan iborat komplektni nechta usul bilan sotib olsa bo'ladi?

- A) 140. B) 155. C) 148. D) 146.

291. 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.

292. 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.

293. $A(0; 1)$ va $B(5; -3)$ nuqtalar berilgan. Agar B nuqta AC kesmaning o'rtasi bo'lsa, C nuqta koordinatalari yig'indisini toping.

- A) 2. B) 2,5. C) 3. D) 4.

294. 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) $-\frac{3}{5}$.

295. $|\vec{a}| = 3$ va $|\vec{b}| = 4$ hamda vektorlar orasidagi burchak 60° ga teng bo'lsa, $\vec{c} = 3\vec{a} + 2\vec{b}$ vektorning uzunligini toping.

- A) $\sqrt{214}$. B) $\sqrt{215}$. C) $\sqrt{216}$. D) $\sqrt{217}$.

296. \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.

297. $\vec{a}(-3; 1)$ va $\vec{b}(2; 4)$ vektorlar yig'indisini toping.

- A) (-1; 5). B) (1; 5). C) (-1; 3). D) (1; -3).

298. \vec{a} va \vec{b} nolmas vektorlarning kollinearlik alomati berilgan javob bu ...

- A) $\vec{a} \cdot \vec{b} = 0$. B) $\vec{c} = x\vec{a} - y\vec{b}$.
 C) $\vec{c} = x\vec{a} + y\vec{b}$. D) $\vec{b} = k \cdot \vec{a}$, $k \neq 0$.

299. $A(3; 6)$ va $B(-1; 2)$ nuqtalardan o'tuvchi hamda markazi $y = x + 2$ to'g'ri chiziqda yotgan aylana markazi koordinatasini toping.

- A) (5; 3). B) (3; 5). C) (3; 4). D) (4; 5).

300. $A(3; 0)$ va $B(-1; 2)$ nuqtalardan o'tuvchi hamda markazi $y = x + 2$ to'g'ri chiziqda yotgan aylana tenglamasini tuzing.

A) $(x-3)^2 + (y-5)^2 = 25$.

B) $(x-3)^2 + (y-4)^2 = 25$.

C) $(x-4)^2 + (y-5)^2 = 25$.

D) $(x-5)^2 + (y-3)^2 = 25$.

301. Uchlari $A(4; 2)$, $B(6; -5)$ va $C(-5; 4)$ nuqtalarda bo'lgan uchburchak berilgan. A uchidan tushirilgan balandlik quyidagi qaysi tenglama bilan berilgan to'g'ri chiziqda yotadi?

A) $x - y - 2 = 0$. B) $11x - 9y - 6 = 0$.

C) $11x - 9y - 26 = 0$. D) $x - y - 6 = 0$.

302. Diametri AB bo'lgan, $A(2; 0)$ va $B(-2; 6)$ nuqtalardan o'tuvchi aylana tenglamasini toping.

A) $(x-3)^2 + y^2 = 13$. B) $(y-3)^2 + x^2 = 13$.

C) $(x-3)^2 + y^2 = 9$. D) $(y-3)^2 + x^2 = 9$.

303. 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.
304. Uzunliklari o'zaro teng bo'lgan $\vec{a}(2; -2; 5)$ va
 $\vec{b}(-3; -4; 2x)$ vektorlar berilgan bo'lsa, x ning
 absolyut qiymatini toping.
 A) $2\sqrt{2}$. B) 2. C) $\sqrt{2}$. D) $\sqrt{3}$.
305. $x^2 + y^2 = 169$ tenglama bilan berilgan aylanaga
 tegishli absissasi 5 ga teng bo'lgan nuqtalarni
 toping.
 A) (5; 12), (5, -12). B) (5; -12).
 C) (5; 12). D) (12; 5), (-12; 5).
306. ABC uchburchak uchlarining koordinatalari beril-
 gan: $A(8; 12)$, $B(-8; 0)$, $C(-2; 8)$. Uchburchakning
 CM medianasi yotgan to'g'ri chiziq tenglamasini
 tuzing.
 A) $x + 2y + 3 = 0$. B) $x + y + 6 = 0$.
 C) $x + y = 6$. D) $x - y - 6 = 0$.
307. Ta'lim muassasasida barcha o'quvchilar kamida
 bitta – ingliz yoki nemis tilida so'zlasha oladilar,
 ayrimlari esa ikkala tilni ham biladilar. O'quvchi-
 larning 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.
308. 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.
309. $A = \{x: |x - 2| < 3, x \in N\}$ to'plamning
 elementlari sonini toping.
 A) 3. B) 6. C) 4. D) 5.
310. Quyidagi javoblardan qaysi biri bo'sh to'plam?
 A) $A = \{x: x^2 \leq 0, x \in R\}$.
 B) $A = \{x: 3x + 5 = 0, x \in R\}$.
 C) $A = \{x: x^2 < x, x \in R\}$.
 D) $A = \{x: |2x - 3| = -4, x \in R\}$.
311. $A = \{1; 3; 5; 6; 8; 10\}$ va $B = \{5; 6; 7; 8; 10\}$
 to'plamlar berilgan. $A \cup B$ to'plam elementlari
 sonini toping.
 A) 8. B) 11. C) 7. D) 6.
312. $A = \{1; 3; 5; 6; 8; 10\}$ va $B = \{5; 6; 7; 8; 10\}$
 to'plamlar berilgan. $A \cup B$ to'plam elementlari
 sonini toping.
 A) 11. B) 8. C) 6. D) 7.
313. $A = \{1; 3; 5; 6; 8; 9; 10; 11\}$ va $B = \{5; 6; 7; 8; 10; 11\}$
 to'plamlar berilgan. $A \cap B$ to'plam elementlari
 sonini toping.
 A) 4. B) 9. C) 5. D) 8.
314. Agar $A \cap B = \{b, c, d\}$ va $A \cap C = \{a, b\}$ bo'lsa,
 to'plam elementlarini toping.
 A) $\{a, b, c, d\}$. B) $\{a, c, d\}$. C) $\{c, d\}$. D) $\{b\}$.
315. $\{x | x \in N, -5 < x \leq 5\}$ to'plamning nechta qism
 to'plamlari mavjud?
 A) 32. B) 16. C) 10. D) 5.
316. $\{x | x \in N, 0 \leq x < 5\}$ to'plamning nechta qism
 to'plamlari mavjud?
 A) 16. B) 5. C) 4. D) 32.
317. Parallel to'g'ri chiziqlarning xossalari to'g'ri
 berilgan javoblarni tanlang.
 1) agar a va b to'g'ri chiziqlar parallel bo'lsa, ular
 orasidagi masofa o'zgarmas miqdordir;
 2) bitta to'g'ri chiziqqa parallel bo'lgan hamma
 to'g'ri chiziqlar o'zaro paralleldir;
 3) bir tekislikda yotib, bitta to'g'ri chiziqqa
 perpendikulyar bo'lmagan hamma to'g'ri
 chiziqlar o'zaro paralleldir.
 A) 2; 3. B) 1; 3. C) 1; 2. D) 1; 2; 3.
318. Birhad yoki ko'phadlar uchun quyidagi
 tasdiqlarning qaysi biri noto'g'ri?
 A) birhadning darajasi deb, uning tarkibidagi
 barcha harflar darajalarining yig'indisiga aytiladi.
 B) ko'phadning darajasi deb, shu ko'phad
 tarkibdagi birhadlarning eng katta darajasiga
 aytiladi.
 C) agar ko'phad tarkibidagi faqat 2 ta harf
 ishtirok etsa, ikki noma'lumli ko'phad deyiladi.
 D) ko'phadning darajasi deb, shu ko'phad
 tarkibdagi birhadlarning darajalari yig'indisiga
 aytiladi.
319. Quyidagilardan qaysilari to'g'ri?
 1) agar $b > 0$, $a > c > 0$ bo'lsa, u holda $\frac{a}{b} > \frac{c}{b}$ bo'ladi;
 2) agar $a > 0$, $b > c > 0$ bo'lsa, u holda $\frac{a}{b} > \frac{a}{c}$ bo'ladi;
 3) agar $0 < a < b$, $c > 0$ bo'lsa, u holda $\frac{a}{b} < \frac{a+c}{b+c}$

bo'ladi.

- A) 1; 2; 3. B) 1; 3. C) 2; 3. D) 1.

320. Bir noma'lumli chiziqli tenglama nechta ildizga ega bo'lishi mumkin?

- 1) bitta ildizga; 2) cheksiz ko'p yechimga;
3) ildizi yo'q.

- A) 1 va 3. B) 1. C) 2 va 3. D) 1; 2 va 3.

321. To'g'ri javobni toping.

- 1) Agar $a > 0$ bo'lsa, $a + \frac{1}{a} > 2$ bo'ladi;

- 2) Agar a va b bir xil ishorali bo'lsa, $\frac{a}{b} + \frac{b}{a} \geq 2$ bo'ladi;

- 3) Agar a va b har xil ishorali bo'lsa, $\frac{a}{b} + \frac{b}{a} \leq -2$ bo'ladi;

- A) 1, 2, 3. B) 1, 2. C) 3. D) 2, 3.

322. To'g'ri berilgan integrallash formulalarini tanlang:

1) $\int \frac{1}{kx+b} dx = \frac{1}{k} \ln|kx+b| + C.$

2) $\int a^{b-kx} dx = -\frac{a^{kx-b}}{k \ln|a|} + C.$

3) $\int e^{b-kx} dx = -\frac{e^{b-kx}}{k} + C.$

- A) 1, 3. B) 1, 2, 3. C) 1, 2. D) 3.

323. To'g'ri berilgan integrallash formulalarini tanlang:

1) $\int \sin(kx+b) dx = -\frac{1}{k} \cos(kx+b) + C.$

2) $\int \cos(b-kx) dx = -\frac{1}{b} \sin(b-kx) + C.$

3) $\int \operatorname{tg}(b+kx) dx = -\frac{1}{k} \ln|\cos(b+kx)| + C.$

- A) 1, 3. B) 1, 2, 3. C) 1, 2. D) 3.

324. To'g'ri berilgan integrallash formulalarini tanlang:

1) $\int \sin^2 x dx = \frac{1}{2}x - \frac{1}{4} \sin 2x + C.$

2) $\int \operatorname{ctg}^2 x dx = \operatorname{ctgx} + x + C.$

3) $\int \operatorname{tg}^2 x dx = \operatorname{tgx} - x + C.$

- A) 1, 3. B) 1, 2, 3. C) 1, 2. D) 3.

325. To'g'ri berilgan integrallash formulalarini tanlang:

1) $\int \sin(g(x))g'(x) dx = -\cos(g(x)) + C.$

2) $\int \cos(g(x))g'(x) dx = \frac{1}{x} \sin(g(x)) + C.$

3) $\int \operatorname{tg}(g(x))g'(x) dx = -\ln|\cos(g(x))| + C.$

- A) 1, 3. B) 1, 2. C) 2, 3. D) 1, 2, 3.

326. Nuqtalar o'rniga to'g'ri javobni tanlang.

To'g'ri burchakli uchburchak o'tkir burchagining... deb shu burchakka yopishgan katetining qarshisidagi kateti nisbatiga aytiladi.

- A) tangensi. B) sinusi.
C) kosinusi. D) kotangensi.

327. Quyidagi tasdiqlarning qaysilari to'g'ri?

1) har qanday uchburchakka ichki chizilgan aylana markazi uchburchak bissektrisalarining kesishish nuqtasida bo'ladi;

2) har qanday uchburchakka tashqi chizilgan aylana uchburchak tomonlarining o'rta nuqtalaridan tomonlariga o'tkazilgan perpendikulyarlarning kesishish nuqtasida bo'ladi;

3) uchburchakning o'rta chizig'i parallel tomonidan 2 ga kam bo'ladi.

- A) 1, 2, 3. B) 1, 2. C) 2, 3. D) 1, 3.

328. Quyidagi tasdiqlarning qaysilari to'g'ri?

1) Trapetsiyaning o'rta chizig'i uning diagonalini teng ikkiga bo'ladi;

2) agar teng yonli trapetsiyaning diagonalini uning katta asosdagi burchagibissektrisasi bo'lsa, u holda, kichik asos yon tomonga teng bo'ladi;

3) agar teng yonli trapetsiyaning diagonalini uning kichik asosdagi burchagi bissektrisasi bo'lsa, u holda katta asos yon tomonga teng bo'ladi;

- A) 1, 3. B) 2, 3. C) 1, 2. D) 1, 2, 3.

329. Quyidagi tasdiqlarning qaysilari to'g'ri?

1) Kub - barcha yoqlari to'rtburchaklardan iborat ko'pyoqdir;

2) Parallelepiped - barcha yoqlari parallelogrammdan iborat ko'pyoqdir;

3) Prizma - asoslari deb ataladigan ikki yoqi parallel tekisliklarda yotuvchi, qolganyoqlari parallelogrammdan iborat ko'pyoqdir.

- A) 1, 3. B) 1, 2, 3. C) 1, 2. D) 2, 3.

330. A, B, C nuqtalar aylanada yotadi. Agar aylana diyametri 10, $\angle ABC = 30^\circ$ ga teng bo'lsa, AC vatar uzunligini toping?

- A) 5. B) 6. C) 8. D) 4.

331. To'g'ri burchakli uchburchak gipotenuzasi 6 ga teng va unga ichki va tashqi chizilgan aylana radiuslari yig'indisi 4 ga teng bo'lsa, uchburchak perimetrini toping.

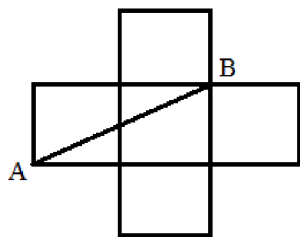
- A) 20. B) 12. C) 18. D) 14.
332. To'g'ri burchakli uchburchakning gipotenuzasi 25 ga, unga ichki chizilgan aylana radiusi 4 ga teng. Uchburchakning perimetrini toping.
A) 51. B) 48. C) 45. D) 58.
333. To'g'ri burchakli uchburchak gipotenuzasiga tushirilgan balandligi 3 ga, to'g'ri burchak bissektrisasi 4 ga teng. Uchburchakning yuzini toping.
A) 36. B) 96. C) 64. D) 72.
334. 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) 81π . B) 36π . C) 18π . D) 9π .
335. To'g'ri burchakli ABCD trapetsiyaning B va C burchaklari to'g'ri $AB = 8$, $BC = 6$ va $DC = 4$. Trapetsiyaning D uchidan AC diagonalgacha bo'lgan masofani toping.
A) 2. B) 3. C) 3,6. D) 2,4.
336. ABC uchburchakning BC va AC tomonlarida mos ravishda D va E nuqtalar shunday olindiki, bunda $\angle BAD = 50^\circ$, $\angle ABE = 30^\circ$. Agar $\angle ABC = \angle ACB = 50^\circ$ bo'lsa, $\angle BED$ ni toping.
A) 40° . B) 80° . C) 70° . D) 50° .
337. Teng yonli uchburchak asosidagi burchak tangensi $\sqrt{3}$ ga teng. Uning yon tomoniga o'tkazilgan medianasi va asosi orasidagi burchakni toping.
A) 60° . B) 30° . C) 15° . D) 45° .
338. ABC to'g'ri burchakli uchburchakda E nuqta BC tomonni $BE : EC = 3 : 1$ kabi nisbatda bo'ladi, D nuqta esa AB gipotenuzada yotadi. Agar $BD = 8$, $AC = 12$ va $\angle BAC = 60^\circ$ bo'lsa, BDE uchburchak yuzini toping.
A) 36. B) 48. C) $18\sqrt{3}$. D) $24\sqrt{3}$.
339. ABC uchburchakning BC tomonida D nuqta olingan. Agar $BD = 16$, $DC = 4$ va $AB = AD = 10$ bo'lsa, ADC uchburchakning yuzini toping.
A) 14. B) 12. C) 10. D) 16.
340. Yon tomoni 7 ga teng bo'lgan teng yonli uchburchakning asosidan olingan nuqta orqali, yon tomonlarga parallel to'g'ri chiziqlar o'tkazilgan. Hosil bo'lgan parallelogramm perimetrini toping.
- A) 14. B) 28. C) 20. D) 21.
341. Yon tomoni 9 ga teng bo'lgan teng yonli uchburchak asosidan olingan nuqta orqali, yon tomonlariga parallel to'g'ri chiziqlar o'tkazilgan. Hosil bo'lgan parallelogramm perimetrini toping.
A) 27. B) 18. C) 21. D) 20.
342. Yon tomoni 8 ga teng bo'lgan teng yonli uchburchakning asosiga tushirilgan mediana 6 ga teng bo'lsa, uning asosini toping.
A) $3\sqrt{6}$. B) 2. C) $2\sqrt{6}$. D) $4\sqrt{7}$.
343. Uchburchakning 10 ga teng balandligi uning asosini 10 va 4 ga teng kesmalarga ajratadi. Uchburchakning qolgan ikki tomonidan kichigiga o'tkazilgan mediana uzunligini toping.
A) 11. B) 14. C) 13. D) 12.
344. Teng yonli uchburchakning asosi 8 sm ga, yon tomoni esa 5 sm ga teng. Bu uchburchakka ichki va tashqi chizilgan aylanalarning markazlari orasidagi masofani(sm) toping.
A) $3/8$. B) $5/2$. C) $5/6$. D) $7/6$.
345. Teng yonli uchburchakning asosi $4\sqrt{2}$ sm ga, yon tomonining medianasi esa 5 sm ga teng. Yon tomonini (sm) toping.
A) 6. B) 5. C) $\sqrt{38}$. D) $\sqrt{34}$.
346. Bir burchagi 60° bo'lgan to'g'ri burchakli uchburchakka tomoni 6 sm ga teng bo'lgan romb shunday ichki chizilganki, 60° li burchak ular uchun umumiy, rombnings barcha uchlari uchburchakning tomonlarida yotadi. Uchburchakning katta tomoni uzunligini (sm) toping.
A) 16. B) 18. C) 12. D) 24.
347. Teng yonli ABC uchburchakda AC asos, $AB = 20$, $\cos A = \frac{2\sqrt{6}}{5}$ bo'lsa, asosga o'tkazilgan balandlikni toping.
A) $\frac{\sqrt{6}}{5}$. B) 4. C) 1. D) 2.
348. ABC uchburchakda D va E nuqtalar BC tomoni uchta teng qismlarga bo'ladi ($BD = DE = EC$), F va G nuqtalar esa AD kesmani uchta teng qismlarga bo'ladi ($AF = FG = GD$), AFE uchburchak yuzining ABC uchburchak yuziga nisbatini toping.

- A) $\frac{1}{12}$. B) $\frac{1}{4}$. C) $\frac{1}{3}$. D) $\frac{1}{9}$.

349. 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).

350. 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.

351. 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 aylana urinadi. Kvadratning diagonalini toping.

- A) $2(2 - \sqrt{2})$. B) $3(\sqrt{2} + 1)$.
C) $1,5(\sqrt{2} + 1)$. D) $2(2 + 2\sqrt{2})$.

352. 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.

353. $y > 0$ bo'lsin. To'rtburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quyida gicha berilgan A(1; 0), B(1; y), C(10; y) va D(12; 0). To'rtburchak diagonalining o'rtalari orasidagi masofani toping.

- A) 1. B) 2. C) y ga bog'liq. D) $\sqrt{2}$.

354. 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.

355. ABCD parallelogrammda M nuqta BD diagonalda 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.

356. Teng yonli trapetsiya diagonali uning o'tkir burchak bisktrisasidir. 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) $3\frac{1}{3}$.

357. ABCD trapesiyaning yuzi 24 ga teng, asoslari $DC=6$, $AB=2$, BC tomondan E nuqta olingan bo'lib, $BE=2EC$ bo'lsa, ADE uchburchak yuzini toping.

- A) 12. B) 21. C) 14. D) 16.

358. ABCD trapesiyaning yuzi 36 ga teng, asoslari $DC=6$, $AB=2$, BC tomondan E nuqta olingan bo'lib, $BE=2EC$ bo'lsa, ADE uchburchak yuzini toping.

- A) 28. B) 21. C) 18. D) 36.

359. Teng yonli trapetsiyaning katta asosi 40 sm ga, kichik asosi esa 24 sm ga teng. Bu trapetsiyaning diagonalari o'zaro perpendikulyar. Uning yuzini (sm^2) toping.

- A) 2048. B) 1024. C) 512. D) 256.

360. Perimetri 32 sm bo'lgan parallelogramda diagonal o'tkazilgan. Ikkita qo'shni uchburchaklar perimetrlari orasidagi ayirma 8sm ga teng. Parallelogramm katta tomonining uzunligini (sm) toping.

- A) 4. B) 8. C) 12. D) 24.

361. M nuqta CD to'g'ri chiziqda C va D nuqtalar orasida yotibdi. Agar $CM=2,5$ sm va $MD=3,5$ sm bo'lsa, CD kesmaning uzunligini toping.

- A) 6 sm. B) 8 sm. C) 7 sm. D) 5 sm.

362. Qavariq ABCDEF oltiburchakda ichki burchaklari o'zaro teng. Agar $AB=3$, $BC=4$, $CD=5$, $EF=2$ bo'lsa, AF tomon uzunligini toping.

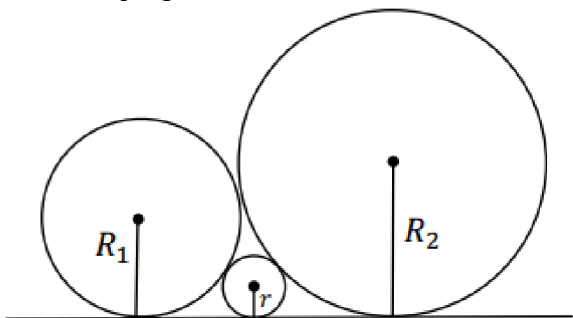
- A) 7. B) 2. C) 6.

D) bir qiymatli aniqlab bo'lmaydi.

363. ABCDEF muntazam oltiburchakda AC, CE, BF, FD diagonal o'tkazilgan. AC va BF diagonal-lar L nuqtada CE va FD diagonal-lar K nuqtada kesishadi. Agar oltiburchak tomoni $2\sqrt{3}$ ga teng bo'lsa, LCKF to'rtburchak yuzini toping.

- A) $6\sqrt{3}$. B) $5\sqrt{3}$. C) $8\sqrt{3}$. D) $9\sqrt{3}$.

364. Tomoni $8\sqrt{3}$ ga teng ABCDEF muntazam oltiburchakning FD diagonali EA va EC diagonalalarini mos ravishda P va K nuqtalarda kesib o'tadi. PK kesma uzunligini toping.
A) 8. B) 16. C) 9. D) 12.
365. Muntazam ko'pburchak tomoni unga tashqi chizilgan aylananing 36° li yoyini tortib turadi. Muntazam ko'pburchakning tomonlari sonini toping.
A) 10. B) 12. C) 6. D) 8.
366. ABCD to'rtburchak aylanaga ichki chizilgan. Agar $\angle ABC = 105^\circ$, $\angle CAD = 35^\circ$ bo'lsa, $\angle ABD$ ni toping.
A) 75° . B) 60° . C) 70° . D) 80° .
367. Aylanaga o'tkazilgan vatar uni 5:7 nisbatda bo'ladi. Ushbu vatarga tiralgan, aylanaga ichki chizilgan katta burchakni toping.
A) 105° . B) 135° . C) 120° . D) 150° .
368. $R_2 = 4$ va $R_1 = 1$ radiusli ikkita 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) $\frac{16}{9}$.
369. Muntazam piramidaning apofemasi bu ...
A) yon yog'ining uchidan tushirilgan balandligi;
B) uchidan asosigacha bo'lgan masofa;
C) qarama-qarshi tomonlar orasidagi masofa;
D) asos uchidan yon tomonigacha bo'lgan masofa.
370. O'n bir burchakli muntazam prizma nechta diagonal kesimga ega?
A) 66. B) 22. C) 33. D) 44.
371. Tekislikdan 1 m masofadagi nuqtadan tekislikka ikkita og'ma tushirilgan. Agar og'malar o'zaro perpendikulyar hamda tekislikka o'tkazilgan perpendikulyar bilan 60° li burchaklar tashkil etishi ma'lum bo'lsa, og'malarning asoslari orasidagi masofani (m) toping.

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

372. 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.
373. Muntazam to'rtburchakli prizma asosining yuzi 64 ga teng. Agar prizmaning diagonali yon qirrasini bilan 30° burchak tashkil etsa, prizmaning yon sirti nimaga teng.
A) $204\sqrt{6}$. B) $209\sqrt{6}$. C) $256\sqrt{6}$. D) $210\sqrt{6}$.
374. Muntazam oltiburchakli prizma asosining tomoni 6 ga, yon yoqlari esa kvadratlardan iborat bo'lsa, prizmaning kichik diagonalini toping.
A) 12 B) $18\sqrt{3}$ C) 36 D) $6\sqrt{2}$
375. O'lchamlar $40 \times 20 \times 5$ (sm) bo'lgan to'g'ri burchakli parallelepipedshaklidagi metal qalinligi 1 mm bo'lgan tunuka tayyorlandi. Bu tunukaning yuzasini toping.
A) $0,4 \text{ m}^2$ B) 40 sm^2 C) 40 m^2 D) 4 m^2
376. Og'ma prizmaning asosi tomonlari 3 sm va 6 sm, o'tkir burchagi 45° bo'lgan parallelogramdan iborat. Prizmaning yon qirrasini 4 sm ga teng bo'lib, asos tekisligiga 30° burchak ostida og'gan. Prizmaning hajmini (sm^3) toping.
A) $9\sqrt{2}$. B) $12\sqrt{2}$. C) $36\sqrt{2}$. D) $18\sqrt{2}$.
377. 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.
378. ABCD tetradning D uchidagi barcha yassi burchaklar to'g'ri. Shu tetradga 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) $2\sqrt{2}$.
379. Piramidaning asosi teng yonli uchburchak va uning tomonlari 20, 20 va 24 sm. Piramidaning yon yoqlari asos tekisligi bilan 60° li burchak tashkil qilsa, uning hajmini (sm^3) toping.
A) $576\sqrt{3}$. B) $448\sqrt{3}$.

C) $1152\sqrt{3}$. D) $384\sqrt{3}$.

380. Piramidaning asoslari tomonlari 5, 12 va 13 sm ga teng bo'lgan uchburchakdan iborat.

Piramidaning barcha ikkiyoqli burchaklari 60° ga teng bo'lsa, uning hajmini (sm^3) toping.

A) $24\sqrt{3}$. B) $48\sqrt{3}$. C) $20\sqrt{3}$. D) $36\sqrt{3}$.

381. Piramidaning asosi tomoni $4\sqrt{3}$ va o'tkir burchagi 45° ga teng bo'lgan rombdan iborat. Ushbu piramidaga ichki chizilgan konusning yasovchisi asos tekisligi bilan 60° li burchak tashkil etadi. Konusning hajmini toping.

A) 6π . B) $6\sqrt{2}\pi$. C) 3π . D) $6\sqrt{3}\pi$.

382. Kesik piramidaning asoslari teng yonli uchburchakdan iborat bo'lib, ularning uchlaridagi burchklari 120° ga teng. katta asosining yon tomonlari a ga, kichik asosining yon tomonlari b ga, ularning o'tma burchaklari uchlarini tutashtiruvchi qirra esa c ga teng bo'lib, u asoslar tekisligiga perpendikulyar. Kesik piramida yon sirtining yuzini toping.

A) $(a+b) \cdot \left(c + \frac{\sqrt{3}}{4} \sqrt{4c^2 + (a-b)^2} \right)$.

B) $\frac{1}{4}(a+b) \cdot \sqrt{12c^2 + 4(a-b)^2}$.

C) $(a+b) \cdot \left(c + \sqrt{4c^2 + (a-b)^2} \right)$.

D) $c + \frac{\sqrt{3}}{4} \sqrt{4c^2 + (a-b)^2}$.

383. 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) $2\arctg 3$. C) $\frac{\pi}{3}$. D) $2\arctg \frac{1}{3}$.

384. 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) $\sqrt{20\frac{2}{3}}$.

385. 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) $\frac{11}{16}$.