Mavzular

Arifmetika.

Natural sonlar. Tub va murakkab sonlar.

1. $2012 \cdot 2011 - 2009 \cdot 2014$ ni hisoblang. A) -6 B) -4 C) 6 D) 23

2. $3 - 6 + 12 - 24 + 48 - \ldots + 3072$

A) $4^6 - 1$ B) $4^6 + 1$ C) $4^9 + 1$ D) $2^{11} + 1$

3. Ifodani qiymatining oxirgi raqamini toping: $2 \cdot 2014^{2015} - 3 \cdot 2013^{2014}$

A) 5 B) 3 C) 1 D) 0

Bo'linish belgilari

4. 11 ga karrali uch xonali natural sonlar nechta?A) 80 B) 81 C) 90 D) 91

5. a va b sonlarini 5 ga bo'lganda qoldiq mos ravishda 4 va 5 ga teng bo'ladi. $a \cdot b$ ko'paytmani 5 ga bo'lgandagi qoldiqni toping. A) 1 B) 2 C) 3 D) 4

6. 324; 255 va 71 sonlaring har birini qanday natural songa bo`lganda qoldiqlari bir xil bo`ladi?

A) 23 B) 25 C) 27 D) 29

7. a va b natural sonlarning umumiy bo'luvchilar soni 3 ga teng bo'lsa, $a + 3b$ va b sonlrning umumiy bo'luvchilari nechta. A) 1 B) 3 C) 4 D) Bir qiymatli aniqlab bo'lmaydi

8. [50;150] kesmada 3 ga bo'lganda qoldiq 1 ga, 4 ga bo'lganda qoldiq 2 ga, 5 ga bo'lganda qoldiq 3 ga, 6 ga bo'lganda qoldiq 4 ga teng bo'ladigan natural sonlar nechta?

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

9. [0;300] kesmada 3 ga bo'lganda qoldiq 1 ga, 4 ga bo'lganda qoldiq 2 ga, 5 ga bo'lganda qoldiq 3 ga, 6 ga bo'lganda qoldiq 4 ga teng bo'ladigan natural sonlar nechta?

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

Sonlarni tub ko'paytuvchilarga ajratish. O'zaro tub sonlar.

10. Tub sonlar qatorini toping.

a) 3, 5, 7, 9; b) 1, 2, 3, 5, 7;

c) 2, 3, 5, 7, 21; d) 2, 3, 5, 7, 19.

A) a, c B) b C) d D) c

11. x va 84 sonlarining eng kichik umumiy karralisi 336 ga, eng kata umumiy bo'luvchisi esa 12 ga teng, x ni toping.

A) 16 B) 24 C) 48 D) 60

12. Natural bo'luvchilari soni eng ko'p bo'ladigan uch xonali natural sonni toping.

A) 480 B) 804 C) 840 D) 908

20. 2234 va 2235 sonlarining umumiy natural bo'luvchilari nechta?

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

21. $2^{18} \cdot 4^9 \cdot 5^{55} \cdot 8^6$ ko'paytma necha honali son bo'ladi?

A) 57 B) 54 C) 56 D) 55

22. Murakkab n sonning 1 dan katta eng kichik bo'luvchisi m bo'lsin. U holda: A) $m < \sqrt{n}$ B) $m \geq \sqrt{n}$ C) $m > \sqrt{n}$ D) $m \leq \sqrt{n}$

23. Yig'indining oxirgi raqamini toping: $2014^{2015} + 2015^{2014}$

A) 3 B) 7 C) 9 D) 11

24. Ifodaning qiymatini oxirgi raqamini toping. $2012^{2013} + 2013^{2014} - 2014^{2015}$

A) 1 B) 3 C) 5 D) 7

25. 500! soni necha nol bilan tugaydi?

A) 100 B) 120 C) 124 D) 125

$2^{10} - 2^8 + 2^6 - 2^4 + 2^2 - 1$ ifodani 9 ga bo'lgandagi qoldiqni toping.

A) 0 B) 1 C) 3 D) 5

Kasrlar

26. 6464 sonini standart shakilda ifodalang.A) $6,464 \cdot 10^3$ B) $646,4 \cdot 10$ C) $64,64 \cdot 10^2$ D) $0,6464 \cdot 10^4$

27. 21568 sonini standart shakilda ifodalang.

A) $21,568 \cdot 10^3$ B) $0,21568 \cdot 10^5$ C) $2,1568 \cdot 10^4$ D) $2,16 \cdot 10^4$

28. 21568sonini standart shakilda ifodalang.

A) $21,568 \cdot 10^3$ B) $0,21568 \cdot 10^5$ C) $2,1568 \cdot 10^4$ D) $2,16 \cdot 10^4$

29. 2589,7 sonini standart shakilda ifodalang.

A) $2,5897 \cdot 10^3$ B) $0258,97 \cdot 10$

C) $25,897\cdot10^{2}$ D) $0,25897\cdot10^{4}$

30. 6556 sonini standart shakilda ifodalang. A) $65,56\cdot10^{2}$ B) $0,6556\cdot10^{4}$ C) $6,556\cdot10^{3}$ D) $655,6\cdot10$

31. 0,06868 sonini standart shakilda ifodalang.

A) $686,8\cdot10^{-4}$ B) $68,68\cdot10^{-3}$ C) $6868\cdot10^{-5}$ D) $6,868\cdot10^{-2}$

32. 0,02032 sonini standart shakilda ifodalang.

A) $203,2\cdot10^{-4}$ B) $20,32\cdot10^{-3}$ C) $2032\cdot10^{-5}$ D) $2,032\cdot10^{-2}$

33. $0,2\cdot10^{-5}+0,3\cdot10^{-4}+0,001\cdot10^{-2}$ ni hisoblang.

A) $0,42\cdot10^{-6}$ B) $4,2\cdot10^{-6}$ C) $42\cdot10^{-6}$ D) $42\cdot10^{-5}$

34. Agar $\frac{79}{41}+\frac{148}{51}+\frac{49}{61}=n$ bo'lsa, $\frac{3}{41}+\frac{5}{51}+\frac{12}{61}$ ni n orqali ifodalang.

A) $6-n$ B) $6+n$ C) $3+n$ D) $3-n$

35. Hisoblang:

$\frac{3}{7}-\frac{2}{5}+\frac{9}{49}-\frac{4}{25}+\frac{27}{243}-\frac{8}{125}+\ldots$

A) $\frac{5}{12}$ B) $\frac{1}{12}$ C) $\frac{1}{4}$ D) $\frac{1}{3}$

Cheksiz davriy o'nli kasrlar

36. $\left(\frac{0,(17)}{0,(3)}+0,(3)\right)^{-1}$ ifodaning qiymati kasr son bolsa, uning surat va maxrajlarining umumiy bo'luvchilari nechta? A) 0 B) 1 C) 2 D) 3

37. $5,(3)+5\frac{1}{3}:\left(6\frac{3}{4}\cdot1\frac{1}{3}-8\frac{1}{9}\right)$ ni hisoblang.

A) $8\frac{1}{3}$ B) $\frac{26}{3}$ C) $7\frac{1}{3}$ D) $9\frac{1}{3}$

Manfiy va musbat sonlar

38. $(-12):\big((+3)+(-15)\big):(-5)$ ni hisoblang.

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

39. $0,29-\big(((-0,23)-(-1,06)+0,37)-((-0,47)-(-0,37))\big)$ ni hisoblang.

A) $-0,19$ B) $0,01$ C) $0,19$ D) $-0,01$

40. $(-36):\big((-20):(-0,8)+(-2,5)\cdot(+14)\big)-$

$-0,5+\frac{1}{6}\cdot\big(6+(-4)+(-8)\big)$ ni hisoblang.

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

41. $\dfrac{5\cdot(-2)^{-2}+\left(\frac{1}{2}\right)^{-4}-\left(\frac{2}{3}\right)^{-2}}{2^{-2}+3^{0}}$ ni hisoblang. A) -12 B) 12 C) -13 D) 13

Algebraik amallar

42. x va y sonlar ayirmasining uchlanganini yozing va shu ifodaning $x=-0,37$ va $y=-0,42$ bo'lgandagi son qiymatini toping.

A) $-0,79$ B) $-0,15$ C) 0,15 D) 0,12

43. Agar $\frac{8}{a}-\frac{a}{2}=0$ bo'lsa, $\frac{2^{4}}{a^{2}}+\frac{a^{2}}{(-4)^{2}}$ ni hisoblang.

A) 1 B) 1,5 C) 2,5 D) 2

44. Agar $\frac{1}{2a}+\frac{a}{1,5}=\frac{4}{3}$ bo'lsa, $\frac{0,5^{3}}{a^{2}}+\frac{a^{2}}{4,5}$ ni hisoblang.

A) $\frac{8}{9}$ B) $\frac{5}{9}$ C) $\frac{7}{9}$ D) $\frac{4}{9}$

45. Nomanfiy x, y sonlar uchun $a=\frac{4x+y}{2}$ va $b=2\sqrt{xy}$ bo'lsin. Qaysi tenglik har doim o'rinli? A) $a>b$ B) $a\geq b$ C) $a\leq b$ D) $a<b$

46. $\left(-p^{3}\right)^{11-n}\cdot\left(p^{n-2}\right)^{3}$ amallarni bajaring.

A) p^{27-6n} B) $-p^{39}$ C) p^{27} D) $-p^{27}$

47. $a=-2$, $c=2$ bo'lsa,

$$\frac{c(a-b)^3+a(b-c)^3+b(c-a)^3}{c^2(b-a)+a^2(c-b)+b^2(a-c)}$$
ifodaning qiymatini toping.

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

48. $x=-y, z=-2$ bo'lsa, $\frac{x^3+y^3+z^3-3xyz}{x^2+y^2+z^2-xy-xz-yz}$ ifodaning qiymatini toping.

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

49. Agar $y>x>0$ bo'lsa, $x^2+\frac{x^3}{y^4}+\frac{x^4}{y^5}+\frac{x^5}{y^6}+\ldots$ soddalashtiring.

A) $x^2-\frac{x^3}{y^4+y^3x}$ B) $\frac{x^3}{y^4-y^3x}$

C) $x^2+\frac{x^3}{y^4-y^3x}$ D) 0

50. Agar barcha x, y lar uchun $x^3+4x^2y+axy^2+3xy-bx^cy+7xy^2+$ $+dxy+y^2=x^3+y^2$ ayniyat bajarilsa a– b+ c+ d, ni toping. $(c>1)$

A) -12 B) -10 C) -1 D) 2

60. Agar barcha x, y lar uchun $x^3+4x^2y+axy^2+3xy-bx^cy+7xy^2+$ $+dxy+y^2=x^3+y^2$ ayniyat bajarilsa $|a+b+c|(a-b-d)$, ni toping. $(c>1)$

A) -8 B) -4 C) -2 D) 3

61. Agar barcha x, y lar uchun $x^3+4x^2y+axy^2+3xy-bx^cy+7xy^2+$ $+dxy+y^2=x^3+y^2$ ayniyat bajarilsa $|a+b+c|(a+b-d)$, ni toping. $(c>1)$

A) -8 B) -4 C) -2 D) 3

62. Agar barcha x, y lar uchun $x^3+4x^2y+axy^2+3xy-bx^cy+7xy^2$ $+dxy+y^2=x^3+y^2$ ayniyat bajarilsa $|a+b+c|(a+b+d)$, ni toping. $(c>1)$

A) -8 B) -4 C) -2 D) 3

62. Agar $a+b+c=7$ va $\frac{1}{a+b}+\frac{1}{a+c}+\frac{1}{c+b}=\frac{7}{10}$ bolsa, $\frac{a}{a+b}+\frac{b}{a+c}+\frac{c}{c+b}$ son nimaga teng?

A) $\frac{17}{10}$ B) $\frac{9}{7}$ C) $\frac{3}{2}$ D) $\frac{19}{10}$

63. Kvadratlarning ayirmasi 55 ga teng bo'lgan barcha natural sonlar juftligini toping. A) 8 va 3; 20 va 19 B) 28 va 27; 17 va 18 C) 28 va 27 D) 8 va 3; 28 va 27

64. $\frac{10}{x^4+24}$ ifodaning eng katta qiymati bilan x^4-15 ning eng kichik qiymati ko'paytmasining $\frac{1}{5}$ qismini toping.

$x^3-2ax^2+4bx-48$ ko'phad $(x-2)\cdot(x-6)$ ga qoldiqsiz bo'linsa, $\frac{a+b}{2}$ ni toping.

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

65. $x^3-3ax^2+bx-15$ ko'phad $(x-1)\cdot(x-3)$ ga qoldiqsiz bo'linsa, a va b ni toping.

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

66. O'zaro teng bo'lmagan x va y sonlari $x^2-36x=y^2-36y$ tenglikni qanoatlantirsa $x+y$ ni toping.

A) 0 B) 18 C) 24 D) 36

67. O'zaro teng bo'lmagan x va y sonlari $x^2-6x=y^2-16y$ tenglikni qanoatlantirsa $x+y$ ni toping.

A) 0 B) 16 C) 24 D) 26

68. O'zaro teng bo'lmagan x va y sonlari $x^2-26x=y^2-26y$ tenglikni qanoatlantirsa $x+y$ ni toping.

A) 0 B) 16 C) 24 D) 26

Ehtimollar nazaryasi

69. A va B to'plamlarning barcha umumiy elamantlaridan tuzilgan to'plam qanday nomlanadi?

A) A va B to'plamlarning birlashmasi
B) A va B to'plamlarning kesishmasi
C) A va B to'plamlarning yigindisi
D) A va B to'plamlarning kesishmasi

70. Hisoblang. $C_8^5 \cdot P_2$

A) 56 B) 48 C) 94 D) 96

($P_n = n! = 1 \cdot 2 \cdot 3 \cdot \ldots \cdot n$)

70.1. Kasirni qisqartiring: $\frac{n!}{(n+1)!}$

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

71. $\{x | x \in N, -1 \le x \le 5\}$ to'plamning nechta qism to'plamlari mavjud?

A) 5 B) 7 C) 16 D) 32

72. $\{x | x \in N, -5 \le x \le 5\}$ to'plamni nechta usul bilan ikkita kesishmaydidan qism to'plamlarga ajratish mumkin?

A) 4 B) 8 C) 16 D) 10

73. $\{x | x \in N, -3 < x \le 5\}$ to'plamning nechta qism to'plamlari mavjud?

A) 5 B) 9 C) 16 D) 32

74. $\{x | x \in N, -6 \le x \le 5\}$ to'plamning nechta qism to'plamlari mavjud?

A) 12 B) 32 C) 5 D) 16

75. $\{x | x \in N, 6 \le x \le 40\}$ to'plamning nechta qism to'plamlari mavjud?

A) 8 B) 32 C) 5 D) 16

76. $\{x | x \in N, x^2 \le 23\}$ to'plamning nechta qism to'plamlari mavjud?

A) 8 B) 32 C) 5 D) 16

77. $\{x | x \in N, 2 \le x^2 \le 44\}$ to'plamning nechta qism to'plamlari mavjud?

A) 5 B) 16 C) 32 D) 44

78. $\{x | x \in N, 6 \le x^2 \le 39\}$ to'plamning nechta qism to'plamlari mavjud?

A) 5 B) 16 C) 32 D) 8

79. 6 nafar mahmonni 6 ta stulga o'tkazish varyantlari nechta?

A) 6 B) 180 C) 300 D) 720

80. To'rt nafar yigit va ikki nafar qizdan konsertni olib borishi uchun bitta yigit va bitta qizni tanlab olish kerak. Bunday ishni nechta usul bilan amalga oshirish mumkin?

A) 6 B) 8 C) 10 D) 12

81. O'yin boshlaganda 10 nafar volebol o'yinchidan nechta usul bilan 6 nafarini o'yinga tushurish mumkin?

A) 30 B) 240 C) 210 D) 60

82. 10 ta kartochkada 1 dan 10 gacha sonlar yozilgan (har bir kartochkada bittadan). Tasodifan olingan kartochkada 3 sonni bo'lishi ehtimolligini toping.

A) $\frac{3}{10}$ B) 0,4 C) 0,1 D) $\frac{1}{3}$

83. 6 ta katakdan ikkitasi qizil rangga, qolgan to'rtta katak esa oq, qora, yashil va ko'k rangga (har biri bitta rangga) bo'yalishi kerak. Bunday ishni necha usul bilanamalga oshirish mumkin?

A) 120 B) 360 C) 500 D) 180

84. Uchra mergan nishonga bir martadan o'q uzmoqda. Ularning nishonga tegish ehtimolliklari mos ravishda 90%, 80%, va 70% ga teng. Uchalasi ham nishonga tegish ehtimolligini toping.

A) 0,3 B) 0,5 C) 0,504 D) 0,006

85. Savatdagi mevalarning 30%i banan va 60%i olma. Tasodifan olingan meva banan yoki olma bo'lish ehtimolligini toping.

A) 0,18 B) 0,5 C) 0,34 D) 0,9

Matinli masala

86. 639 sonini 2:3:4 kabi nisbatda bo'ling.

A) 142; 215; 282 B) 171; 142; 326
C) 142; 213; 284 D) 171; 239; 259

87. Samandar doskaga ikki son yozdi. Uchunchi son sifatida birinchi va ikkinchi sonlarning yig'indisini, to'rtinchi son sifatida ikkinchi va uchunchi sonlarning yig'indisini va h.k. yozdi, lekin yettinchi sonni yozmadi. So'ng dastlabgi oltita sonni qo'shdi va bu yigindini bilgan holda qo'shiluvchilardan birini aniq hisoblash

mumkinligini ko'rdi. Bu qaysi qo'shiluvchi edi?

A) To'rtinchi B) beshinchi
C) oltinchi D) uchunchi

88. Samandarning o'g'il bola sinifdoshlari soni qiz bola sinifdoshlari sonidan 7 taga ko'p. Sinfda o'g'il bollar soni qiz bollar sonidan 2 marta ko'p. Diyora Samandarning sinifdoshi. Diyoraning sinifdosh dugonalari nechta?

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

89. Bir ayol bog'ga olma tergani kirdi. Bog'dan u 4 ta eshik orqali chiqishi kerak edi. Har bir ashik oldida qorovul turgan bo'lib, ayol birinchi qorovulga tergan olmalarining yarmini berdi. Ikkinchi qorovulga qolgan olmalarning yarmini berdi. Uchunch va to'rtinchinchi qorovullarni ham huddi shunday siyladi. Oxirda o'zida 10 ta olma qoldi. Ayol bog'dan nechta olma uzgan?

A) 150 B) 160 C) 180 D) 210

90. Daraxtdagi beshta shoxning har birida qo'nib turgan qushlar soni baravar. Har bir shoxdan 2 tadan qush uchib ketganda, ilgari uchta shoxda nechta qush bo'lsa, hamma shoxda shuncha qush qoldi. Har bir shoxda nechtadan qush bo'lgan?

A) 4 tadan B) 5 tadan
C) 6 tadan D) 10 tadan

91. Bir savat olma 20000 so'm, bir savat nok 30000 so'm, bir savat olhori 40000 so'm turadi. Sakkiz savat meaning bahosi 230000 so'm bo'lsa, ulardan eng ko'pi bilan nechtasida olxo'ri bo'lishi mumlin.

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

92. Oltin va durdan yasalgan bezkning og'irligi 3 misqol, narxi 24 dinor. Agar 1 misqol oltin 5 dinor, 1 miqol dur 15 dinor tursa, bezakda qancha misqol oltin bor?

A) 1,2 B) 1,8 C) 2,1 D) 2,4

93. Kollejda 4 ta guruhda 126 ta o'quvchi bor. Birinchi guruhada jami o'quvchilarning $\frac{3}{14}$ qismi, ikkinchi guruhda $\frac{5}{21}$ qismi, uchunchi gruhda $\frac{11}{42}$ qismi, qolganlari to'rtinchi guruhda o'qiydi. Har bir guruhda nechta o'quvchi bor?

A) 30; 27; 36; 33 B) 36; 33; 30; 27
C) 27; 30; 33; 36 D) 33; 30; 27; 36

94. Avtomabil haydovchisi birinchi soatda yo'lning yrmini, ikkinchi soatda qolgan yo'lning $\frac{1}{3}$ qismini, uchunchi soatda qolgan 56 km masofani bosib o'tdi.Haydovchi uch soatda jami qancha yo'l bosib o'tgan?

A) 112 B) 144 C) 156 D) 168

95. O'quvchi uyidan maktabgacha bo'lgan masofani birinchi yarim soatda $\frac{1}{3}$ qismini, ikkinchi yarim soatda qolgan masofaning yarmini yurgach, yana 450 m masofa qoldi.O'quvchi jami qancha masofani yurishi kerak?

A) 1350 B)1400 C) 1300 D) 1370

96. Yo'lovchi birinchi soatda yo'lning $\frac{1}{5}$, ikkinchi soatda qolgan yo'lning $\frac{1}{3}$ qismini, uchunchi soatda esa qolgan yo'lning yarmini yurgach, mo'jalgacha 4 m masofa qoldi. Yo'lovchi jami qancha masofani yurishi kerak?

A) 11 B) 12 C) 15 D) 16

97. Bir sonning 30% ortig'i shu sonning 20% kmidan necha foiz ko'p?

A) 60,5 B) 56,25C) $66\frac{2}{3}$ D) 45

98. Sayyoh mo'jallangan yo'lning 67% ni o'tgach hisoblab ko'rsa, yo'lning to'rtdan uch qismini o'tishi uchun yani 9 km yurishi kerak ekan. Mo'jallangan yo'l necha km bo'lgan?

A) 112 B) 112,4 C) 112,5 D) 115

99. Poyezd 2 minutda 4 kilometr masofani, motosikl 3 minutda 4 kilometr masofani bosib o'tadi.

Motosiklchining tezligi poyezd tezligining necha foizini tashkil etadi?

A) $67\frac{2}{3}\%$ B) $73\frac{1}{3}\%$

C) $66\frac{2}{3}\%$ D) 70%

100. Poyezd 4 minutda 8 kilometr masofani, motosikl 6 minutda 8 kilometr masofani bosib o'tadi. Motosiklchining tezligi poyezd tezligining necha foizini tashkil etadi?

A) $53\frac{1}{3}\%$ B) $65\frac{2}{3}\%$

C) 70% D) $66\frac{2}{3}\%$

101. Talaba 25 ta savolning 76%ini to'g'ri belgiladi, 20% ini taxminan belgiladi. Taxminan belgilangan javoblar to'g'ri javoblarining necha $\%$ ini tashkil etadi. A) 75% B) $27\frac{4}{19}\%$

C) $26\frac{6}{19}\%$ D) 70%

102. Akvariumning bo'yi 110 sm, eni 70 sm, balandligi 60 sm. Suv sathi yuqoridan 10 sm pastda bo'lishi uchun akvariumga necha litr suv quyish kerak?

A) 312 B) 462 C) 385 D) 38,5

103. Metal quyma tarkibida 18 kg rux, 36 kg mis, 6 kg qalay bor. Qalay quyma tarkibiy qismlarining necha foizini tashkil qiladi?

A) 10 B) 20 C) 30 D) 60

104. Akvariumning bo'yi 120 sm, eni 70 sm, balandligi 90 sm. Suv sathi yuqoridan 10 sm pastda bo'lishi uchun akvariumga necha litr suv quyish kerak?

A) 77 B) 756 C) 670 D) 672

Ratsianal ko'rsatkichli daraja

105. Soddalashriring:

$$\left(18+8\sqrt{2}\right)\left(4-\sqrt{2}\right)^2+4\sqrt{20\frac{1}{4}}.$$

A) 254 B) 178 C) 214 D) $6+\sqrt{2}$

106. Hisoblang:

$$\left(\sqrt{1+\sqrt{6}}-\sqrt{\sqrt{150}+\sqrt{25}}\right)\cdot\sqrt{\sqrt{6}-1}+1-\sqrt{5}.$$

A) 4 B) -4 C) 6 D) $6-2\sqrt{5}$

107. Hisoblang: $\frac{1}{\sqrt{1}+\sqrt{4}}+\frac{1}{\sqrt{4}+\sqrt{7}}+$

$$+\frac{1}{\sqrt{7}+\sqrt{10}}+\ldots+\frac{1}{\sqrt{2011}+\sqrt{2014}}$$

A) $\frac{\sqrt{2014}-1}{3}$ B) $\frac{1-\sqrt{2014}}{3}$ C)3 D) $\frac{1}{3}$

108. Ifodani soddalashtiring

$$\frac{1,6+5,4}{\sqrt[3]{2,56}-\sqrt[3]{8,64}+\sqrt[3]{29,16}}-\frac{2,25-1,44}{1,5-1,2}+\frac{27}{10}$$

A) $-2\sqrt[3]{0,2}$ B) $5\sqrt[3]{0,2}$

C) 0 D) $2\sqrt[3]{0,2}$

109. Hisoblang:

$$\left(4\sqrt{3}+8\right)\cdot\left(\sqrt{3}\left(\sqrt{3}-2\right)+\frac{3-2\sqrt{3}}{\sqrt{3}}+\frac{\sqrt{3}-2}{\sqrt{3}}+\ldots\right):\left(\sqrt{3}+1\right)$$

A) 6 B) -6 C) $6\sqrt{3}$ D) $-6\sqrt{3}$

110. Hisoblang:

$$\sqrt{3\sqrt{2}-4}\cdot\sqrt[4]{34+24\sqrt{2}}\cdot\sqrt[4]{324}$$

A) 4 B) 6 C) 8 D) 9

111. Hisoblang: $\frac{\sqrt[4]{2\sqrt{2}+3}}{\sqrt{\sqrt{2}+1}}$

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

112. Hisoblang: $1-\frac{1}{1-\frac{3\sqrt{3}}{\sqrt{3}-\frac{3}{2\sqrt{3}}}}$

A) 0,2 B) 1,2 C) $1-\frac{\sqrt{3}}{2}$ D) $\frac{\sqrt{3}}{2}$

113. $x=2,125$ bo'lsa,

$$\sqrt{4x^2-5\left(4x-5\right)}+2\sqrt{9+x\left(x+6\right)}$$

ifodaning qiymatini toping.

A) 5,5 B) 6,5 C) 6 D) 11

114. $x=3{,}185$ bo'lsa,
$\sqrt{x+1-4\sqrt{x-3}}+\sqrt{x+1+4\sqrt{x-3}}$
ifodaning qiymatini toping.

A) $\frac{\sqrt{74}}{10}$ B) 1 C) 4 D) $\frac{\sqrt{74}}{5}$

115. $x=9{,}75$ bo'lsa,
$\sqrt{x+6\sqrt{x-9}}+\sqrt{x-6\sqrt{x-9}}$ ifodaning qiymatini toping.

A) $3\sqrt{3}$ B) 3 C) 6 D) $\sqrt{3}$

116. $a=4{,}125$ bo'lsa,
$\sqrt{a-4\sqrt{a-4}}+\sqrt{a+4\sqrt{a-4}}$ ifodaning qiymatini toping.

A) $\frac{\sqrt{2}}{2}$ B) 2 C) 4 D) $\sqrt{2}$

117. $a=1$ bo'lsa,
$\sqrt{2a-\sqrt{a^2+2}}\cdot\sqrt{2a+\sqrt{a^2+2}}$ ifodaning qiymatini toping.

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

118. $x=2{,}61$ bo'lsa,
$(3-x)^{-1}\sqrt{(x-3)^2(x+1)}$ ifodaning qiymatini toping.

A) $-1{,}9$ B) $1{,}9$ C) $3{,}61$ D) $-3{,}61$

119. $m=9$ bo'lsa,
$\frac{m^{1,5}+2\sqrt{2}}{m+2-\sqrt{2m}}+\sqrt{2}\left(\sqrt{2m}-1\right)$ ifodaning qiymatini toping.

A) 0 B) 9 C) 12 D) 27

120. $m=32$ bo'lsa,
$\frac{m^{1,2}-3\sqrt{3}}{m^{0,8}+3-\sqrt{3m^{0,8}}}-\sqrt{3}\left(\sqrt{3m^{0,8}}-1\right)$
ifodaning qiymatini toping.

A) -8 B) -6 C) 6 D) 8

121. $\frac{\sqrt{5-2\sqrt{6}}}{\left(\sqrt[4]{3}+\sqrt[4]{2}\right)\left(\sqrt[4]{3}-\sqrt[4]{2}\right)}$ ni hisoblang. A) -1 B) 1 C) 2 D) 3

122. $\frac{\sqrt[3]{a^5b^{-1}}-\sqrt[3]{a^{-1}b^5}}{\sqrt[3]{a^2b^{-1}}+\sqrt[3]{a^{-1}b^2}}$ ni soddalashtiring. A) 1 B) $a^{-1}+b^{-1}$ C) $a-b$ D) $a^{-1}-b^{-1}$

123. $\left(\frac{x-0{,}(5)}{\sqrt[3]{x^2}+\sqrt[3]{\frac{5x}{9}}+\sqrt[3]{\frac{25}{81}}}+\left(0{,}(5)\right)^{\frac{1}{3}}\right)^3$
ni soddalashtiring.

A) x B) $2x$ C) $x-1$ D) $x+1$

Tenglamalar

124. $\frac{1}{x-2}+\frac{1}{x+7}=\frac{1}{x-1}+\frac{1}{x+1}$
tenglamani yeching. A) $-0,5;5$
B) $0,2;5$ C) $-0,2;0,2$ D) $-5;5$

125. $\frac{1}{\frac{1}{\frac{1}{x}+\frac{2}{2}}+\frac{1}{\frac{1}{x}+\frac{2}{2}}}+\frac{1}{\frac{1}{\frac{1}{x}+\frac{2}{2}}+\frac{1}{\frac{1}{x}+\frac{2}{2}}}=\frac{x}{36}$
tenglamani yeching.

A) 1 B) 36 C) 60 D) 70

126. $\left(x^2+3x+3\right)\left(x^2+x+3\right)=3x^2$
tenglamaning haqiqiy ildizlari yig'indisini toping.

A) 3 B) 2 C) 4 D) 6

127.
$\left(x^2+11x+11\right)\cdot\left(x^2+x+11\right)=11x^2$
tenglamaning eng kichik ildizi eng kattasidan qancha kichik?

A) 10 B) 9 C) 8 D) 11

128. Tenglamaning ildizlari yig'indisini toping
$\left(x^2+23x+23\right)\cdot\left(x^2+x+23\right)=23x^2$

A) -25 B) -24 C) -23 D) -22

129. $\sqrt{x-1}+x-7=0$ tenglamaning ildizlari yig`indisini toping.

A) 14 B) 5 C) 10 D) 15

130. Tenglamaning ildizlari yig'indisini toping: $\sqrt{x-3}-\sqrt{x+1}+2=0$

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

131. Tenglamaning ildizlari yig'indisini toping: $\sqrt{4x+13}-\sqrt{3x+12}=-\sqrt{x+1}$

A) -1 B) 0 C) 2 D) $\varnothing$

132. $\sqrt{7-\sqrt{\sqrt{x+2}+7}}=2$ tenglamaning ildizlari quydagi oraliqlardan qaysi biriga tegishli? A) $[7;10)$ B) $[4;2)$ C) $[4;7)$ D) $[-1;2)$

133. Tenglamani yeching:
$\sqrt{x+9+5\sqrt{2x-7}}+\sqrt{x+1+3\sqrt{2x-7}}=5\sqrt{2}$
A) 3,5 B) 4 C) 8 D) 16

134. Tenglamani yeching:
$\sqrt{x+2+\sqrt{2x+5}}+\sqrt{x+6+3\sqrt{2x+3}}=11\sqrt{2}$
A) 6 B) 11 C) 23 D) 39

135. Tenglamani yeching:
$\sqrt{x-2+\sqrt{2x-5}}+\sqrt{x+2+3\sqrt{2x-5}}=7\sqrt{2}$
A) 3 B) 7 C) 14 D) 15

136. $\sqrt{36-4x^2}+\sqrt{100-4x^2}=18x^4+16$ tenglmang ildizlari qaysi oraliqqa tegishli? A) $[0;2]$ B) $(0;2)$ C) $(-2;0)$ D) $[-3;-1]$

137. Tenglamani yeching:
$\sqrt{x+3+4\sqrt{x-1}}+\sqrt{x+8+6\sqrt{x-1}}=17$
A) 10 B) 26 C) 37 D) 50

140. Tenglama nechta yechimg ega?
$12-7x+x^2=4(x-3)\sqrt{x}$
A) 0 B) 1 C) 2 D) 3

145. Tenglamani yeching:
$$\frac{2}{2-\sqrt{x}}+\frac{1}{2}=\frac{4}{2\sqrt{x}-x}$$
A) 4 B) 16 C) 4; 16 D) $\varnothing$

146. $8-\sqrt[3]{76-\sqrt{x}}=\sqrt[3]{76+\sqrt{x}}$ tenglamani yeching.
A) 2209 B) $\varnothing$ C) 2304 D) 2401

147. Tenglamani yeching:
$\sqrt{\sqrt[3]{2x-7}+1}=5-\sqrt[3]{2x-7}$
A) 3 B) 4 C) 17 D) 66

148. $|x^2-9x+15|=7$ tenglama yechimlari yig'indisini toping.
A) 7 B) 9 C) 8 D) -7

149. $0,2^{x^2+7x+4,5}=5\sqrt{5}$ tenglamani yeching. A) $-1;-6$ B) $1;-6$ C) $1;6$ D) $-1;6$

150. Tenglamani yeching.
$2\cdot 3^{2x-1}-5\cdot 3^{x-1}=441$
A) 1 B) 3 C) 5 D) 6

151. Tenglamaning ildizlari yig'indisini toping: $\left(5^{2x+7}-25\right)\cdot\sqrt[8]{4-x^2}=0$
A) $-2,5$ B) $-0,5$ C) 0 D) 1,5

152. Tenglamaning ildizlari yig'indisini toping: $(x-2)\cdot\sqrt{x^2-2x-12}=6x-12$
A) -4 B) 2 C) 4 D) 10

153. $\frac{256}{2^{x+3}}=(0,25)^{2-x}$ tenglamani yeching.A) 0 B) 1 C) 2 D) 3

154. Tenglamaning ildizlari yig'indisini toping: $\left(\sqrt{5}+2\right)^{x-1}=\left(\sqrt{5}-2\right)^{\frac{x-1}{x+1}}$
A) -2 B) -1 C) 0 D) 1

155. Tenglama nechta yechimga ega?
$12-7x+x^2=4(x-3)\sqrt{x}$
A) 0 B) 1 C) 2 D) 3

156. Tenglamaning haqiqiy ildizlari ko'paytmasini toping: $x^3-32-4x\sqrt{x}=0$
A) 1 B) 2 C) 3 D) 4

157. $\begin{cases}y^2+xy=12\\x^2+xy=4\end{cases}$ tenglamalar sistemasini yeching.
A) $(-1;-3)$ va $(1;3)$ B) $(1;3)$ C) $(1;3)$ va $(3;1)$ D) $(-1;-3)$

158. $\begin{cases}\sqrt{x}-\sqrt{y}=3\\x-y=21\end{cases}$ Sistemadan $x+y$ ni toping.A) 25 B) 29 C) 30 D) 38

159. $(x;y)$ sonlar juftligi $\begin{cases}3x-12y=27\\\sqrt{x}+2\sqrt{y}=9\end{cases}$ tenglama sistemasini qanoatlantirsa, $x+y$ ning qiymatini toping. A) 7 B) 9 C) 23 D) 29

160. $\begin{cases}x-z=-1\\x+y=2\\y-z=-5\end{cases}$ tenglamalar sisitemsini qanoatlantiruvchi x,y va z sonlarining o'rta arifmetigini toping.
A) 0 B) -2 C) 2 D) $-1,5$

161. $\begin{cases}\frac{1}{a}+\frac{4}{b}=\frac{1}{2}\\ \frac{2}{a}+\frac{3}{b}=\frac{4}{5}\end{cases}$ bo'lsa, $b-?$

A) 17 B) 25 C) 50 D) 134

162. $\begin{cases}2x-y+z=2\\ 3x+2y+2z=-2\\ 2x-2y+z=3\end{cases}$ sistemani yeching.

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

163. $\begin{cases}2x-4y+3z=1\\ x-2y+4z=3\\ 3x-y+5z=2\end{cases}$ sistemani yeching.

A) $-1;0;1$ B) $1;0;1$ C) $0;1;-1$ D) $-1;-1;0$

164. $\begin{cases}x+2y=5\\ x^2+y+5=4xy\end{cases}$ Tenglamalar sistemasining yechimlaridan iborat nuqtalarni tutashtiruvchi kesmaning uzunligini toping.

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

Tengsizliklar

165. Tengsizlikni yeching: $\sqrt{4+3x}<x$.

A) $0<x<4$ B) $x\ge 1$
C) $x>4$ D) $x<4$

166. $\frac{(x-2)(x+1)^2(x-3)}{(x+2)^2(x-4)}\ge 0$ tengsizlikni eng katta manfiy butun yechimining eng kichik butin musbat yechimiga nisbatini toping.

A) $-\frac{1}{3}$ B) $-\frac{1}{5}$ C) $-\frac{1}{2}$ D) $-\frac{1}{4}$

167. $3\ge\frac{2-8x-x^2}{x^2-1}$ tengsizlikni qanoatlantiruvchi eng katta butun manfiy sonni toping.

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

168. $\left|3-\sqrt{x+5}\right|>\frac{x-8}{6}$ tengsizlikning butun yechimlari nechta?

A) 23 B) 24 C) 25 D) cheksiz ko'p

169. $\left|3-\sqrt{x+5}\right|>\frac{x-8}{6}$ tengsizlikning manfiy butun yechimlari nechta?

A) 8 B) 7 C) 5 D) cheksiz ko'p

170. $\left|\frac{x^2-5x+4}{x^2-4}\right|\le 1$ Tengsizlikni nechta tub son qanoatlantiradi?

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

171. Tengsizlikni yeching.

$$\left|\frac{x^2-3x+2}{x-1}\right|\le 1.$$

A) $(1;3]$ B) $(1;5]$ C) $(1;3)$ D) $[1;5]$

172. $1+\frac{\sqrt{3x-2}}{x-4}<0$ tengsizlikni yeching. A) $2<x<4$ B) $2\le x<4$
C) $x>9$ D) $2\le x<4,\ x>9$

Parametrli tenglama va parametrli tenglamalr sistemasi

173. a ning qanday qiymatida $ax+3a=x^2$ tenglama yagona yechimga ega? A) $a=0;a=-12$
B) $a=0;a=12$ C) $a=0;$ D) $a=12$

174. $\left|x^2-5ax\right|=15a$ tenglama yagona yechimga ega bo'ladigan a ning barcha qiymatlarini toping.

A) 0 B) 2,4 C) 3 D) 4

175. Agar $|x-10|=\frac{x}{2}+a$ tenglama yagona yechimga ega bo'ladigan a ning barcha qiymatlari yig'indisini toping.

A) 0 B) 2,4 C) 3 D) 4

Parametrli tenglama va parametrli tenglamalr sistemasi

176. k ning qanday qiymatlarida $\frac{1}{k+1}=1-k$ tenglama manfiy yechimga

ega. A) $k<0;k>1$ B) $k\le 1$ C) $k>0;k<1$ D) $k<1$

177. a ning qanday qiymatida $ax+3a=x^2$ tenglama yagona yechimga ega?

A) $a=0;a=-12$ B) $a=0;a=12$ C) $a=0;$ D) $a=12$

178. $\left|x^2-5ax\right|=15a$ tenglama ikkita haqiqiy yechimga ega bo'ladigan a ning barcha natural qiymatlar yig'indisini toping. A) 2 B) 3 C) 10 D) 4

179. Agar $\left|x-10\right|=\frac{x}{2}+a$ tenglama yagona yechimga ega bo'ladigan a ning barcha qiymatlari yig'indisini toping.

A) 0 B) 2,4 C) 3 D) 4

Funksiya

180. $f(x)=e^x-x$ bo'lsa, $\frac{f(4)}{f(2)}$ ni toping.

A) e^2-2 B) $e+2$ C) e^4-4 D) e^2+2

181. $f(g(2))+g(f(1))$ ning qiymatini toping, agar $f(x)=\begin{cases}2, x>1\\ 1-x, x\le 1\end{cases}$ va $g(x)=\begin{cases}0, x<0\\ 3^x, x\ge 0\end{cases}$ bo`lsa.

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

182. $\sqrt[4]{\frac{\left(x-\frac{2}{5}\right)\left(x+\frac{1}{2}\right)}{(3-x)(x+2)}}$ funksiyaning aniqlaniqlanish sohasini toping.

A) $(-2;3)$ B) $\left(-2;-\frac{1}{2}\right]\cup\left[\frac{2}{5};3\right)$ D) $\left[-\frac{1}{2};\frac{2}{5}\right]$ C) $(-\infty;-2)\cup\left(-\frac{1}{2};\frac{2}{5}\right]\cup(3;\infty)$

183. $y=\sqrt{\frac{\left(x-\frac{2}{5}\right)(x+0,5)}{(3-x)(x+2)}}$ funksiyaning aniqlaning sohasiga tegishli barcha butun sonlar ko'paytmasini toping.

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

184. $y=\frac{\sqrt[4]{x+1}-\sqrt[4]{x}}{x^2+2x-3}$ funksiyaning aniqlaning sohasiga tegishli bo'lgan eng kichik butun sonni toping.

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

185. $y=\frac{\sqrt{\log_x\left(5x^2+4x\right)}}{|x|}$ funksiyaning aniqlanish sohasiga tegishli bo'lmagan butun musbatyechimlarining yig'indisini toping. A) 0 B) 1 C) 0,2 D) 1,2

186. Agar $f(x)=\begin{cases}x+1, & x<-2\\ x^2+4x, & -2\le x<3\\ 2x+3, & 3\le x\end{cases}$ funksiya berilgan bo'lsa, $f(-4)+f(2)+f(5)$ ning qiymatini toping. A) 24 B) 20 C) 26 D) 22

187. $f(x)=\begin{cases}\frac{x}{2}, x-juft\\ x+1, x-toq\end{cases}$, $f\left(f\left(f\left(f\left(f(17)\right)\right)\right)\right)=?$

A) 1 B) 12 C) 5 D) 6

188. Agar $y=kx-2$ funksiya grafiki $A(1;2)$ nuqtadan o'tsa, k ning qiymatini toping.

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

189. Agar $y=-2,6x+b$ funksiya grafiki $A(1;0,5)$ nuqtadan o'tsa, b ning qiymatini toping.

A) $\frac{31}{5}$ B) $-\frac{21}{10}$ C) $\frac{21}{10}$ D) $\frac{23}{10}$

190. Agar $f(x)=ax^7+bx^3-2$ funksiya uchun $f(-3)=-2$ shart bajarilsa, $f(3)$ qiymatini toping. A) 1 B) -2 C) -1 D) bir qiymatli aniqlanmaydi.

191. Agar $f(x)=ax$ va $g(x)=x+b$ funksiyalardan $f(g(x))=x+2$ funksiya tuzilgan bo'lsa, $b-a$ ning qiymatini toping.

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

192. $f(x+2)+f(x-1)=2(x^2+7)$ ekani malum bo'lsa, $f(x)$ fuknsiyani toping.

A) $f(x)=x^2-x+5$

B) $f(x)=x^2-4$

C) $f(x)=2x^2+1$

D) $f(x)=x^2+3x+7$

193. $f(x)=\dfrac{2x}{x-1}$ funksiya grafiki qaysi choraklardan o'tadi?

A) I, II–chorak B) I, III, IV–chorak

C) I,II,III,IV–chorak D) I,II,IV–chorak

194. 45^0 burchak hosil qiluvchi to'g'ri chiziq tenglamasini toping.

A) $y=x-5$ B) $y=x+5$

C) $y=x-1$ D) $y=x+1$

195. $M(2;3)$ va $N(-3;-1)$ nuqtalar berilgan. MN kesmaning ordinate o'qi bilan kesishgan nuqtasi koordinatalarini toping. A) $\left(0;\dfrac{7}{5}\right)$ B) $\left(\dfrac{7}{5};0\right)$

C) $\left(-\dfrac{7}{4};0\right)$ D) $\left(0;-\dfrac{7}{5}\right)$

198. $A(-6;-1)$ nuqta $C(n;5)$ va $B(-2;1)$ nuqtalardan o'tuvchi to'g'ri chiziqda yotsa, n ning qiymati nechiga teng bo'ladi? A) 4 B) 5 C) 6 D) 8

197. a va b sonlari qanday bo'lganda $ax-2y=b$ to'g'ri abscissa o'qi musbat yo'nalishi bilan o'tkir burchak qilib, (0, −2) nuqtadan o'tadi?

A) $a=-1, b=-4$ B) $a>0, b=4$

C) #### D) aniqlab bo'lmaydi.

198. $y=\dfrac{21+6x+x^2}{11+6x+x^2}$ funksiyaning qiymatlar sohasiga tegishli barcha butun sonlar yigindisini toping.

A) 15 B) 20 C) 21 D) 24

199. $y=2^{kx^2-8}$ funksiya grafiki $A(2;8)$ nuqtadan o'tsa, k ning qiymatini toping. A) 2 B) 4 C) 6 D) 8

200. $f(x)=\dfrac{(x-3)^2}{4}$ funksiya uchun $f^{-1}(0)$ ni hisoblang.

A) 3 B) 4 C) $\dfrac{4}{3}$ D) $-\dfrac{27}{4}$

201. $f(x+1)=7+3x$ funksiya uchun $f^{-1}(a)=2$ tenglik o'rinli bo'lsa, a ning qiymatini toping.

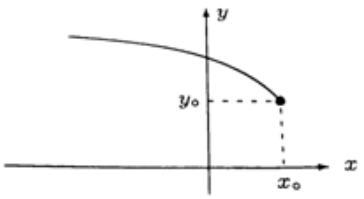
A) 8 B) 10 C) 12 D) $-\dfrac{2}{3}$

202. Grafigi paraboladan iborat $f(x)$ funksiyaning ozod hadi 6 ga teng, parabolaning uchi $\left(2,5;-\dfrac{1}{4}\right)$ bolsa, $f(x)>0$ tengsizlikni eching.

A) $(2;3)$ B) $(-\infty;2]\cup[3;\infty)$

C) $[3;\infty)$ D) $(-\infty;2)\cup(3;\infty)$

203. Rasmda $y=a\sqrt{bx+c}+d$ funksiya grafigi tasvirlangan va $y=y_0$ uning eng kichik qiymati bo'lsa, quyidagilardan qay biri doim o'rinli?



A) $bc>d$ B) $a>c$

C) $ab<0$ D) $abc>d$

204. Ox o'qidan 5 marta, Oy o'qidan 3 marta cho'zish orqali $y=f(x)$ funksiya

grafigidan qaysi funksiya grafigi hosil qilinadi?A) $y=5f\left(\frac{x}{3}\right)$ B) $y=5f(3x)$

C) $y=\frac{f(3x)}{5}$ D) $y=\frac{f\left(\frac{x}{3}\right)}{5}$

205. Ox o'qidan 2 marta, Oy o'qidan k marta cho'zish orqali $y=f(x)$ funksiya grafigidan qaysi funksiya grafigi hosil qilinadi?

A) $y=2f\left(\frac{x}{k}\right)$ B) $y=2f(kx)$

C) $y=\frac{f(kx)}{2}$ D) $y=\frac{f\left(\frac{x}{k}\right)}{2}$

206. Ox o'qidan l marta, Oy o'qidan 2 marta cho'zish orqali $y=f(x)$ funksiya grafigidan qaysi funksiya grafigi hosil qilinadi?

A) $y=lf\left(\frac{x}{2}\right)$ B) $y=lf(2x)$

C) $y=\frac{f(2x)}{l}$ D) $y=\frac{f\left(\frac{x}{2}\right)}{l}$

Teskari funksiya

209. $f(x)=\frac{4-2f(x)}{x-4}$ funksiyaga teskari funksiyani toping. A) $\frac{3}{x-4}$

B) $\frac{2x-4}{x}$ C) $\frac{2x+4}{x}$ D) $\frac{x+4}{3}$

Arifmetik pragressiya

208. x va y arifmetik progressiyaning ketma-ket hadlari bo'lsa, progressiyaning ayrmasini toping.

$$\begin{cases}|2y+xy|=3y\\ |x+1|=2\\ |x^2+y^2|=17\end{cases}\quad (x>0,y>0).$$

A) 3 B) −2 C) 2 D) −3

209. Agar arifmetik progressiyada $\begin{cases}a_1+a_2+a_3+a_4=18\\ a_4^2-a_1^2=54\end{cases}$ bo'lsa, ayirmani toping. A) 1 B) 2 C) 3 D) 4

210. 12 ga karrali, 403 dan kata bo'lmagan barcha natural sonlarning yig'indisini toping.

A) 6732 B) 6708 C) 6756 D) 6720

211. $a_1,a_2,\ldots,a_{20}$ arifmetik progressiyaning hadlari bo'lib $a_1=x$, $a_4=y$ va $\begin{cases}x+y=10\\ |x+y|=6\end{cases}$ o'rinlibolsa $S_{20}=?$ A) 42 B) 400 C) 210 D) 420

212. $a_1,a_2,\ldots,a_8$ ketma-ketlikda ixtiyoriy uchta ketma-ket hadining yig'indisi 40 ga teng. Agar ketma-ketlikning uchunchi hadi 5 ga teng bo'lsa, birinchi va sakkizinchi hadlarining yig'indisini toping?

A) 5 B) 10 C) 35 D) 37

213. $a_1,a_2,\ldots,a_8$ ketma-ketlikda ixtiyoriy uchta ketma-ket hadining yig'indisi 30 ga teng. Agar ketma-ketlikning uchunchi hadi 7 ga teng bo'lsa, birinchi va sakkizinchi hadlarining yig'indisini toping?

A) 7 B) 14 C) 23 D) 27

214. $f(n)$ soni n natural sonning raqamlari yig'indisiga teng bo'lsa, $f(1)+f(2)+f(3)+\ldots+f(99)$ ni hisoblang.

A) 198 B) 500 C) 750 D) 900

215. Arifmetik progressiya n-hadi $a_n=-\frac{n-2}{5}$ ga teng. Progressiyaning ayirmasini toping.

A) −0,2 B) −0,5 C) −1 D) −2

Geometrik pragressiya

216. Otasining yoshi o'g'linikidan 2 marta kata, qizining Yoshi esa $2x+3<35$ tengsizlikning eng katta yechimi bo'lib, ota, o'g'il va qizning yoshi kamayuvchi geometrik

progressiyani tashkil qiladi. Ota va o'g'ilning yoshini toping. A) 64; 32 B) 60; 30 C) 45; 30 D) 40; 20

217. Geometrik progressiyada 5+15+45+...+1215 yigindini hisoblang.
A) 1720 B) 1820 C) 1840 D) 1920

218. $\frac{b_3}{b_5}=2\frac{b_{10}}{b_{13}}$ geometrik progressiya mahrajini toping. A) $\frac{1}{2}$ B) $\frac{1}{4}$ C)2 D)4

219. $\frac{b_1+b_2+b_3}{b_1+b_2}=\frac{7}{6}$ geometrik progressiya mahrajini toping.

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

220. Geometrik progressiyada $n-$hadi $b_n=\frac{\sqrt{3}}{4}5^{n+2}$ ga teng. Progressiyaning mahrajini toping.
A) -5 B) 0,2 C) 0,5 D) 5

221. $\frac{S_6}{S_3}=2\sqrt{2}$ geometrik progressiyaning mahrajini toping.

A) $2-\sqrt[3]{2}$ B) $\sqrt[3]{2\sqrt{2}}$
C) $\sqrt[3]{2\sqrt{2}}-1$ D) $\sqrt[3]{2\sqrt{2}-1}$

222. $x-\frac{x+1}{2}>\frac{x-3}{4}-\frac{x-2}{3}$ tengsizlikning eng kichik butun yechimi geometrik progressiyaning birinchi hadi bo'lib, geometrik progressiyaning maxraji 2 ga teng. S_4 ni hisoblang
A) 15 B) 14 C) 16 D) -16

223. $3,(5);\ x;\ 0,(8);\ldots$ cheksiz kamayuvchi musbat hadli geometrik progressiyaning yig'indisini toping.
A) 7,(1) B) 7,(5) C) 7,(7) D) 7,(3)

224. $A(2;8), B(1;6)$ va $C(3;14)$ nuqtalardan o'tuvchi parabolaning koeffitsiyentlari o'suvchi geometrik progressiyaning dastlabki hadlari bo'lsa, geometrik progressiyaning o'n birinchi hadini bo'luvchilar sonini toping.
A) 10 B) 11 C) 12 D) 13

225. O'suvchi arifmetik progressiyanin dastlabgi uchta hadi yig'indisi 21 ga teng. Bu hadlarga mos ravishda 1; 1; 5 qo'shilsa, geometrik progressiya hosil bo'ladi. Shu geometrik progressiyaning dastlabgi 8 ta hadi yig'indisini toping.
A) 1012 B) 1016 C) 1020 D) 1024

226. $(a,3,b)$ arifmetik progressiya, $(a,2,b)$ geometrik progressiya bo'lsa, a^2+b^2 ni toping.
A) 20 B) 22 C) 24 D) 28

Logarifmik

227. $\log_2\left(\frac{3}{0,(4)}+\frac{3}{0,(6)}+\frac{3}{0,(8)}+1,375\right)$ ni hisoblang.
A) 1 B) 2 C) 4 D) $\log_2 3$

228. $\log_2 81+\log_3 9+\log_3 3+\ldots$ ni hisoblang. A) 0 B) 95 C) 27 D) 8

229. $2^{1+\log_2 3}-3^{\log_4 5}+5^{\log_4 3}-1^{\log_3 4}$ ifodaning qiymatini toping.
A) 1 B) 3 C) 5 D) 7

230. $4^{\log_8 27}-7^{\log_8 3}+3^{\log_8 7}-1^{\log_7 8}$ ifodaning qiymatini toping.
A) 5 B) 8 C) 10 D) 12

231. Hisoblang: $\log_{25}32\cdot\log_{27}625\cdot\log_{128}81$.
A) 1 B) $\frac{5}{42}$ C) $\frac{21}{40}$ D) $1\frac{19}{21}$

231. Hisoblang: $\log_6(\sqrt{2-\sqrt{3}}+\sqrt{2+\sqrt{3}})$
A) $\frac{1}{2}$ B) 1 C) $\log_6 2$ D) $\log_6\sqrt{3}$

232. Hisoblang: $\log_8\left(\frac{1+\sqrt{7}}{\sqrt{4+\sqrt{7}}}-\frac{1-\sqrt{5}}{\sqrt{3-\sqrt{5}}}\right)$
A) $\frac{1}{2}$ B) 1 C) 0 D) $-1,5$

233. Agar $\lg 5=a$ va $\lg 3=b$ bo'lsa, $\log_{30}8=8$ ni toping. A) $3(1-a)$
B) $\frac{3(1-a)}{1+b}$ C) $3(1-a)(1+b)$ D) $(1+b)$

234. $x = 2 - \sqrt{3}$ bo'lsa, $4^{\log_2 \sqrt{x}} + \frac{1}{x}$ ifodaning qiymatini toping.

A) $2+\sqrt{3}$ B) $2-\sqrt{3}$ C) $2\sqrt{3}$ D) 4

235. $a = 2\sqrt{3+\sqrt{5}}$ bo'lsa, $7^{4\log_a 7 \cdot \log_{49} a}$ ifodaning qiymatini toping.

A) 1 B) 7 C) 343 D) 49

236. $3^{\sqrt{2}(\log_{0,2} a + \log_5 a)}$ ifodaning qiymatini toping. A) $\sqrt{2}$ B) $\sqrt{3}$ C) 1 D) 2

237. $(0,2)^{\frac{1}{2}\log_5 4 - \log_{25} 16}$ ni hisoblang

A) 1 B) 2 C) 4 D) $\sqrt{2}$

238. $x = 15$ bo'lsa, $\frac{\lg(x^2+3x-4)}{\lg(x-1)} - \log_{(x-1)}(x+4)$ ifodaning qiymatini toping.

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

239. $a = 16$ bo'lsa, $\frac{25^{-1} + \log_2 a^{-1}}{5^{-1} - \log_4 a} - \frac{3}{a^{-0,5}}$ ifodaning qiymatlarini toping.

A) −9 B) −9,8 C) −10 D) −10,2

240. $y = \log_{0,25} \frac{7x}{x^2+49}$ funksiyaning eng kichik qiymatini toping.

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

241. $y = \log_{1,5} \frac{-4x}{x^2+9}$ funksiyaning eng kichik qiymatini toping.

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

Logarifmik tenglamalar

241. $x^{\lg 5} \cdot 5^{-\lg x} = 1$ tenglamani yeching

A) $(0;1)$ B) $(0;+\infty)$

C) $\{1\} \cup (1;+\infty)$ D) $(-1;1)$

243. $e^{\ln^2 x} + x^{\ln x} = 2e^4$ tenglamani yeching.

A) $\frac{1}{e^2}; e^2$ B) $\frac{1}{e}; e^2$ C) $\frac{1}{e^2}; e$ D) $\frac{1}{e}; e$

244. $3^x + 2^{x\log_2 3} \cdot x = 0$ tenglama ildizlari ko'paytmasini toping.

A) −1 B) 0 C) 1 D) 2

245. Tenglamani ildizlarini yig'indisini toping: $\left|\log_4(|x|+3)\right| = |x|$.

A) 1 B) −1 C) 0 D) 2

246. Tenglamani eng kichik yechimini toping: $(x+1)^{\log_2^3(x+1)} = 2$.

A) −1 B) −0,5 C) 0 D) 1

247. $\log_3(5-x^2)\sqrt[4]{3-2x-x^2} = 0$ tenglama ildizlari yig'indisini toping.

A) −4 B) −3 C) −2 D) −1

248. $(3x-8)\log_5(7x-2x^2-5) = 0$ tenglama ildizlari ko'paytmasini toping.

A) 2,5 B) 2,6 C) 3 D) 5

249. $\log_2\left(2\sqrt{x+5}+5\right) + \log_{0,5}(-x-0,5) = 1$ tenglamani butun yechimlari nechta.

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

250. tenglama nechta butun yechimga ega? $8^{\log_3 x}\sqrt{4-x} + \log_4(x-2) = 8$

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

251. $6^x = 0,25$ bo'lsa, $\sqrt{49^x - 10\cdot 7^x + 25} + 7^x + 2,5$ ifodaning qiymatini toping. A) $2\cdot 7^x - 2,5$

B) $2\cdot 7^x + 2,5$ C) 7,5 D) 5

252. Tenglama necha butun o`lchamga ega? $\sqrt{2x-x^2} = 2\cdot\ln|x-1|$

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

253. $\lg(\lg x) + \lg(\lg x^3 - 2) = 0$ tenglamani yeching. A) $\frac{1}{\sqrt[3]{10}}; 10$

B) 10 C) $\frac{1}{\sqrt[3]{10}}$ D) $\sqrt[3]{10}; 10$

254. Ushbu $\begin{cases} 2,5x + y = 9 \\ x^2 + 2y = 12 \end{cases}$ tenglamalar sistemasini qanoatlantiruvchi nuqtalar toplamining nechtasi $\log_y(3x^2+2x) = 2$ tenglamaning yechimi bo'la oladi?

A) 1 B) 2 C) 3 D) $\varnothing$

255. $(x^2-4)\log_3(x^2-2x+2)=0$ bo'lsa, $x+\log_3 x$ ni hisoblang.

A) $\varnothing$ B) $2+\log_3 2$ va 1

C) $-2-\log_3 2$ D) $2+\log_3 2$

256. Agar $\log_2 x+\log_2 y=2\log_2 3$ tenglik o'rinli bo'lsa, $\log_{\sqrt[3]{xy}} 27$ ni hisoblang. A) 3 B) 3,5 C) 4 D) 4,5

257. $\dfrac{\log_3(5x-6)}{\sqrt{10-3x}}=2$ tenglama ildizlari yig'indisini toping.

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

258. Tenglamaning ildizlari ko'paytmasini toping: $\sqrt{3\log_2(-x)}-\log_2\sqrt{x^2}=0$

A) 1 B) 8 C) 9 D) 12

259. Tenglamada x ni toping.

$\log_2 x+\log_2\sqrt{x}+\log_2\sqrt[4]{x}+\ldots+\log_2\sqrt[2^n]{x}+\ldots=10$

A) 8 B) 9 C) 25 D) 32

260. $\sqrt{2x-x^2}=2\cdot\ln|x-1|$ tenglama nechta butun yechimga ega.

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

261. Tenglamalar sistemasi nechta yechimga ega? $\begin{cases}x^y=2^6\\ \log_2 x=y-1\end{cases}$

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

262. $\begin{cases}\log_y 2=\dfrac{1}{2\log_2 x}\\ y=-2+3|x|\end{cases}$ tenglamalar sistemasi yechimlarini tog'ri chiziq bilan tutashtirishdan hosil bo'lgan shaklning yuzini toping.

A) 7 B) 8 C) 9 D) 10

263. $p=\log_{1,4}3$ bo'lsa, $\dfrac{7^{2p}-5^{2p}}{7^{2p}+2\cdot7^p\cdot5^p+5^{2p}}$ ifodaning qiymatini toping. A) 0,5 B) 1 C) 1,5 D) 2

264. $\begin{cases}x^y=2^6\\ \log_2 x=y-1\end{cases}$ tenglama nechta yechimga ega?

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

265. $\begin{cases}\sqrt[10]{2^x}\sqrt[5]{\sqrt{2^y}}=\sqrt[x]{128}\\ \lg(x+y)=\lg 40-\lg(x-y)\end{cases}$ tenglamalar sistemasi qanoatlantiruvchi x va y noma'lumlarning qiymatlari yig'indisini toping.

A) 9 B) 10 C) 14 D) 49

266. $3^x+2^{x\log_2 3}\cdot x=0$ tenglama ildizlari ko'paytmasini toping.

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

267. $A(\log_3 27;\ln e^2)$ va $B(x;y)$ nuqtalar berilgan va $\begin{cases}x+1=y\\ 2x-y=3\end{cases}$ bolsa, A va B nuqtalar orasidagi masofani toping.

A) $\sqrt{2}$ B) $\sqrt{3}$ C) $\sqrt{5}$ D) $\sqrt{10}$

278. $|x+5|-|x-3|=8$ tenglama o'rinli bo'lsa, $\log_{27}(12-x)$ finksiyaning eng kata qiymatini toping.

A) 1 B) ∞ C) 1 D) $\dfrac{2}{3}$

279. $\log_{\log_{\ln e^{5^{5^{123}}}}} x=123$ tenglamaning ildizi x bolsa, uning oxirgi raqamining yarmini tiping.

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

280. $\log_{x^2-1}(2x+3x^2)=\log_{x^2-1}(x^3-2x)$ tenglamani yeching.

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

281. $\log_x 3\cdot\log_3 5\cdot\log_{3x}3=\log_{9x}3\cdot\log_9 25$ tenglamani yechimlari ko'paytmasini toping.

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

282. Agar $\log_x(6x-8)=2$ tenglamaning yechimlari o'suvchi geometrik pragressiyani dastlabki hadlari bo'lsa, geometrik pragressiya-ning o'ninchi hadini toping.

A) $\dfrac{1}{256}$ B) 1024 C) 256 D) $\dfrac{1}{1024}$

283. Quydagi $\log_2 x = \sqrt{x}$ tenglama nechta yechimga ega? A) 2 ta B) 1 ta C) 3 ta D) yechimga ega emas

Logarifmik tengsizliklar

284. $\log_7(x-5)\left(x^2-19x+88\right)<0$ tengsizlikni yeching.

A) $(6;8)\cup(11;\infty)$ B) $(5;6)\cup(8;11)$
C) $(-\infty;5)\cup(6;8)$ D) $(8;11)$

285. $\log_7(x-5)\left(x^2-19x+88\right)<0$ tengsizlikni butun yechimlari yig'indisini toping.

A) 17 B) 19 C) 20 D) 21

286. $\log_7(x-5)\left(x^2-19x+88\right)\ge 0$ tengszlikni yeching. A) $[6;8]\cup[11;\infty)$ B) $[6;8]$ C) $[6;11]$ D) $[11;\infty]$

287. $\log_3(4,5-2x)\left(12+x-x^2\right)>0$ tengsizlikni butun yechimlari yig'indisini toping.

A) -2 B) 2 C) -5 D) 5

288. $\log_3(4,5-2x)\left(12+x-x^2\right)<0$ tengszlikni yeching.

A) $(1,75;2,25)$ B) $(-\infty;-3)$
C) $(-\infty;-3)\cup(1,75;2,25)$
D) $(-\infty;1,75)\cup(2,25;\infty)$

289. Tengszlikni yeching:

$\log_2(x+3)\ge\log_{\frac{1}{2}}(x-4)+\log_2\left(2x^2-11x+12\right)$

A) $(2;6)$ B) $(2;3)$
C) $(2;3)$ D) $[4;6)$

290. Tengsizlikni yeching:

$\log_5\left(10-9x+2x^2\right)-\log_{\sqrt{5}}(x-2)\ge 0.$

A) $[3;\infty)$ B) $(3;\infty)$ C) $(3;8)$ D) $[3;8)$

291. $\log^2_{\frac{1}{5}}\left(9-x^2\right)-2\log\left(9-x^2\right)-8\le 0$ tengsizliknning eng katta butun yechimini toping.

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

292. Tengsizlikni yeching:

$\log_2\left(x^2-6x+8\right)-\log_{\sqrt{2}}(x-1)\ge 0$

A) $(1;1,7]$ B) $(1;1,5]$ C) $[1;1,75]$ D) $(1;1,75]$

293. $\sqrt[3]{x^{\log_3\sqrt[3]{x}}}>3$ tengsizlikning yechimi bo'lmaydigan eng katta natural sonni $\frac{1}{3}$ qismini hisoblang.

A) 8 B) 9 C) 10 D) $\frac{28}{3}$

294. $2\log_2\left(\sqrt{4x+5}-1\right)>\log_2\left(\sqrt{4x+5}+11\right)$ tengsizlikni yechimi bo'lmaydigan yechimlari yig'indisini toping.

A) 6 B) 10 C) 15 D) 21

295. Tengsizlikni yeching.

$\log_{\sqrt{3}}(2x-1)<\log_3\left(x^2+6x+9\right)$

A) $\left(\frac{5}{3};2\right)$ B) $\left(\frac{4}{3};3\right)$ C) $\left(\frac{1}{2};4\right)$ D) $\left(\frac{2}{3};2\right)$

296. $\log_x\frac{10}{x}\ge\log_x\frac{1}{2}$ tengsizlikni butun yechimlari yig'indisini toping.

A) 144 B) 209 C) 210 D) 231

297. $\log_{x^2-1}\left(x^4-4x^2+9\right)\ge 2$ tengsizlikni qanoatlantirvchi barcha butun sonlar ko'paytmasini toping.

A) -4 B) -2 C) 0 D) 4

298. $\log_{x^2-1}\left(x^4-4x^2+9\right)\ge 2$ tengsizlikni qanoatlantirvchi barcha butun sonlar yig'indisini toping.

A) 0 B) 2 C) 4 D) $4+2\sqrt{2}$

299. $\log_2^4 x-\log^2_{0,5}\frac{x^3}{8}+9\log_2\frac{32}{x^2}<4\log^2_{0,5}x$ tengsizlikning yechimi bo'imaydigan eng kichik natural sonni toping.

A) 8 B) 2 C) 9 D) 1

300. $\left(4^{x+4}+4^{-x}\right)^{4\log_2 x-\log_2\left(5x^3+6x^2\right)}<1$ tengsizlikni eng kata va eng kichik butun yechimlari yig'indisining uchdan birini toping.

A) 2 B) 3 C) 5 D) 6

301. $\left(21^{x+5}+21^{x\cos 3\pi}\right)^{4\log_3(x+1)-\log_3\left(5x^3+21x^2+17x+61\right)}<1$ tengsizlikni butun yechimlari yig'indisini toping.

A) 2 B) 3 C) 5 D) 6

302. $\left(5^{x+5}+5^{-x}\right)^{4\log_3 x-\log_2\left(5x^3+21x^2\right)}<1$

tengsizlikni yeching.

A) $(0;6)$ B) $(1;5)$ C) $(0;4)$ D) $\varnothing$

Triganametrya

302. $x=\frac{3\pi}{7}, y=\sin\frac{\pi}{6}$ va $z=tg\frac{5\pi}{7}$ sonlar uchun quydagi munosabatlardan qaysi biri o'rinli?

A) $x>y>z$ B) $x>z>y$

C) $z>y>x$ D) $y>x>z$

303. $\alpha=30^0$ $x=(tg\alpha)^{tg\alpha}$ $y=(tg\alpha)^{ctg\alpha}$ va $z=(ctg\alpha)^{tg\alpha}$ sonlar uchun quydagi munosabatlardan qaysi biri o'rinli?

A) $x>y>z$ B) $x>z>y$

C) $z>y>x$ D) $y>x>z$

304. $\alpha=7,5^0$, $a=(tg\alpha)^{tg\alpha}$ $b=(tg\alpha)^{ctg\alpha}$, $c=(ctg\alpha)^{tg\alpha}$, $d=(ctg\alpha)^{ctg\alpha}$ bo'lsa quydagilardan qaysi biri o'rinli?

A) $d>a>c>b$ B) $d>c>a>b$

C) $d>c>b>a$ D) $c>d>a>b$

305. Agar $\alpha\in\left(\frac{\pi}{4};\frac{\pi}{2}\right)$ bo'lsa, quydagi shartlardan qaysi biri to'g'ri?

A) $(\cos\alpha)^{\sin a}<(\cos\alpha)^{\cos a}<(\sin\alpha)^{\sin a}$

B) $(\sin\alpha)^{\cos a}<(\cos\alpha)^{\sin a}<(\cos\alpha)^{\cos a}$

C) $(\cos\alpha)^{\cos a}<(\cos\alpha)^{\sin a}<(\sin\alpha)^{\cos a}$

D) $(\cos\alpha)^{\cos a}<(\sin\alpha)^{\cos a}<(\cos\alpha)^{\sin a}$

306. Agar $\alpha=31^0$ va $\beta=270^0$ bo'lsa, $\sin\alpha\cdot\sin(\beta-\alpha)+\sin^2\left(\frac{\beta}{2}-\alpha\right)$ ni hisoblang.

A) $\frac{2-\sqrt{2}}{4}$ B) 0,25 C) 0,5 D) 0,75

307. $\sin\left((-1)^n\frac{\pi}{2}\right)\cos\left((-1)^n\pi\right)-(-1)^n$ ni hisoblang.

A) $2(-1)^{n+1}$ B) $2(-1)^n$

C) $(-1)^n$ D) $(-1)^{n+1}$

308. $\sin 80^0\sin 40^0\sin 20^0$ ni hisoblang.

A) $\frac{\sqrt{2}}{4}$ B) $\frac{\sqrt{3}}{2}$ C) $\frac{\sqrt{3}}{8}$ D) $\frac{\sqrt{3}}{16}$

309. $tg10^0tg50^0tg70^0$ ni hisoblang.

A) $\frac{\sqrt{2}}{4}$ B) $\frac{\sqrt{2}}{4}$ C) $\frac{\sqrt{3}}{3}$ D) $\sqrt{3}$

310. $tg80^0tg60^0tg40^0tg20^0$ ni hisoblang. A) 1 B) 3 C) $\frac{\sqrt{3}}{3}$ D) $\sqrt{3}$

311. Hisoblang:

$(1+tg8^0)(1+tg9^0)(1+tg36^0)(1+tg37^0)$

A) 2 B) 4 C) 8 D)16

312. $\frac{\sin 2\alpha-tg\alpha}{tg\alpha\cdot\cos 2\alpha}$ ifodani soddalashtiring.

A) $1+tg\alpha$ B) $tg\alpha$ C) 1 D) 2

313. $\cos^2\left(\frac{2\pi}{3}+2\alpha\right)+\cos^2\left(\frac{2\pi}{3}-2\alpha\right)+\cos^2 2\alpha$ ni soddalashtiring.

A) $\cos^2 2\alpha$ B) 1,5 C) 0,5 D) 0,75

314. $\frac{1+\cos 3\alpha+\cos 2\alpha+\cos\alpha}{2\cos^2\alpha+\cos\alpha-1}$ ifodani soddalashtiring. A) 1 B) $2\cos\alpha$

C) $\cos\alpha$ D) $2\sin\alpha$

315. $\frac{\sin 10\alpha+\sin 6\alpha+\sin 2\alpha}{\cos 10\alpha+\cos 6\alpha+\cos 2\alpha}$ ni soddalashtiring. A) $\sin 10\alpha$ B) $tg6\alpha$

C) $\cos 2\alpha$ D) 2

316. Ifodani soddalashtiring.

$\cos^4 4\alpha+\sin 8\alpha-\sin^4 4\alpha$.

A) $-\sqrt{2}\sin(4\alpha-45^0)$

B) $\sqrt{2}\sin(4\alpha-45^0)$

C) $-\sqrt{2}\cos(4\alpha-45^0)$

D) $\sqrt{2}\cos(4\alpha-45^0)$

317. $\frac{\cos\left(\frac{3\pi}{2}-\alpha\right)}{\cos\left(\frac{3\pi}{2}-\alpha\right)}=x,\ \left(0<\alpha<\frac{\pi}{2}\right)$

o'rinli bo'lib, x $9^x=3^x+6$ tenglikni qanoatlantirsa, $\sin\alpha$ ni toping.

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

318. $\frac{2}{3}\cos 2\pi = \log_{3\sqrt{3}} \frac{1}{x}$ tenglamadan x ni toping.

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

319. $\frac{\sqrt[3]{a^2} + 2\sqrt[3]{ab} + 4\sqrt[3]{b^2}}{\left(\sqrt[3]{a^4} - 8b\sqrt[3]{a}\right) : \sqrt[3]{ab}} \cdot \left(2 - \sqrt[3]{\frac{a}{b}}\right) = x$ bo'lsa, $\sin(arcctgx) = ?$

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

320. $\cos\left(2\arccos 0,(333)\right)$ ni hisblang.

A) $\frac{2}{9}$ B) $-\frac{4}{9}$ C) $\frac{2}{3}$ D) $-\frac{7}{9}$

321. $\cos\left(2\arcsin 0,(66)\right)$ ni hisblang.

A) $\frac{7}{9}$ B) $\frac{1}{9}$ C) $-\frac{4}{9}$ D) $-\frac{2}{3}$

322. $\sqrt[4]{125^{3-2x}} = \frac{5}{\sqrt[4]{5}}$ bo'lsa, $\sin(arctg2x)$ ni hisoblang.

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

323. Ifodaning eng kichik qiymatini toping: $\frac{1}{8}\cos 4\alpha + \sin^2 2\alpha$

A) $-0,125$ B) 0,125 C) 0,5 D) 0,875

324. $y = \cos 2\pi + 4\cos^4 x - 4\cos^3 x$ funksiyaning eng kichik musbat davrini toping. A) 2π B) π C) $\frac{\pi}{2}$ D) $\frac{3\pi}{2}$

325. $y = \log_2 \cos\alpha$ funksiyaning aniqlanish sohasini toping.

A) $\left(2n\pi; \frac{\pi}{2} + 2n\pi\right); n \in Z$

B) $\left(-\frac{\pi}{4} + 2n\pi; \frac{\pi}{4} - 2n\pi\right); n \in Z$

C) $\left(2n\pi; \frac{\pi}{4} + 2n\pi\right); n \in Z$

D) $\left(-\frac{\pi}{2} + 2n\pi; \frac{\pi}{2} + 2n\pi\right); n \in Z$

326. $y = 2\sin\left(2x + \frac{\pi}{4}\right)$ funksiya nechta natural qiymatlarni qabul qiladi.

A) cheksiz ko'p B) 0 C) 2 D) 3

327. $y = 4\cos^2 x + \sin^2 x$ funksiya butun qiymatlari yg'indisini toping.

A) butun qiymatlar cheksiz

B) butun qiymatlar mavjud emas

C) 9 D) 10

428. $y = 3\sin^2 x + 3\sin^2\left(\frac{2017\pi}{2} - x\right)$ funksiyaning qiymatlar sohasiga nechta butun son tegishli? A) cheksiz ko'p

B) 0 C) 1 D) 3

429. $y = \sin x$ funksiya grafigi berilgaan bo`lib, uni parallel ko`chirish yordamida $y = \sin(x + a) + b$ funksiya frafigi hosil qilingan. Bunday parallel ko`chirishda koordinata boshi qanday nuqtaga ko`chadi? A) $N(a;-b)$

B) $N(-a;b)$ C) $N(-a;b)$ D) $N(a;b)$

430. $arctg3 + arctg2 + arctg1$ ni hisoblang. A) $\frac{3\pi}{2}$ B) π C) 2π D) $\frac{\pi}{2}$

Triganametrik tenglamalar

431. $1 + \cos^2 x = \sin^3 x + \cos^3 x$ tenglama $[-\pi;\pi]$ kesmada nechta yechimga ega?

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

432. Agar $\sin 2\alpha = \frac{1}{2}$ va $\alpha \in \left(\frac{\pi}{4}; \frac{\pi}{2}\right)$ bo'lsa, $\cos 3\alpha$ ni hisoblang.

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

433. $\sin\left(\frac{\pi}{2} + (x+1)^2\right) = x^2 + 2x + 2$ tenglama ildizlari yig`indisini toping.

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

434. Tenglamani yeching:

$$2+\sin x=\frac{1}{1+x^2}$$

A) $\varnothing$ B) $-\frac{\pi}{2}$ C) 1 D) 0

435. Agar $tg^2\alpha=\frac{1}{6}$ va $\alpha\in\left(0;\frac{\pi}{2}\right)$ bo'lsa, $\cos^2\alpha-\sin^2\alpha$ ni hisoblang.

A) $\frac{3}{7}$ B) $-\frac{1}{6}$ C) $\frac{5}{7}$ D) $-\frac{1}{7}$

436. Tenglamani yeching: $\cos 2x=\sin^2 x$

A) $\pm\arccos\frac{1}{3}+2\pi k,\ k\in Z$

B) $\pm\frac{1}{2}\arccos\frac{1}{3}+\pi k,\ k\in Z$

C) $\arcsin\frac{1}{3}+2\pi k,\ k\in Z$

D) $\arccos\frac{2}{3}+2\pi k,\ k\in Z$

437. Tenglamani yeching:

$0,(3)\cos^2 x-0,(6)\sin x=0,(1)-0,(3)\sin^2 x$

A) $\arccos 0,(3)+2\pi k,\ k\in Z$

B) $\arccos 0,(6)+2\pi k,\ k\in Z$

C) $(-1)^n\arcsin 0,(3)+\pi k,\ k\in Z$

D) $(-1)^n\arcsin 0,(6)+\pi k,\ k\in Z$

438. Tengsizlikni yeching.

$$tg\left(\pi+\frac{x}{3}\right)+1\ge 0.$$

A) $\left[-\frac{3\pi}{4}+3\pi k;\frac{3\pi}{2}+3\pi k\right),k\in Z$

B) $\left(-\frac{3\pi}{4}+3\pi k;\frac{3\pi}{4}+2\pi k\right),k\in Z$

C) $\left[-\frac{3\pi}{4}+3\pi k;\frac{3\pi}{4}+3\pi k\right),k\in Z$

D) $\left[-\frac{3\pi}{4}+2\pi k;\frac{3\pi}{2}+2\pi k\right),k\in Z$

439. Tenglama nechta yechimga ega?

$$\frac{\sqrt{5-x^2}}{x}\cdot tgx=0$$

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

440. Agar $ctg^2\alpha=1,5$ va $\alpha\in\left(0;\frac{\pi}{2}\right)$ bo`lsa, $\cos^2\alpha-\sin^2\alpha$ ni hisoblang.

A) $\frac{1}{5}$ B) $\frac{1}{2}$ C) $\frac{1}{4}$ D) $-\frac{1}{5}$

441. $1-\sin 3x=\cos^2 2x-\cos\left(\frac{\pi}{2}+x\right)$ tenglamani yeching. A) $2\pi n,n\in Z$

B) $\arcsin\frac{1}{\sqrt{3}}+2\pi n,n\in Z$

C) $\frac{\pi n}{2},n\in Z$ D) $\pm\frac{\pi}{6}+2\pi n,n\in Z$

442. Tenglamani yeching.

$$\sqrt{3}ctg\left(5x+\frac{\pi}{3}\right)=-3$$

A) $\frac{\pi}{10}+\frac{\pi k}{5},k\in Z$ B) $-\frac{\pi}{2}+\frac{\pi k}{5},k\in Z$

C) $-\frac{\pi}{6}+\pi k,k\in Z$ D) $-\frac{\pi}{10}+\frac{\pi k}{5},k\in Z$

443. Agar $tg^2\alpha=3$ va bo'lsa, $\cos^2\alpha-\sin^2 a$ ni hisoblang.

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

444. Tenglamani yeching:

$$1+tgx+tg^2x+tg^3x+\ldots=\frac{\cos\left(-\frac{5\pi}{3}\right)}{\sqrt{1-tg^2x}}$$

A) $\pm\frac{\pi}{4}+\pi n;arctg0,6+\pi n,n\in Z$

B) $\frac{\pi}{4}+\pi n;arctg0,6+\pi n,n\in Z$

C) $-arctg0,6+\pi n,n\in Z$

D) $\frac{\pi}{4}+\pi n;-arctg0,6+\pi n,n\in Z$

445. $\sin^3 x+(1-\sin x)\cdot\cos 2x=$

$=2tg\frac{\pi}{8}+2tg^3\frac{\pi}{8}+2tg^5\frac{\pi}{8}+2tg^7\frac{\pi}{8}+\ldots$

tenglama $[0;2\pi]$ kesmada nechta yechimga ega?

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

446. $\left(\sqrt[3]{7}\right)^{\frac{3}{\log_3 7}} = tgx$ bo'lsa, $\left|tgx - \left(\frac{1}{27}\right)^{ctgx-1}\right|$ ni hisoblang. $\left(0 < x < \frac{\pi}{2}\right)$

A) -6 B) -5 C) 6 D) 5

447. Tenglama nechta yechimga ega?

$$\frac{\sqrt{5-x^2}}{x} \cdot tgx = 0$$

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

448. Tenglama nechta yechimga ega?

$$\left(\frac{1}{\sin x} - 1\right) \cdot \sqrt{4-x^2} = 0$$

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

449. Tenglama nechta yechimga ega?

$$\left(1 - \frac{1}{\sin^2 x}\right) \cdot \sqrt{9-x^2} = 0$$

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

450. Tenglama nechta yechimga ega?

$$(2\cos x - 1) \cdot \sqrt{9 - 5x - 4x^2} = 0$$

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

451. Tenglama nechta yechimga ega?

$$\left(3 - ctg^2 x\right) \cdot \sqrt{-8 - 17x - 2x^2} = 0$$

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

452. Tenglama ildizlari yig'indisini toping: $(tg\pi x + 1) \cdot \sqrt{2 + 3x - 2x^2} = 0$

A) 1,5 B) 2,25 C) 3,75 D) 4,25

453. Tenglama ildizlari yig'indisini toping: $ctg2\pi x \cdot \sqrt[4]{3 - 2x - 5x^2} = 0$

A) 0 B) $-0{,}4$ C) $-0{,}15$ D) $-1{,}15$

454. Tenglama nechta yechimga ega?

$$\log_3\left(9 - x^2\right) \cdot tgx = 0$$

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

455. $2^{\sqrt{x-3}} = \cos\left(x^2 - 9\right)$ Tenglamaning ildizlari yig'indisini toping.

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

456. $5^{-\sin^2(10\pi x)} = 4x^2 - 12x + 10$ tenglama ildizlari yig'indisini toping.

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

457. Tenglamani yeching:

$$2tg^2 x + 3tgx - 2 = 0$$

A) $arctg\frac{1}{2} + 2\pi n, n \in Z$

B) $-arctg\frac{1}{2} + 2\pi n, n \in Z$

C) $arctg\frac{1}{2} + \pi n, n \in Z; -arctg2 + \pi n, n \in Z$

D) $arctg\frac{1}{2} + \pi n, n \in Z$

458. Quydagi tenglamaning yechimini toping. $\left|\cos\left(\frac{3\pi}{2} + x\right)\right| = -\frac{2tg\frac{x}{2}}{1 + tg^2\frac{x}{2}}$

A) $2\pi n < x < \pi + 2\pi n,\ n \in Z$

B) $(-\pi + 2\pi n; 2\pi n), n \in Z$

C) $[-\pi + 2\pi n; 2\pi n], n \in Z$

D) $2\pi n \le x \le \pi + 2\pi n, n \in Z$

459. $\begin{cases} \sin x + \cos y = 0 \\ \sin^2 x + \cos^2 y = \frac{1}{2} \end{cases}$ sistemani yeching.

A) $\left(\pm\frac{\pi}{4} + \pi n; \pm\frac{\pi}{4} + \pi k\right) n, k \in Z$

B) $\left(\pm\frac{\pi}{6} + \pi n; \pm\frac{\pi}{3} + \pi k\right) n, k \in Z$

C) $\left(\pm\frac{\pi}{3} + \pi n; \pm\frac{\pi}{6} + \pi k\right) n, k \in Z$

D) $\left(\pm\frac{\pi}{6} + \pi n; \pm\frac{2\pi}{3} + \pi k\right) n, k \in Z$

460. $\begin{cases} \frac{\sin\frac{\pi}{2}}{a} + \frac{4}{b} = \frac{1}{2} \\ \frac{2\cos 2\pi}{a} + \frac{3}{b} = \frac{4}{5} \end{cases}$ bo'lsa, $b - ?$

A) 17 B) 25 C) 50 D) 134

461. $\begin{cases} x - y = \frac{\pi}{6} \\ \frac{\sin x}{\cos x} = 2 \end{cases}$ sistemani yeching.

A) $\left(\frac{\pi}{2}+2\pi n;\frac{\pi}{3}+2\pi n\right), n\in Z$

B) $\left(\frac{\pi}{2}+\pi n;\frac{\pi}{3}+\pi n\right), n\in Z$

C) $\left(\frac{\pi}{3}+\pi n;\frac{\pi}{2}+\pi n\right), n\in Z$

D) $\left(\frac{\pi}{3}+2\pi n;\frac{\pi}{6}+2\pi n\right), n\in Z$

462. Tenglamaning ildizlari yig'indisini toping. $\arccos\left(\frac{x^2}{4}+x\right)=\frac{2\pi}{3}$

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

463. Tenglamaning ildizlari yig'indisini toping. $\arccos\left(\frac{x^2}{3}-\frac{x}{2}\right)=\frac{\pi}{6}$

A) $-2,5$ B) $-1,5$ C) 1,5 D) 4

$\sin\left(\frac{\pi}{2}+(x+1)^2\right)=x^2+2x+2$

464. Tenglamaning ildizlari yig'indisini toping. A) -1 B) 0 C) 1 D) 2

465. Arifmetik progressiyaning birinchi hadi -1 ga va ayirmasi $\frac{1}{2}$ ga teng bo'lsa, uning nechta hadi $\sin x=a_n$ shartni qanoatlantiradi.

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

466. Tenglama nechta yechimga ega?

$\left(1-2\sin^2 x\right)\cdot\log_7\left(18+x-4x^2\right)=0$

A) 3 B) 4 C) 5 D) 6

467. $2\log_{\sin 2x}\cos^2 x-4+5\log_{\cos^2 x}\sin 2x=0$

Tenglamani yeching.

A) $arcctg2+2\pi n, n\in Z$

B) $arcctg\sqrt{2}+2\pi n, n\in Z$

C) $-arcctg2+2\pi n, n\in Z$

D) $arcctg2+2\pi n, n\in Z$

468. $|\sin x|-x^2=0$ tenglamani nechta yechimi bor? A) 2 B) 3 C) 4 D) 5

469. Tenglama ildizlari yig'indisini toping: $\arcsin\left(x^2-5x\right)=\arccos\left(-\frac{\sqrt{3}}{2}\right)$

A) 5 B) 2,5 C) 10 D) -4

470. $\arcsin^2 x+\arccos^2 x=\frac{5\pi^2}{32}$ tenglamani yeching.

A) $x_1=\cos\frac{\pi}{16}; x_1=\cos\frac{5\pi}{8}$

B) $x_1=\cos\frac{3\pi}{8}; x_1=\cos\frac{\pi}{8}$

C) $x=\cos\frac{3\pi}{64}$ D) $x=1$

471. Tenglamani yeching.

$2arctg\left(x^2-5x+7\right)=\frac{\pi}{2}$

A) 3; 4 B) 5; 6 C) 2; 3 D) 1; 6

472. $0<\alpha<\beta<\pi, ctg(\alpha+\beta)=0$ va bo'lsa, $tg(\alpha-\beta)=-\frac{1}{\sqrt{3}}$ bo'lsa, $\frac{\sin\alpha}{\cos\beta}$ ni hisoblang.

A) 1 B) -1 C) 0 D) $\frac{1}{\sqrt{3}}$

473. Tenglamani yeching

$\log_x\sin\left(\frac{\pi}{2}+x\right)\cdot\log_{1/2}x=1$

A) $\frac{\pi}{3}+2\pi n,\ n\in N$

B) $\frac{\pi}{3}+\pi n,\ n\in N$

C) $\frac{\pi}{3};\pm\frac{\pi}{3}+2\pi n,\ n\in N$

D) $\frac{\pi}{3};\pm\frac{\pi}{3}+\pi n,\ n\in N$

474. $\left(1-2\sin^2 x\right)\cdot\log_7\left(18+x-4x^2\right)=0$ tenglama nechta yechimga ega?

A) 3 B) 4 C) 5 D) 6

475. $\left(\sqrt{3+2\sqrt{2}}\right)^{\sin x}+\left(\sqrt{3-2\sqrt{2}}\right)^{\sin x}=\frac{10}{3}$ tenglamani yeching. A) 0 B) $\varnothing$

C) $\pm\frac{\pi}{6}+\pi n$ D) $\frac{\pi}{2}+\pi n$

476. $1+\{x\}=\cos 3x$ tenglamani yeching, bunda $\{x\}-x$ ning kasr qismi.

A) $x=2\pi$ B) $x=0$ C) $x=1$ D) $x=-1$

Triganametrik tengsizliklar

477. $\sin 2x+9\cos^2 x-1\le 0$ tengsizlik $x$ning qanday qiymatlarida o'rinli? $(x\in[0;2\pi])$ A) $[arctg2;\pi]$

B) $[arctg4;\pi-arctg2]$

C) $[\pi+arctg4;2\pi-arctg2]$

D) $[arctg4;\pi-arctg2]\cup[\pi+arctg4;2\pi-arctg2]$

478. $2\sin^2 x+3\sin x>0$ tengsizlikning $[0;2\pi]$ kesmadagi yechimlari to'plamini toping. A) $(0;\pi]$ B) $(0;\pi)$

C) $[0;\pi]$ D) $\left[0;\frac{\pi}{2}\right]\cup\left[\frac{3\pi}{2};2\pi\right]$

479. $\sin 6x\cdot\cos 2x<\sin 5x\cdot\cos 3x$ tengsizlikni yeching.

A) $\left(-\frac{\pi}{6}+\frac{2n\pi}{3};\frac{\pi}{6}+\frac{2n\pi}{3}\right);n\in Z$

B) $\left(n\pi;\frac{\pi}{6}+n\pi\right)\cup\left(\frac{\pi}{2}+n\pi;\frac{5\pi}{6}+n\pi\right);n\in Z$

C) $\left(\frac{\pi}{6}+n\pi;\frac{\pi}{2}+n\pi\right)\cup\left(\frac{5\pi}{6}+n\pi;\pi+n\pi\right);n\in Z$

D) $\left(\frac{\pi}{6}+\frac{2n\pi}{3};\frac{\pi}{2}+\frac{2n\pi}{3}\right);n\in Z$

480. $\cos 0,2x-\sqrt{3}\sin 0.2x<0$ tengsizlikni yeching.

A) $\left(\frac{5\pi}{6}+2\pi n;\frac{35\pi}{6}+2\pi n\right)$

B) $\left(\frac{5\pi}{6}+10\pi n;\frac{35\pi}{6}+10\pi n\right)$

C) $\left(\frac{5\pi}{3}+2\pi n;\frac{35\pi}{3}+2\pi n\right)$

D) $\left(\frac{5\pi}{3}+10\pi n;\frac{35\pi}{3}+10\pi n\right)$

481. $\sin 3x+\sqrt{3}\cos 3x\ge 0$ tengsizlikni yeching.

A) $\left[-\frac{\pi}{9}+\frac{\pi n}{3};\frac{2\pi}{9}+\frac{\pi n}{3}\right],\ k\in Z$

B) $\left[-\frac{\pi}{9}+2\pi n;\frac{2\pi}{9}+2\pi n\right],\ k\in Z$

C) $\left[-\frac{\pi}{9}+\pi n;\frac{2\pi}{9}+\pi n\right],\ k\in Z$

D) $\left[-\frac{\pi}{9}+\frac{2\pi n}{3};\frac{2\pi}{9}+\frac{2\pi n}{3}\right],\ k\in Z$

482. $tgx+tg\left(\frac{\pi}{4}+x\right)<-2$

triganametrik tengsizlikni yeching.

A) $\left(-\frac{\pi}{2}+n\pi;-\frac{\pi}{3}+n\pi\right)\cup\left(\frac{\pi}{4}+n\pi;\frac{\pi}{3}+n\pi\right);n\in Z$

B) $\left(-\frac{\pi}{3}+n\pi;\frac{\pi}{4}+n\pi\right)\cup\left(\frac{\pi}{3}+n\pi;\frac{\pi}{2}+n\pi\right);n\in Z$

C) $\left(-\infty;-\frac{\pi}{3}+n\pi\right)\cup\left(\frac{\pi}{4}+n\pi;\frac{\pi}{3}+n\pi\right);n\in Z$

D) $\left(-\frac{\pi}{6}+n\pi;\frac{\pi}{4}+n\pi\right)\cup\left(\frac{\pi}{3}+n\pi;\frac{\pi}{2}+n\pi\right);n\in Z$

483. $tg^3x+tg^2>1+tgx$ tengsizlikni yeching. A) $\left(-\frac{\pi}{2}+\pi n;\frac{\pi}{2}+2\pi n\right)n\in Z$

B) $\left(\frac{\pi}{4}+\pi n;\frac{\pi}{2}+\pi n\right),n\in Z$

C) $\left(\frac{\pi}{4}+2\pi n;\frac{\pi}{2}+2\pi n\right),n\in Z$

D) $\left(-\frac{\pi}{2}+\pi n;\frac{\pi}{2}+\pi n\right),n\in Z$

484. $\frac{2}{|x-4|}\le\sin^2 x+\sin^2\left(\frac{\pi}{2}-x\right)$ tengsizlikni qanoatlantirmaydigan x ning barcha natural qiymatlari o'rta arifmetigini toping.

A) 0 B) 3 C) 4 D) ∞

485. $\arccos\frac{x}{2}<\arccos x$ tengsizlikni yeching. A) $[-1;1]$ B) $(0;1]$

C) $(0;1)$ D) $[-1;0)$

486. $0,2^{\cos 2x} - 25^{-\cos^2 x} < 4\cdot(125)^{-0,5}$ tengsizlikni yeching.

A) $\left(-\frac{\pi}{3}+2\pi n;\frac{\pi}{3}+2\pi n\right), n\in Z$

B) $\left(-\frac{\pi}{3}+\pi n;\frac{\pi}{3}+\pi n\right), n\in Z$

C) $\left(-\frac{\pi}{6}+2\pi n;\frac{\pi}{6}+2\pi n\right), n\in Z$

D) $\left(-\frac{\pi}{6}+\pi n;\frac{\pi}{6}+\pi n\right), n\in Z$

Hosila

487. $F(x)=x^5-0,25x^4+1,5x^3+\cos 3x+7$ funksiyaning hosilasini toping.

A) $f(x)=5x^4+x^3-4,5x^2-3\sin 3x$

B) $f(x)=x^4-x^3-4,5x^2+3\sin 3x$

C) $f(x)=x^4+x^3-4,5x^2-3\sin 3x$

D) $f(x)=5x^4-x^3+4,5x^2-3\sin 3x$

488. $F(x)=\frac{1}{18}x^6-\frac{1}{15}x^5+e^{3x}-\cos\frac{x}{3}+6$ funksiyaning hosilasini toping.

A) $f(x)=\frac{1}{3}x^5-\frac{1}{3}x^4+3e^{3x}+\frac{1}{3}\sin\frac{x}{3}$

B) $f(x)=x^5+x^4-3e^{3x}-\cos\frac{x}{3}$

C) $f(x)=x^5-x^4+3e^{3x}+3\cos\frac{x}{3}$

D) $f(x)=\frac{1}{3}x^5-\frac{1}{3}x^4+3e^{3x}-\frac{1}{3}\cos\frac{x}{3}$

489. $F(x)=0,11x^4+0,7x^3+0,5x^2-\sin 0,8x+e^{0,5x}$ funksiyani hosilasini toping.

A) $f(x)=0,44x^3-2,1x^2+x-0,8\cos 0,8x+0,5e^{0,5x}$

B) $f(x)=0,44x^3-2,1x^2+x+0,8\cos 0,8x+0,5e^{0,5x}$

C) $f(x)=0,11x^3-0,7x^2+0,5x-\cos 0,8x+e^{0,5x}$

D) $f(x)=0,11x-0,7x^2+0,5x+\cos 0,8x+e^{0,5x}$

490. $y=2x^3-6x^2+29$ funksiyaning $x=-2$ nuqtadagi hosilasining qiymatini toping. A) 43 B) 44 C) 42 D) 41

491. $f(x)=tgx\cdot\sin x\cdot ctgx\cdot\cos x$ bo`lsa, $f'(\frac{\pi}{2})$ ni toping.

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

492. $f(x)=\cos\left(\frac{\pi}{4}\cdot tg\frac{\pi x}{4}\right)$ bo'lsa, $f'(1)$ ni toping. A) $\frac{-\pi^2\sqrt{2}}{16}$

B) $\frac{-\pi^2\sqrt{2}}{8}$ C) $\frac{\pi^2\sqrt{2}}{8}$ D) $\frac{\pi^2\sqrt{2}}{4}$

493. $y=\log_3\left(\sin^2 3x+\cos^2 3x\right)$ funksiyaning $x=\frac{1}{2}$ nuqtadagi hosilasining qiymatini toping.

A) 0 B) 1 C) $-\log_3 2$ D) $\log_3 2$

494. $y=\log_5\left(\sin^2 x+\cos^2 x\right)$ funksiyaning $x=\frac{1}{2}$ nuqtadagi ikkinchi tartibli hosilasining qiymatini toping.

A) 0 B) 1 C) $-\log_5 2$ D) $\log_5 2$

495. $f(x+2)=e^x\cdot g\left(x^2+1\right)$ va $g(1)=5$ bo'lsa, $f'(2)$ ni toping.

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

496. $f(x)=3^{2x^2-1}$ bo`lsa, $f'(a)=4\cdot f(a)$ tenglamani yeching.

A) 3 B) e C) $\ln\frac{1}{3}$ D) $\log_3 e$

497. $f(x)=\ln\left(e^x-xe^x\right)$ bo'lsa, $f'(2)$ ni toping. A) 1 B) 2 C) $\ln 2$ D) e

498. $y=e^x\cdot\ln x$ bo'lsa, $y''-y'$ ni toping. A) $-e^x\left(\frac{x}{x-1}\right)$ B) $e^x\left(\frac{x-1}{x^2}\right)$

C) $e^x+x^x\ln x$ D) $\frac{e^x}{x^2}$

499. $y=\log_2\left(arctg2x+arcctg2x\right)$ funksiyaning $x=\frac{1}{2}$ nuqtadagi hosilasining qiymatini toping.

A) 0 B) 1 C) $-\log_2 2$ D) $\log_2 3$

500. $f(x)=\ln\left(\sin\left(x+1\right)\right)$ bo'lsa, $f'\left(\frac{\pi-2}{2}\right)$ ni toping. A) mavjud emas B) 0 C) $ctg1$ D) $tg1$

501. $\sin 2x=y,\ y=\log_3\left(\left(\frac{3x^2}{2}+2x+8\right)''\right)$ bolsa, tgx ning $(0;2\pi)$ orliqagi yechimini toping.

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

502. $y=11\cos 3x+3\cos 11x$ funksiyani hosilasini toping.

A) $66\sin 4x\cdot\sin 7x$ B) $66\sin 4x\cdot\cos 7x$
C) $66\cos 4x\cdot\cos 7x$ D) $-66\cos 4x\cdot\sin 7x$

503. $y=11\cos 4x+2\cos 22x$ funksiyani hosilasini toping.

A) $88\sin 9x\cdot\sin 13x$ B) $88\sin 9x\cdot\cos 13x$
C) $88\cos 9x\cdot\cos 13x$ D) $-88\cos 9x\cdot\sin 13x$

504. $y=3\cos 2x-\cos 6x$ funksiyani hosilasini toping.

A) $-12\cos 2x\cdot\sin 4x$ B) $12\sin 2x\cdot\cos 4x$ C) $12\cos 2x\cdot\cos 4x$ D) $12\sin 2x\cdot\sin 4x$

505. $y=2\cos 2x+\cos 4x$ funksiyani hosilasini toping.

A) $8\sin 3x\cdot\sin x$ B) $-8\cos x\cdot\sin 3x$
C) $8\cos 3x\cdot\cos x$ D) $8\sin x\cdot\cos x$

506. $y=2\cos 6x-\cos 12x$ funksiyani hosilasini toping.

A) $24\sin 3x\cdot\sin 9x$ B) $-24\cos 3x\cdot\sin 9x$
C) $24\cos 3x\cdot\cos 9x$ D) $24\sin 3x\cdot\cos 9x$

507. $y=3\sin 7x-\sin 21x$ funksiya hosilasini toping.

A) $-42\cos 7x\cdot\sin 14x$ B) $42\sin 7x\cdot\cos 14x$
C) $42\sin 7x\cdot\sin 14x$ D) $42\cos 7x\cdot\cos 14x$

508. $F(x)=7\sin 5x+5\sin 7x-12$ funksiya hosilasini toping.

A) $70\cos x\cdot\cos 6x$ B) $70\sin 6x\cdot\sin x$
C) $35\sin x\cdot\sin 6x$ D) $35\cos x\cdot\cos 6x$

509. Agar $f(x)=2^x\cdot 2x$ bo'lsa, $f'(x)>0$ tengsizlikni yeching.

A) $(-\infty;\log_2 e)$ B) $(-\log_2 e;\infty)$
C) $(-\log_2 e;e)$ D) $(-2\log_2 e;\infty)$

510. $3^{tgy}>\left(4,5x^2+2x\right)''$ tengsizlikni yeching. A) $\left[arctg2+\pi n;\frac{\pi}{2}+\pi n\right),n\in Z$

B) $\left(-\frac{\pi}{2}+\pi n;arctg2+\pi n\right),n\in Z$

C) $\left(arctg2+\pi n;\frac{\pi}{2}+\pi n\right],n\in Z$

D) $\left(arctg2+\pi n;\frac{\pi}{2}+\pi n\right),n\in Z$

511. $f(x)=\arcsin x$ bolsa, $f'(x)$ning aniqlanish sohasini toping. A) $[-1;1]$ B) $(-1;1)$ C) $(-\infty;\infty)$ D) $(-\infty;-1)\cup(1;\infty)$

512. $f(x)=(\sin x)^{\cos x}$ bo'lsa, $f'\left(\frac{5\pi}{6}\right)$ ni toping.

A) $\frac{1-\sqrt{3}}{2}$ C) $\left(\frac{\ln 2+3}{3}\right)\left(\sqrt{2}\right)^{-\sqrt{3}}$

B) $\frac{\ln 2}{3}$ D) $\left(\frac{\ln 2-3}{3}\right)\left(\sqrt{2}\right)^{\sqrt{3}}$

513. $f(x)=e^{\sqrt{x^2-3x-4}}$ bo'lsa, $f'(8)$ ni toping. A) e^4 C) $\frac{4}{2\ln 5}$ B) $\frac{5e^4}{6}$ D) $\frac{13e^6}{12}$

514. $f(x)=\frac{x^3}{3}-x^2-35x+2$ funksiya uchun $f'(x)=0$ bo`lsa, x ni toping.

A) 5 va 7 B) -7 va 5
C) -5 va 7 D) -7 va -5

515. $f(x)=e^x\cdot\log_x e$ bo'lsa, $f'(e)=?$

A) e^e-e^{e-1} B) e^{e^2-1} C) 0 D) 1

516. $f(x)=\ln\left(\sin\left(x+1\right)\right)$ bo'lsa, $f'\left(\frac{\pi-2}{2}\right)$ ni toping. A) mavjud emas

B) 0 C) $ctg1$ D) $tg1$

517. $f(x)=(\sin x)^{\cos x}$ bo'lsa, $f'\left(\frac{5\pi}{6}\right)$ ni toping. A) $\frac{\ln 2}{3}$ B) $\frac{1-\sqrt{3}}{2}$ C) $\left(\frac{\ln 2-3}{2}\right)\left(\sqrt{2}\right)^{\sqrt{3}}$ D) $\left(\frac{\ln 2+3}{2}\right)\left(\sqrt{2}\right)^{-\sqrt{3}}$

518. Agar $f(x)=3^x\cdot x$ bo'lsa, $f'(x)=0$ tenglamani yeching.

A) 0 B) $\log_3 e$ C) $-\log_3 e$ D) 0

519. $f(x)=\arccos(\cos x)$ bo'lsa, $f'\left(\frac{\pi}{2}\right)$ ni toping.

A) -1 B) 0 C) 1 D) $\frac{\pi}{2}$

520. $2\cos^2 x+5\sin x-4=z$ tenglamaning $f(x)=3x^2-6x$, $f'(1)=z$ shartlar o'rinli bo'lgandagi yechimini toping.

A) $\frac{\pi}{6}+\pi n, n\in Z$

B) $(-1)^n\frac{\pi}{6}+\pi n, n\in Z$

C) $\frac{\pi}{2}+2\pi n, n\in Z$

D) $(-1)^{n+1}\frac{\pi}{6}+\pi n, n\in Z$

521. Agar $f(x)=\frac{1}{3}x^3-2x^2+5x$ funksiya uchun $f'''(x)=f'(x)$ tenglik o'rinli bo'lsa, tenglamaning ildizlari yig'indisini toping.

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

522. $f(x)=3-2x^2$ funksiya berilgan bo'lsa, $\sqrt{x+2}>f''(x)$ tengsizlikni eching. A) $(-\infty;\infty)$ B) $[-2;\infty)$ C) $(-2;\infty)$ D) $\varnothing$

523. $f(x)=\arcsin x$ funksiya berilgan bo'lsa, $|x-1|\ge f'(0)$ tengsizlikni eching. A) $[0;2]$ B) $[2;\infty]$ C) $(-\infty;0]\cup[2;\infty)$ D) $\{0\}$

Hosilaning tabiqlari

524. $g(x)=\frac{1}{3}x^3-\frac{7}{2}x^2+10x$ funksiyaning ekstremum nuqtalari arfimetik progressiyaning ketma-ket hadlari bo'lib, $a_1=x_{\max}$, $a_2=x_{\min}$ bo'lsa, arfimetik progressiyaning beshinchi hadini toping.

A) 3 B) 5 C) 6 D) 14

525. $y=f(x)$ funksiya maksimum nuqtasi x_0 bo'lsin. U holda qaysi tenglik x_0 ning qandaydir atrofidagi barcha x lar uchun o'rinli?

A) $f(x)\le f(x_0)$ B) $f(x)\ge f(x_0)$

C) $f(x)<f(x_0)$ D) $f(x)>f(x_0)$

526. $y=f(x)$ funksiya D to'plamda quydan chegaralangan bo'lsin. U holda qaysi munosanat ixtiyoriy $x\in D$ uchun o'rinli?

A) biror K musbat haqiqiy soni uchun $|f(x)|<K$

B) biror K soni uchun $f(x)<K$

C) biror K haqiyqiy son uchun $f(x)>K$

D) biror K musbat haqiqiy soni uchun $|f(x)|>K$

Urunma tenglamasi

527. $y=x^2+3x+4$ funksiyaning grafigiga absissasi 2 ga teng bo'lgan nuqtadan o'tkazilgan urinma Oy o'qning musbat yonalishi bilan hosil qilgan burchagining sinusini toping.

A) $\frac{3}{\sqrt{50}}$ B) $\frac{7}{\sqrt{50}}$ C) $\frac{9}{\sqrt{50}}$ D) $\frac{1}{\sqrt{50}}$

528. $y=\frac{2}{3}x^3-\frac{3}{2}x^2+\frac{1}{2}x+\frac{1}{3}$ funksiyaning $x=1$ nuqtadagi urunma tenglamasini toping.

A) $y=\frac{1+2x}{2}$ B) $y=\frac{1-2x}{2}$

C) $y=\frac{1-3x}{2}$ D) $y=\frac{1+3x}{2}$

Boshlang'ich funksiya

529. $f(x)=22\sin 5x\cdot\sin 6x$ uchun boshlang'ich funksiyani toping.

A) $11\cos x-\cos 11x+C$
B) $-11\cos x-\cos 11x+C$
C) $11\sin x+\sin 11x+C$
D) $11\sin x-\sin 11x+C$

530. $f(x)=54\sin 9x\cdot\cos 18x$ uchun boshlang'ich funksiyani toping.

A) $3\cos 9x-\cos 27x+C$
B) $-3\cos 9x-\cos 27x-C$
C) $3\sin x+\sin 27x+C$
D) $3\sin 9x-\sin 27x+C$

531. $f(x)=16\sin 3x\cdot\cos 5x$ uchun boshlang'ich funksiyani toping.

A) $4\cos 2x-\cos 8x+C$
B) $-4\cos x-\cos 8x+C$
C) $4\sin 8x+\sin 8x+C$
D) $4\sin 2x-\sin 8x+C$

532. $f(x)=18\sin 5x\cdot\cos 4x$ uchun boshlang'ich funksiyani toping.

A) $-9\cos x-\cos 9x+C$
B) $9\cos x-\cos 9x+C$
C) $9\sin x-\sin 9x+C$
D) $9\sin x+\sin 9x+C$

533. $f(x)=24\sin 5x\cdot\cos 7x$ uchun boshlang'ich funksiyani toping.

A) $-6\cos 2x-\cos 12x+C$
B) $6\cos 2x-\cos 12x+C$
C) $6\sin 2x+\sin 12x+C$
D) $6\sin 2x-\sin 12x+C$

534. $f(x)=14\sin 4x\cdot\cos 3x$ uchun boshlang'ich funksiyani toping.

A) $-\cos 7x-7\cos x+C$
B) $7\cos x-\cos 7x+C$
C) $7\sin x+\sin 7x+C$
D) $7\sin x-\sin 7x+C$

535. $f(x)=70\cos x\cdot\cos 6x$ uchun boshlang'ich funksiyani toping.

A) $7\cos 5x-5\sin 7x+C$
B) $-7\cos 5x-5\cos 7x+C$
C) $7\cos 5x-5\cos 7x+C$
D) $7\sin 5x+5\sin 7x+C$

536. $f(x)=72\cos 7x\cdot\sin 11x$ uchun boshlang'ich funksiyani toping.

A) $-9\cos 4x-2\cos 18x+C$
B) $9\cos 4x-2\cos 18x+C$
C) $9\sin 4x+2\sin 18x+C$
D) $9\sin 4x-2\sin 18x+C$

537. Boshlang'ich funksiyani toping:

$$f(x)=\sin\left(\frac{x}{4}+5\right).$$

A) $F(x)=\frac{1}{4}\cos\left(\frac{x}{4}+5\right)+C$

B) $F(x)=5\cos\left(\frac{x}{4}+5\right)+C$

C) $F(x)=4\cos\left(\frac{x}{4}+5\right)+C$

D) $F(x)=-4\cos\left(\frac{x}{4}+5\right)+C$

538. Ushbu $f(x)=\frac{2x+1}{x^2+x-2}$ funksiyaning boshlang'ich funksiyasini toping.

A) $\ln|x+2|+C$
B) $\frac{2x^2}{(x-1)(x+2)}+C$
C) $\ln(x-1)+C$
D) $\ln(|x-1|\cdot|x+2|)+C$

539. Ushbu $f(x)=\frac{2x+3}{x^2+3x+2}$ funksiyaning boshlang'ich funksiyasini toping.

A) $\ln|x+2|+C$
B) $\ln(|x+1|\cdot|x+2|)+C$
C) $\ln(x+1)+C$
D) $\ln(|x-1|\cdot|x-2|)+C$

540. Ushbu $f(x)=\frac{2x+4}{x^2+4x+3}$ funksiyaning boshlang'ich funksiyasini toping.

A) $\frac{2x^2}{(x+1)(x+2)^2}+C$
B) $\ln(|x+3|\cdot|x+1|)+C$
C) $\ln(x+2)+C$
D) $\ln|x+1|+C$

541. $y=\frac{1}{\sqrt[3]{x^2}}+x\sqrt[3]{x^2}-5^x+2$ funksiyaning boshlang'ich funksiyasini toping.

A) $3\sqrt[3]{x}+\frac{3}{8}x^2\sqrt[3]{x^2}-5^x+2x+C$

B) $3\sqrt[3]{x}+\frac{3}{8}x^2\sqrt[3]{x^2}-\frac{5^x}{\ln 5}+2x+C$

C) $3\sqrt[3]{x}+\frac{3}{8}x^2\sqrt[3]{x^2}-5^x\ln 5+2x+C$

D) $\sqrt[3]{x}-3x^2\sqrt[3]{x^2}-5x+C$

Integral

542. $\int\frac{dx}{x\sqrt{\ln x}}$ hisoblang

A) $\sqrt{\ln x}+c$ B) $\frac{1}{\sqrt{\ln x}}+c$

C) $2\sqrt{\ln x}+c$ D) $\frac{2}{\sqrt{\ln x}}+c$

543. $\int\frac{\cos\frac{1}{x}}{x^2}dx$ ni hisoblang.

A) $-\sin\frac{1}{x}+c$ B) $\sin\frac{1}{x}+c$

C) $2\sin\frac{1}{x}+c$ D) $\sin\frac{1}{x^2}+c$

544. $\int\left(x^2+\sqrt[3]{x}-7\right)dx$ ni hisoblang.

A) $\frac{x^3}{3}+\frac{x\sqrt[3]{x}}{4}-7x+C$

B) $x^3+\frac{3x\sqrt[3]{x}}{4}-7x+C$

C) $\frac{x^3}{3}+\frac{4x\sqrt[3]{x}}{3}-\frac{7x}{3}+C$

D) $x^3+\frac{\sqrt[3]{x}}{4}-7x+C$

545. $\int_0^2\sqrt{x^2-2x+1}\,dx$ hisoblng.

A) 0 B) $\frac{1}{2}$ C) 1 D) 2

546. $\int_0^1 2x^3dx$ ni hisoblang.

A) $\frac{1}{4}$ B) $\frac{1}{2}$ C) $\frac{2}{3}$ D) $\frac{3}{5}$

547. $\int_0^2\sqrt{x^2-2x+1}\,dx$ hisoblang.

A) 0 B) 1 C) 2 D) $\frac{1}{2}$

548. $f(x)=x^2-x-6$ tenglamaning ildizlari x_1 va x_2 $\int_{x_2}^{x_1}|y-1|dy$ aniq integralni hisoblang $(x_1>x_2)$

A) 4,5 B) 5,5 C) 6,5 D) 7,5

549. $a=-4$ bo'lsa, $\int_a^{a+1}\left(\ln\left(\sin^2 3x+\cos^2 3x\right)+1\right)dx$ aniq integralni hisoblang.

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

550. $a=1$ bo'lsa, $\int_a^{a+1}\left(\ln\left(\sin^2 2x+\cos^2 2x\right)+1\right)dx$ aniq integralni hisoblang.

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

551. $a>0$ ning qanday qiymatlarida tengsizlik o'rinli? $\int_{-a}^{a}e^x dx>\frac{3}{2}$

A) $(-\infty;\infty)$ B) $(\ln 2;\infty)$

C) $\left(-\ln\frac{1}{2};\ln 2\right)$ D) $\left(\ln\frac{1}{2};\ln 2\right)$

552. $a<0$ ning qanday qiymatlarida tengsizlik o'rinli?

$\int_a^0\left(3^{-2x}-2\cdot 3^{-x}\right)dx>0;$ A) $(-\infty;-1]$

B) $[-1;\infty)$ C) $\{-1\}$ D) $(-\infty;0)$

553. $\sin x > \int_0^1 \left(x^2+3x\right)dx$ tengsizlikni yeching. A) $\varnothing$ B) $\left(\arcsin\frac{11}{6}+2\pi n;\pi-arc\sin\frac{11}{6}+2\pi n\right), n\in Z$ C) $\left(\arcsin\frac{6}{11}+2\pi n;\pi-arc\sin\frac{6}{11}+2\pi n\right), n\in Z$ D) $\left(\arcsin\frac{11}{6}+\pi n;\pi-arc\sin\frac{11}{6}+\pi n\right), n\in Z$ **55**

4. $\int_1^e \frac{\sin(\ln x)}{x}dx$ hisoblang.

A) $-\cos 1$ B) $1-\cos 1$
C) $1-\sin 1$ D) $\cos 1$

555. $\int_1^2 \left(a^2+(4-4a)x+4x^3\right)dx \le 12$ tengsizlikni qanoatlantiruvchi a ning barcha qiymatlarini toping. A) $(-\infty;\infty)$
B) $(-\infty;3]$ C) $[3;\infty)$ D) $\{3\}$

Yuzani integral orqali hisoblash

556. $y=\frac{1}{\sqrt{x}}$; $y=0$; $x=1$; $x=9$ chiziqlar bilan chegaralangan shakilning yuzini toping.

A) 4 B) 4,5 C) 6 D) 8

GEOMETRYA

Planametrya

Burchaklar vamasofalar

557. C nuqta $-AB$ kesmaning o'rtasi. AC va BC kesmalarda mos ravishda M, N nuqtalar shunday olinganki, $AM:MC=CN:NB$ munosabat bajariladi. Agar AB kesma uzunlgi 36 ga teng bo'lsa, MN kesma uzunligini toping.
A) 9 B) 12 C) 18 D) 24

558. 60^0 li burchak ichida uning tomonlaridan a va b masofada turgan nuqtadan burchakning uchigacha bo'lgan masofani toping.

A) $\frac{2}{3}\sqrt{2\left(a^2+ab+b^2\right)}$
B) $\frac{2}{3}\sqrt{3\left(a^2+ab+b^2\right)}$
C) $\frac{1}{3}\sqrt{3\left(a^2+ab+b^2\right)}$
D) $\frac{2}{3}\sqrt{a^2+ab+b^2}$

Uchburchaklar

559. To'g'ri burchakli uchburchakning bir burchagi 38^0 ga teng bo'lsa, to'g'ri burchak uchidan tushurilgan bissektrissa va balandlik orasidagi burchakni toping.

A) 7^0 B) 10^0 C) 14^0 D) 17^0

560. Uchburchak ABC da $\angle A=75^0$, $2h_c=AB$ bo'lsa, C burchak kattaligini toping.

A) 75^0 B) 60^0 C) 45^0 D) 30^0

561. Uchburchakning bir tamoni 21 sm, qolgan ikki tamoni 3:8 nisbatda bo`lib ular orasidagi burchak 60° ga teng bo`lsa, ularning peremetrini toping. A) 48 B) 65 C) 54 D) 43

562. To`g`ri burchakli uchburchakka ichki va tashqi chizilgan aylanalarning radiyuslari mos ravishda 2 sm va 5 sm ga teng. Agar atlanalar markazi orasidagi masofa 5 ga teng bo`lsa, uchburchakning katetlarini toping.

A) 3 va 4 B) 6 va 8
C) 5 va 12 D) 8 va 15

563. Katta katetni diametr qilib, unga yarim aylana tashqi chizilgan. Kichik kateti $30sm$, to`g`ri burchak uchini yarim aylan gipatenuzani kesgan nuqta bilan tutashtiruvchi vatar $24sm$, yarim aylan uzunligini toping. A) 40π
B) 30π C) 20π D) 10π

564. Agar uchburchakning medianalari 12, 15 va 21 sm ga teng bo`lsa, uning yuzini toping.

A) 48 B) $48\sqrt{3}$ C) $48\sqrt{2}$ D) $48\sqrt{5}$

565. ABC uchburchakda $\angle C = 90^0$, $AC = 2\sqrt{3}$, $BK = 1$, CK uchburchak baladligi bo'lsa, $\angle ACK$ ni toping.

A) 15^0 B) 30^0 C) 60^0 D) 45^0

566. Uchburchakni bir tomoni 21 sm, qolgan ikki tomoni 3:8 nisbatda bo'lib ular orasidagi burchak 60^0 ga teng bo'lsa, uning peremetrini toping.

A) 48 B) 65 C) 54 D) 43

567. ABC o'tkir burchakli uchburchak berilgan. Uchburchakning BC tomonini C uchidan boshlab hisoblaganda 2:3 nisbatda bo'luvchi AN to'g'ri chiziq o'tkazilgan. Agar ABN uchburchakning yuzi 15 ga teng bo'lsa, ABC uchburchakning yuzini toping.

A) 18 B) 25 C) 28 D) 30

568. ABC uchburchakning yuzi 30 sm^2. AC tomonida olingan D nuqta uni $AD : DC = 2 : 3$ nisbatda bo'ladi. BC tomonga tushurilgan DE perpendikulyar uzunligi 3 sm bo'lsa, BC ni toping.

A) 6 B) 9 C) 12 D) 15

569. ABC uchburchakda $AB = 10$, $BC = 17$, $AC = 21$ sm. Uchburchak ichidan olingan N nuqta AC va BC tomonlargacha bo'lgan masofalar 2 va 4 sm bo'lsa, N nuqtadan AB tomongacha bo'lgan masofani toping.

A) 2,9 B) 3 C) 5,8 D) 6

570. Uchburchak ABC da AC asosga DE patallel to'g'ri chiziq o'tkazilgan $S_{ABC} = 8, S_{DEC} = 2$ bo'lsa, $DE : AC$ ni toping.

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

571. To`g`ri burchakli uchburchakning gipatenuzasi c, o`tkir burchaklaridanbiri α ga teng. Shu uchburchakka ichki chizilgan aylana radiyusini toping.

A) $c\sqrt{2}\ sin\frac{a}{2}\sin(45°-\frac{a}{2})$

B) $c\sqrt{2}\cos\frac{a}{2}\cos(45°-\frac{a}{2})$

C) $c\sqrt{2}\cos\frac{a}{2}\cos(45°-\frac{a}{2})$

D) $c\sqrt{2}\cos\frac{a}{2}\sin(45°-\frac{a}{2})$

572. To`g`ri burchakli uchburchakda to`g`ri burchaging bissektrisasi gipatenuzani a va b ga teng kesmalarga bo`ladi. Uchburchak yuzini toping.

A) $\frac{ab(a+b)^2}{a^2+b^2}$ B) $\frac{ab(a+b)^2}{2(a^2+b^2)}$

C) $\frac{2ab(a+b)^2}{a^2+b^2}$ D) $\frac{ab(a^2+b^2)}{2(a+b)^2}$

573. Teng yonli uchburchakka ichki chizilgan aylana yon tomonini urinish nuqtasida uchidan boshlab hisoblaganda 8 va 4 ga teng kesmalarga ajratsa, uchburchakning peremetrini toping.

A) 42 B) 32 C) 36 D) 40

574. Muntazam uchburchakning tomoni a. Uchburchak tomonlari o'rtalarini tutashtiririb muntazam uchburchaklar hosil qilindi. Ichma ich joylshgan uchburchaklar yuzalari yig'indisini toping. A) $\frac{a^2\sqrt{3}}{6}$

B) $\frac{a^2\sqrt{3}}{4}$ C) $\frac{a^2\sqrt{3}}{2}$ D) $\frac{a^2\sqrt{3}}{3}$

575. Asosi m va asosidagi burchagi α bo`lgan teng yonli uchburchakning peremetiring toping.

A) $mtga \cdot ctg\frac{\alpha}{2}$ B) $mtg\alpha \cdot tg\frac{a}{2}$

C) $mctga \cdot tg\frac{a}{2}$ D) $mctga \cdot ctg\frac{a}{2}$

576. Agar teng yonli uchburchakning asosi b ga, yon tamoniga tushirilgan balandligi h ga teng bo`lsa, uning yuzini toping.

A) $\frac{b^2h}{2\sqrt{b^2-h^2}}$ B) $\frac{b^2h}{\sqrt{b^2-h^2}}$

C) $\frac{2b^2h}{\sqrt{b^2-h^2}}$ D) $\frac{b^2h}{4\sqrt{b^2-h^2}}$

577. ABC uchburchakning A burchagi 2α ga teng va $AC=b$, $AB=c$ bo`lsa A burchak bissektrisasini toping.

A) $\dfrac{2bc\cos\alpha}{b+c}$ B) $\dfrac{2bc\cos 2a}{b+c}$

C) $\dfrac{2bc\cos\dfrac{a}{2}}{b+c}$ D) $\dfrac{bc\cos a}{b+c}$

578. Asosi a ga, yon tomoni b ga teng bo'lgan teng yonli uchburchakning yon tomoniga tushurilgan mediana uzunligini toping. A) $m_b=\dfrac{1}{2}\sqrt{2a^2+b^2}$

B) $m_b=\dfrac{1}{2}\sqrt{a^2+2b^2}$

C) $m_b=\dfrac{a}{2}\sqrt{a^2+2b^2}$

D) $m_b=\dfrac{a}{2}\sqrt{2a^2+b^2}$

579. Katetlari yig'indisi l ga, to'g'ri burchagi uchidan tushurilgan balandligi h ga teng bo'lsa, uning yuzini toping.

A) $h\left(\sqrt{h^2+l^2}-h\right)$ B) $\dfrac{1}{2}\left(\sqrt{h^2+l^2}-h\right)$

C) $\dfrac{h}{2}\left(\sqrt{h^2+l^2}-h\right)$ D) $2h\left(\sqrt{h^2+l^2}-h\right)$

580. To'g'ri burchakli uchburchakning to'g'ri burchagi uchidan tushurilgan balandlik h ga, katetlarning gipotenuzadagi proyeksiyalarining ayirmasi l ga teng. Uchburchak yuzini toping.

A) $h\sqrt{(l^2+4h^2)}$ B) $\dfrac{1}{2}h\sqrt{l^2+4h^2}$

C) $\dfrac{h}{2}\sqrt{l^2+h^2}$ D) $\dfrac{1}{2}h\sqrt{l^2+2h^2}$

581. ABC uchburchakning A burchagi 2α ga teng va AC=b AB=c bo'lsa, A burchak bissektrissasini toping.

A) $\dfrac{2bc\cos\alpha}{b+c}$ B) $\dfrac{2bc\cos 2\alpha}{b+c}$

C) $\dfrac{2bc\cos\dfrac{\alpha}{2}}{b+c}$ D) $\dfrac{2bc\cos\alpha}{b+c}$

582. Teng yonli uchburchak peremetri p ga, asosidagi burchagi α ga teng, shu uchburchakka ichki chizilgan aylananing radyusini toping.

A) $\dfrac{p\sin 2\alpha}{4\cos^4\dfrac{\alpha}{2}}$ B) $\dfrac{p\sin 2\alpha}{2\cos^4\dfrac{\alpha}{2}}$

C) $\dfrac{p\sin 2\alpha}{\cos^4\dfrac{\alpha}{2}}$ D) $\dfrac{p\sin 2\alpha}{8\cos^4\dfrac{\alpha}{2}}$

583. Muntazam uchburchakning tomoni a. Unung markazidan $\dfrac{a}{3}$ radius bilan aylana ichki chizilgan. Uchburchakning aylanadan tashqaridagi qismini toping.

A) $\dfrac{a^2}{9}\left(3\sqrt{3}-\pi\right)$ B) $\dfrac{a^2}{6}\left(3\sqrt{3}-\pi\right)$

C) $\dfrac{a^2}{27}\left(3\sqrt{3}-\pi\right)$ D) $\dfrac{a^2}{18}\left(3\sqrt{3}-\pi\right)$

584. Uchburchakning tomonlari $a=13, b=14, c=15$. Bulardan ikkitasi $(a$ va $b)$ markazi uchunchi tomonda yotuvchi doiraga urunma bo'ladi. Doira radiusini toping.

A) $6\dfrac{1}{9}$ B) $6\dfrac{4}{9}$ C) $6\dfrac{1}{3}$ D) $6\dfrac{2}{9}$

585. To'g'ri bur chakli uchburchakda o'tkir burchakning medianalari uzunliklari $6\sqrt{5}$ va $8\sqrt{5}$ ga teng. Uchburchakning gipotenuzasini toping.

A) 17 B) 18 C) 19 D) 20

586. Teng ABC yonli uchburchakning AC asosida D nuqta shunday olinganki $AD=38, DC=40$ tengliklar bajariladi. ABD va DBC uchburchakdagi ichki chizilgan aylanalar BD to'g'ri chiziqqamos ravishda M va N nuqtalar urinadilar. MN kesma uzunligini toping. A) 1 B) $\sqrt{2}$ C) $\sqrt{3}$ D) 2

587. Tamonlari $60;36;48$ bo'lgan uchburchakni tamonlariga uringuncha sharga perpendikular kiritiladi. Agar sharning radiusi 13 ga teng bo'lsa, uchburchak tekisligi shorning markazidan qancha masofada joylashgan. A) 3 B) 4 C) 5 D)6

588. Yarim perimetri 12 ga gipotenuzasi 10 ga teng bo'lgan To'g'ri burchakli uchburchakka ichki chizilgan aylana radiusini toping.

A)2,5 B) 1,5 C) 2 D)3

589. Asosi $7\,sm$ ga yon tamoni $9\,sm$ ga teng bo'lgan teng yonli uchburchakning yon tamoniga tushirilgan bissektrisa uzunligini (sm) toping.

A) 6,5 B) $6\frac{9}{16}$ C) $6\frac{15}{16}$ D)$6\frac{3}{4}$

590. To'g'ri burchakli uchburchakning peremetri 30 sm, uning ikki qo'shni tomonlariga chizilgan kvadratlar yuzalarining yig'indisi $137\,sm^2$. To'g'ri to'rtburchakning yuzini toping.

A) 26 B) 44 C) 36 D) 50

591. Teng yonli uchburchakning asosiga va yon tomoniga tuchurilgan baladliklari 10 va 12 sm bo'lsa, asos uzunligini toping.

A) 15 B) 16 C) 20 D) 24

592. Teng yonli uchburchakning yon tomoni 20 ga, asosi 24 ga teng. Bu uchburchak medianalarining kesisish nuqtasi bilan bissektrissalarining kesishish nuqtasi orasidagi masofani toping. A) $\frac{2}{3}$ B) $\frac{1}{3}$ C) $\frac{3}{2}$ D) 1

593. To'g'ri burchakli uchburchakda to'g'ri burchakning bissektrissasi gipatenuzani a va b ga teng kesmalarga bo'lindi. Uchburchakning yuzini toping.

A) $\frac{ab(a+b)^2}{a^2+b^2}$ B) $\frac{ab(a+b)^2}{2(a^2+b^2)}$

C) $\frac{2ab(a+b)^2}{a^2+b^2}$ D) $\frac{ab(a^2+b^2)}{2(a+b)^2}$

594. Tomoni a ga teng bo'lgan teng tomonli uchburchak ichiga uchburchakning tomonlariga va bir-biriga urunuvchi uchta teng doira joylashtirilgan. O'zaro urunuvchi doiralar yoylaridan hosil bo'lgan egri chiziqli uchburchakning yuzini toping.

A) $\frac{a^2\left(2-\sqrt{3}\right)\left(2\sqrt{3}-\pi\right)}{16}$

B) $\frac{a^2\left(2-\sqrt{3}\right)\left(2\sqrt{3}-\pi\right)}{8}$

C) $\frac{a^2\left(2-\sqrt{3}\right)\left(2\sqrt{3}-\pi\right)}{32}$

D) $\frac{a^2\left(2-\sqrt{3}\right)\left(2\sqrt{3}-\pi\right)}{64}$

595. To'g'ri burchakli uchburchakning gipotenuzasini unga ichki chizilgan aylananing urinish nuqtasi a va b ga kesmalarga teng bo'ladi. Agar biror kateti c ga teng bo'lsa, uchburchak yizini toping.

A) $c\sqrt{(a+b)^2+c^2}$ B) $c\sqrt{(a+b)^2-c^2}$

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

596. To'gri burchakli uchburchakning gipotenuzasi c, o'tkir burchaklaridan biri α ga teng. Shu uchburchakka ichki chizilgan aylana radyuzini toping.

A) $c\sqrt{2}\sin\frac{\alpha}{2}\cos\left(45^0-\frac{\alpha}{2}\right)$

B) $c\sqrt{2}\sin\frac{\alpha}{2}\sin\left(45^0-\frac{\alpha}{2}\right)$

C) $c\sqrt{2}\cos\frac{\alpha}{2}\cos\left(45^0-\frac{\alpha}{2}\right)$

D) $c\sqrt{2}\cos\frac{\alpha}{2}\sin\left(45^0-\frac{\alpha}{2}\right)$

597. Teng yonli uchburchakning yon tomomni 20 ga, asosi 24 ga teng. Bu uchburchak medianalarining kesishish nuqtasi bilan bissektriaksiyalarining kesishish nuqtasi orasidagi masfani toping. A) 1 B) $\frac{2}{3}$ C) $\frac{1}{3}$ D) $\frac{3}{2}$

598. To`g`ri burchakli uchburchakning gipatenuzasining unga ichki chizilgan aylananing urunish nuqtasi a va b kesmalarga bo`ladi. Agar biror kateti $c$ ga teng bo`lsa, uchburchak yuzining toping.

A) $c\sqrt{(a+b)^2+c^2}$ B) $c\sqrt{(a+b)^2-c^2}$

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

599. To'g'ri burchakli uchburchakka yarim aylana ichki chizilgan, uning diametric gipotenuzada yotadi, markazi esa gipotenuzani 15 sm va 20 sm li kesmalarga bo'ladi. Yarim aylananing katetlar bilan urinish nuqtalari orasidagi yoyning uzunligini toping.

A) 12 B) 13 C) 14 D) 15

600. Agar uchburchakning medianalari 12, 15 va 21 sm ga teng bo`lsa, uning yuzini toping.

A) 48 B) $48\sqrt{3}$ C) $48\sqrt{2}$ D) $48\sqrt{5}$

601. Agar teng yonli uchburchakning asosi b ga, yon tomoniga tushurilgan baladligi h ga teng bo'lsa, uning yuzini toping.

A) $\frac{b^2h}{\sqrt{b^2-h^2}}$ B) $\frac{b^2h}{2\sqrt{b^2-h^2}}$

C) $\frac{2b^2h}{\sqrt{b^2-h^2}}$ D) $\frac{b^2h}{4\sqrt{b^2-h^2}}$

602. Uchburchakning tamonlari $\log_2 a, \log_2 b$ va $\log_2 c$. a, b va c geometrik progressiyaning ketma-ket hadlari bo'lib, ularga mos ravishda 1, -4 va -17 sonlar qo'shilsa arifmetik progressiyaning dastlabki hadlari hosil bo'ladi. Quydagi $a+8=\frac{c}{2}$ tenglik o'rinli bo'lsa, uchburchakning yuzini toping. A) 2 B) 6 C) 4 D) 8

603. Agar uchburchakning yuzi medianalari 12, 15 va 21 sm ga teng bo'lsa, uning yuzini toping.

A) 48 B) $48\sqrt{2}$ C) $48\sqrt{3}$ D) $48\sqrt{5}$

604. Uchburchakning yon tamonlari tub sonlar bo'lib, uning ichki burchaklari arifmetik progressiyani tashkil qiladi. Agar $3\sin\alpha = 2\sin\gamma$ bo'lsa, uchburchakning uchidagi β burchak qashqisidagi tamonni toping $(\alpha < \beta < \gamma)$.

A) 7 B) $\sqrt{7}$ C) $\sqrt{5}$ D) $\sqrt{3}$

605. Agar α, β, γ lar uchburchakning ichki burchaklari bo'lib (α, β, γ) $a_1 = \sin\alpha, a_2 = \sin\beta, a_3 = \sin\gamma$, hamda $a_2 = \sqrt{3}a_1, a_3 = 2a_1$ tengliklar o'rinli bo'lsa, $\frac{|a_3|}{|a_1|+|a_2|} = ?$ A) $1+\sqrt{3}$

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

606. To'g'ri burchakli uchburchakka ichki va tashqi chizilgan aylanalarning radyuslari mos ravishda 2 sm va 5 sm ga teng bo'lsa, uchburchakning qatetini toping. A) 3 va 4 B) 6 va8

C) 5 va 12 D) 8 va 15

607. O'tkir burchagi 60^0 ga, perimetri $4\left(3+\sqrt{3}\right)$ ga teng bo'lgan to'g'ri burchakli uchburchakga tashqi chizilgan aylana radiusini topilsin.

A) 2 B) 3 C) 4 D) $2\sqrt{3}$

608. Teng yonli uchburchakning uchidagi burchagi α ga teng. Shu uchburchaka ichki va tashqi chizilgan doira radyuslari nisbatini toping.

A) $\frac{ctg\left(45^0-\frac{\alpha}{4}\right)}{\sin\alpha}$ B) $\frac{tg\left(45^0-\frac{\alpha}{4}\right)}{\sin\alpha}$

C) $\frac{ctg\left(45^0-\frac{\alpha}{4}\right)}{\cos\alpha}$ D) $\frac{tg\left(45^0-\frac{\alpha}{4}\right)}{\cos\alpha}$

To'rtburchaklar

609. P nuqta $ABCD$ to`g`ri to`rtburchak ichidagi nuqta. Agar $|PD|=\sqrt{3}, |PB|=\sqrt{2}$ $|PD|=\sqrt{6}$ bo`lsa, $|PA|=?$ toping.

A) 2 B) $\sqrt{7}$ C) $\sqrt{5}$ D) 3

610. To`g`ri to`rtburchakning perimetri 30 sm, uning ikki qo`shni tomonlariga chizilgan kvadratlar yuzlaring yig`indisi $137\,sm^2$. To`g`ri to`rtburchakning yuzini toping. A) 44 B) 26 C) 36 D) 50

611. To'g'ri burchakli trapetsiyaning diaganali yon tomoniga teng. Agar uning balandligi 2 ga va yon tomoni 7 ga teng bo'lsa, trapetsiya o'rta chiziqini toping. A) 4 B) 5 C) $3\sqrt{2}$ D) $3\sqrt{3}$

312. Trapetsiyaning 9 ga teng bo`lgan o`rta chizig` uning yuzini 3:5 kabi nisbatda bo`ladi. Trapetsiyaning asoslarini toping.

A) 4,5 va 13,5 B) 4 va 14
C) 6 va 12 D) 3,5 va 14,5

613. Asoslari 13 va 17 ga teng bo'lgan teng yonli trapessiyaning diaganallari o'zaro perpendikulyar. Trapessiyaning yuzini toping.

A) 210 B) 215 C) 220 D) 225

614. Teng yonli trapetsiyaning asoslari 4 va 12 bo'lsa, unga ichki chizilgan doiraning yuzini toping.

A) 8π B) 12π C) 16π D) 18π

615. P nuqta $ABCD$ to`g`ri to`rtbvurchak ichidagi nuqta. Agar $|PD|=\sqrt{3}, |PB|=\sqrt{2}$ $|PD|=\sqrt{6}$ bo`lsa, $|PA|=?$ toping.

A) 2 B) $\sqrt{7}$ C) $\sqrt{5}$ D) 3

616. Aylanaga tashqi chizilgan teng yonli trapetsiyaning asoslari ayirmasi 2ga teng bolgan arifmetik progressiya tashkil qiladi. Trapetsiyani o'rta chizig'i 3ga teng bo'lsa, aylana markazidan trapetsiyaning kichik asosi uchigacha bo'lgan masofani toping.

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

617. $ABCD$ parallelogramda $AB=37$, diaganallari kesishgan niqtadan AD tomonga tushurilgan perpendikulyar uni $AE=26$ va $ED=14$ kesmalarga ajrtadi. Parallelogramm yuzini toping.

A) 1400 B) 1440 C) 1450 D) 1480

618. Trapessiyaning parallel tomonlari a va b ga teng. Shu tomonlarga parallel va trapessiya yuzini teng ikkiga bo'lgan kesma uzunligini toping.

A) $2\sqrt{a^2+b^2}$ B) $\sqrt{\dfrac{a^2+b^2}{2}}$

C) $\sqrt{a^2+b^2}$ D) $\dfrac{1}{2}\sqrt{a^2+b^2}$

619. Yuzi Q ga, diaganallarining nisbati $m:n$ bo'lgan rombning tomonini toping.

A) $2\sqrt{Q\dfrac{m^2+n^2}{mn}}$ B) $Q\sqrt{\dfrac{m^2+n^2}{mn}}$

C) $\sqrt{Q\dfrac{m^2+n^2}{mn}}$ D) $\sqrt{Q\dfrac{m^2+n^2}{2mn}}$

620. Rombning peremetri $2p$, diaganallarining yig'indisi m bo'lsa, uning yuzini toping.

A) $\dfrac{m^2-p^2}{4}$ B) $\dfrac{m^2-p^2}{2}$

C) $\dfrac{m^2-p^2}{8}$ D) $2\left(m^2-p^2\right)$

621. Tapessiyaning qurrasi a ga teng. Shu trapessiyaning bir qirrasi orqali o'tib, uning qarshisidagi qirrani 2:1 nisbatda bo'luvchi tekislik bilan kesilgan. Hosil bo'lgan kesimni toping.

A) $\dfrac{\sqrt{17}a^2}{12}$ B) $\dfrac{\sqrt{19}a^2}{12}$

C) $\dfrac{\sqrt{17}a^2}{6}$ D) $\dfrac{\sqrt{19}a^2}{6}$

622. To'g'ri burchakli trapessiyaning balandligi h, uning asosiga perpendikulyar bo'lmagan tomonini diametr qilib chizilgan aylana trapessiyaning qarama-qarshi tomoniga urinadi. Katetlari trapessiyaning asoslari bo'lgan to'g'ri

burchakli uchburchakning yuzini toping. A) $\frac{h^2}{8}$ B) $\frac{h^2}{16}$ C) $\frac{h^2}{2}$ D) $\frac{h^2}{4}$

623. $ABCD$ parallelogramda $AB=37$, diagnallari kesisish nuqtsidan AD tomonga tushirilgan perpendikulyar uni $AE=26$ va $ED=14$ bo`lgan kesmalarga ajratadi. Parallelogramm yuzini toping.
A) 1440 B) 1400 C) 1480 D) 1450

Aylanavadoira

624. Aylananing $a=arcctg\sqrt{3}$ ichki burchagiga mos yoy uzinligi 2π ga teng. Shu yoyga tiralgan vatarning uzunligini toping.
A) 12 B) 8 C) 6 D) 4

625. Doiraning 6 smli vatari ajratgan sigmetiga tomoni 2 smli kvadrat ichki chizilgan. Doira radiyusini toping.
A) $\sqrt{10}$ B) 3 C) $2\sqrt{2}$ D) $\sqrt{7}$

626. To'g'ri burchakli uchburchakning gipotenuzasining uzunligi $\sqrt{45}$, katetlari maxraji 2ga teng geometric progressiyani tashkil etadi. Unga ichki chizilgan aylananing eng kata vatarini toping. A) $4,5-\frac{\sqrt{45}}{2}$ B) $9-\sqrt{45}$
C) $4,5+\frac{\sqrt{45}}{2}$ D) $9+\sqrt{45}$

627. Aylanaga teng yonli trapetsiya tashqi chizilgan. Bu aylananing radyusi trapetsiyaga tashqi chizilgan aylana radyusidan $\sqrt{6}$ marta kichik. Trapetsiya asosidagi burchagini toping.
A) $\frac{\pi}{8}$ B) $\frac{\pi}{6}$ C) $\frac{\pi}{4}$ D) $\frac{\pi}{3}$

628. Katta katetini diametr qilib, unga yarm aylana tashqi chizilgan. Kichik kateti 30 sm, to'g'ri burchak uchini yarm aylana gipotenuzani kesgan nuqta bilan tutashtiruvchi vatar 24 sm, yarm aylana uzunligini toping.
A) 30π B) 40π C) 20π D) 10π

629. Aylananing bir nuqtasidan uzunliklari 10 va 12 bo'lgan vatarlar o'tkazilgan. Kichik vatar o'rtasidan katta vatargacha bo'lgan masofa 4 ga teng bo'lsa, aylana radiusini toping.
A) 5,25 B) 6 C) 6,25 D) 6,5

630. Aylana $ABCD$ trapessiyaning B, C va D uchlaridan o'tib AB tomoniga B nuqtada urunadi. Asoslari a va b bo'lsa BD diaganalni toping.
A) $\sqrt{a+b}$ B) $a+b$ C) $\sqrt{ab}$ D) ab

631. Asosi 4 sm ga, balandligi 6 sm ga teng bo'lgan teng yonli uchburchakning yon tomonini diametr qilib yarm aylana chizilgan. Uning asos va yon tomon bilan kesishish nuqtalari to'g'ri chiziq bilan tutashtirilgan. Yarm aylanada hosil bo'lgan ichki chizilgan to'rtburchakning yuzini toping.
A) 10 B) 10,5 C) 10,8 D) 11

Aylana tenglamasi

632. $x^2-4x+y^2+6x=12$ tenglama bilan berilgan aylana uzunligini toping.
A) 8π B) 10π C) 11π D) 12π

633. $x^2+10x+y^2+16y=32$ tenglama bilan berilga aylana chegaralab turgan soha yuzini toping.
A) 100π B) 121π C) 144π D) 81π

634. Ushbu $x^2-2x+y^2-4y=4$ tenglama berilgan aylananing markazidan va koordinatalar boshidan o'tuvchi to'g'ri chiziq tenglamasi $f(x)$ bo'lsa, $f'(9)$ ni hisoblang.
A) 0 B) 1 C) 2 D) 4

635. Ushbu $x^2+y^2-6x+4y+5=0$ tenglama bilan berilgan aylananing markazidan o'tuvchi va Ox o'qi bilan 45^0 burchak hosil qiluvchi to'g'ri chiziq tenglamasini toping.
A) $y=x-5$ B) $y=x+5$
C) $y=x-1$ D) $y=x+1$

Ko'pburchak

636. Diagnallarning soni tomonlaring soniga teng bo`lgan ko`pburchakning ichki burchaklaring yig`indising toping.
A) 720° B) 360° C) 540° D) 180°

637. Diaganallari soni tomonlarining sonidan 1,5 marta ko'p bo'lgan qavariq muntazam ko'pburchakning barcha ichki burchaklari va bitta tashqi burchagi yigindisini toping.

A) 480^0 B) 720^0 C) 780^0 D) 900^0

638. Diagnallarning soni tomonlaring soniga teng bo`lgan qavariq muntazam ko`pburchakning barcha ichki burchaklari va bitta tashqi burchagi yig`indisini toping.

A) 540° B) 468° C) 720° D) 612°

639. Diaganallari soni tomonlarining sonidan 2 marta ko'p bo'lgan qavariq muntazam ko'pburchakning barcha ichki burchaklari va bitta tashqi burchagi yigindisini toping.

A) 540^0 B) 720^0 C) 1080^0 D) 900^0

640. Qavariq ko`pburchakning $x$ ga teng bo`lgan bitta burchagidan tashqari qolgan barcha burchaklari yig`indisi 2192° ga teng. $x$ burchakning gradus o`lchovini toping. A) 154° B) 148°

C) 150° D) aniqlab bo`lmaydi.

Aylanavako'pburchaklar

641. Halqaning katta radiusi 6, kichik radiusi esa tomoni $\sqrt{3}$ ga teng bo'lgan muntazam uchburchakka ichki chizilmagan aylananing radiusidan 4 marta katta. Halqaning yuzini va kengligini toping. A) $32\pi;4$

B) $32\pi;6$ C) $36\pi;8$ D) $36\pi;12$

642. Aylanaga ichki chizilgan $ABCD$ to'rtburchakning AC va BD dioganallari E nuqtada kesishadi. Agar $AB=3, BC=5, CD=4,$ va $CE:EA=4:3$ bolsa, AC kesmaning uzunligini toping?

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

643. Yuzasi 8 ga teng bo'lgan kvadratga tashqi chizilgan aylananing radiusi $R=\log_3 x$ teglamani qanoatlantirsa, tenglamaning yechimini toping. A) 0,5 B) 2 C) 9 D) 3

644. Radiusi 8 ga teng bo'lgan aylanaga ichki chizilgan muntazam olti burchakning perimetrini toping.

A) 48 B) 56 C) $48\sqrt{3}$ D) $48\sqrt{2}$

645. Radiusi R bo'lgan doiraga bir burchagi 120^0 bo'lgan teng yonli uchburchak tashqi chizilgan. Uning asosini toping.

A) $2R\left(\sqrt{3}+\sqrt{2}\right)$ B) $R\left(\sqrt{3}+\sqrt{2}\right)$

C) $2R\left(\sqrt{3}+1\right)$ D) $R\left(\sqrt{3}+1\right)$

646. Aylanaga teng yonli trapetsiya tashqi chizilgan. Bu aylananing radiusi trapetsiyaga tashqi chizilgan aylana radiyusidan $\sqrt{6}$ marta kichik. Trapetsiya asosidagi burchakni toping.

A) $\frac{\pi}{3}$ B) $\frac{\pi}{6}$ C) $\frac{\pi}{4}$ D) $\frac{\pi}{8}$

647. Aylana kvadratning ikki qo'shni tomoniga urinadi, qolgan ikki tomonini 2 va 23 bo'lgan kesmalarga ajratadi. Aylana radiusini toping.

A) 17 B) 25 C) 27 D) 37

Koordinatalarsistemasi

648. XOY-Dekart koordinata sistemasida 2 ta to'g'ri chiziq berilgan bo'lib, ulardan biri koordinata boshi va $A(2;3)$ nuqtadan, ikkinchisi $B(0;2)$ va $C(1;0)$ nuqtalardan o'tishi ma'lum bo'lsa, ular kesishish nuqtasining koordinatalar yig'indisi aniqlansin.

A) $\frac{4}{7}$ B) $\frac{6}{7}$ C) $\frac{10}{7}$ D) 3

649. Agar $A\left(-3\frac{3}{4};5\frac{1}{2}\right)$ va $B(-0,8;-1,4)$ nuqtalar berilgan bo'lsa, AB kesmani o'rtasini toping.

A) $\left(-3\frac{3}{8};5\frac{1}{4}\right)$ B) $(-0,4;-0,7)$

C) $\left(-2\frac{11}{40};2,05\right)$ D) $(-1,475;2,05)$

650. $(-3;4)$ nuqtaning abscissa, ordinata o'qlariga va koordinata boshiga

nisbatan simmetrik bo'lgan nuqtalarni tutashtirishdan hosil bo'lgan uchburchakning balandligini toping.

A) 2,4 B) 4,8 C) 5 D) 5,4

651. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quydagicha berilgan: $A(0;0)$ $B(1;-10)$, $C(1;0)$. Uchburchakning yuzini toping.

A) 4 B) 5 C) $3\sqrt{3}$ D) $4\sqrt{2}$

652. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quydagicha berilgan: $A(5;0)$ $B(1;4)$, $C(1;0)$. Uchburchakning yuzini toping.

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

653. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quydagicha berilgan: $A(0;0)$ $B\left(\frac{1}{2};0\right)$, $C(1;0)$. Uchburchakning yuzini toping.

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

654. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quydagicha berilgan: $A(0;0)$ $B(-1;-2)$, $C(-2;0)$. Uchburchakning yuzini toping.

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

655. Uchburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quydagicha berilgan: $A(0;0)$ $B(1;-2)$, $C(1;0)$. Uchburchakning yuzini toping.

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

656. To'rtburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quydagicha berilgan. $A(1;0)$, B(1; y), C(–10; y) va D(–12;0). To'rtburchak diaganallarining o'rtalari orasidagi masofani toping.

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

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

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

658. $y>0$ bo'lsin. To'rtburchakning uchlari to'g'ri burchakli dekart koordinatalar sistemasida quydagicha berilgan. $A(1;0)$, B(1; y), C(–1; y) va D(–3;0). To'rtburchakning diagonallarining o'rtalari orasidagi masofani toping.

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

659. Markazi $A(3;2)$ nuqtada bo'lgan Oy o'qiga urinuvchi aylanaga tashqi chizilgan muntazam uchburchakning yuziga tengdosh kvadratning perimetrini toping

A) $6\sqrt{3\sqrt{3}}$ B) $4\sqrt[4]{27}$

C) $12\sqrt[4]{27}$ D) $\sqrt[4]{27}$

Vektorlar

660. Ikki sonning ko'paytmasi 18 ga teng va bu sonlar $|x-y|=3$ tenglamani qanoatlantiradi. Bu nuqtalar orasidagi masofani toping.

A) $3\sqrt{2}$ B) 6 C) 3 D) 4

661. Ikki vektor orasidagi burchak $(\arccos)'=-1$ tenglamani qanoatlantirsa, bu vektorlar ..... bo'ladi

A) teng vektorlar B) perpendikulyar
C) qarama-qarshi D) yo'nalishdosh

662. $|\vec{a}+\vec{b}|=8, |\vec{a}-\vec{b}|=4$ va $|\vec{a}|=3$ bo'lsa, $|\vec{b}|$ ni to'ping.

A) $\sqrt{23}$ B) 5 C) $\sqrt{31}$ D) 4

663. $A(2;4)$; $B(3;6)$; $C(6;14)$ nuqtalar berilgan. $|\overline{AB}+\overline{AC}|$ ni hisoblang.

A) 12 B) 13 C) 14 D) $5\sqrt{29}$

Streanametrya

664. Katetlari $2\sqrt{2}$ va 8 ga teng bo'lgan uchburchak kichik tamoni atrofida aylantirish natijasida hosil bo'lgan jisimning yon sirtini yuzini toping. A) $54\sqrt{2}\pi$ B) $48\sqrt{2}\pi$ C) $50\sqrt{2}\pi$ D) $52\sqrt{2}\pi$

Fazoda to'g'richiziqlarvatekisliklar

665. Bir nuttadan tekislikka og'ma va perpendikulyar tushirilgan. Og'ma ma tekislik orasidagi α burchak uchun ushbu $\dfrac{\sin\left(\frac{\pi}{2}-\alpha\right)}{\cos\left(\frac{3\pi}{2}-\alpha\right)}=-2$ tenglik o'rinli bo'lsa og'maning proeksiyasini perpendikulyarga nisbatini toping,

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

666. A nuqtadan tekislikka o'zaro perpendikulyor bo'lgan 2 ta og'ma o'tkazilgan. Ulardan biri 8 ga, ikkinchisi uning 75% ga va bu nuqtadan tekislikgacha bo'lgan masofa 4,8 ga teng bo'lsa, ularning tekislikdagi proyeksiyalarini toping.

A) 3,6 va 6,4 B) 3,3 va 6,6
C) 3,2 va 5,8 D) 3,5 va 6,5

667. Agar $\vec{a}\left(\sqrt{27};2\sqrt{3};-6\right)$ va $\vec{b}\left(\sqrt{20};-\sqrt{6};6\sqrt{2}\right)$ berilgan bo`lsa, $\frac{\vec{a}}{\sqrt{3}}\cdot\frac{\vec{b}}{\sqrt{2}}$ ni toping.

A) $14\sqrt{3}-2\sqrt{10}$ B) $3\sqrt{10}+14\sqrt{3}$
C) $14\sqrt{3}-3\sqrt{10}$ D) $3\sqrt{10}-14\sqrt{3}$

Ko'pyoqlar

668. To'la sirti $36\,sm^2$ bo'lgan kubning ayqash qirralari o'rtalari orasidagi masofani toping.

A) 3 B) 4 C) 6 D) 9

669. Parallelepipedning asoslari tomoni 4 ga teng kvadratlardan, barcha yon yoqlari romblardan iborat. Yuqori sosining uchlaridan biri ostki asosining barcha uchlaridan baravar uzoqlikda joylashgan. Parallelepipedning hajmini toping.

A) 8 B) $16\sqrt{2}$ C) $8\sqrt{2}$ D) $32\sqrt{2}$

670. Parallelepipedning asoslari tomoni 6 ga teng kvadratlardan, barcha yon yoqlari romblardan iborat. Yuqori sosining uchlaridan biri ostki asosining barcha uchlaridan baravar uzoqlikda joylashgan. Parallelepipedning hajmini toping.

A) 81 B) $54\sqrt{2}$ C) $72\sqrt{2}$ D) $108\sqrt{2}$

671. Chiziqli o'lchovlarning ayirmasi 3 ga teng bo'lgan to'g'ri burchakli parallelepipedning diagonali $\sqrt{93}$ ga teng bo'lsa, uning hajmini toping.

A) 70 B) 180 C) 90 D) 80

672. To'g'ri parallelepiped diaganallari 9 sm va $\sqrt{33}$ sm, asosining perimetri 18 sm, yon qirrasi 4 sm. Parallelepiped to'la sirtini toping.

A) 100 B) 104 C) 108 D) 120

673. Uchburchakli muntazam prizmada yon yog'i diaganali bilan ikinchi yon yog'i orasidagi burchak 30^0. Asos qirrasi a. Prizma yon sirtini toping.

A) $3a^2\sqrt{2}$ B) $3a^2\sqrt{3}$
C) $2a^2\sqrt{2}$ D) $2a^2\sqrt{3}$

674. Uchburchakli muntazam piramida asosiga perpendiqulyar va asosining ikki tomonini teng ikkiga bo'luvchi tekislik bilan kesilgan. Dastlabgi piramida asosining tomonini a va asosidadi ikki yoqli burchak α ga teng. Tekislik kesib ajratgan piramida hajmini toping.

A) $\frac{a^3tg\alpha}{32}$ B) $\frac{a^3tg\alpha}{64}$
C) $\frac{a^3tg\alpha}{128}$ D) $\frac{a^3tg\alpha}{256}$

675. Beshburchakli muntazam piramida asosi yuzi S, yon sirti Q ga teng.

Piramida yon yog'ining asos tekisligiga og'ish burchagini toping.

A) $\operatorname{arctg}\frac{S}{Q}$ B) $\arcsin\frac{S}{Q}$

C) $\arccos\frac{S}{Q}$ D) $\operatorname{arcctg}\frac{S}{Q}$

676. Piramidaning asosi teng yonli uchburchak bo'lib, asosidagi burchak α. Piramida asosidagi hr bir ikkiyoqli burchak $\varphi = 90^0 - \alpha$. Piramida yon sirti S bo'lsa, to'la sirtini toping.

A) $2S\cos^2\left(45^0 - \frac{\alpha}{2}\right)$ B) $2S\cos^2\left(\frac{\alpha}{2}\right)$

C) $2S\sin^2\left(45^0 - \frac{\alpha}{2}\right)$

D) $2S\cos^2\left(90^0 - \frac{\alpha}{2}\right)$

677. To'g'ri prizmaning asosida to'g'ri burchakli ABC uchburchak. $\angle C = 90^0$, $\angle A = 60^0$, $AC = b$. Prizmada AB gipotenuza orqali o'tuvchi yon yog'ining diaganali AC katet orqali o'tuvchi yon yoq bilan 30^0 burchak hosil qiladi. Prizma hajmini toping.

A) $\frac{b^3\sqrt{6}}{2}$ B) $\frac{b^3\sqrt{3}}{4}$ C) $\frac{b^3\sqrt{3}}{3}$ D) $b^3\sqrt{6}$

678. To'g'ri prizmaning asosi to'g'ri burchakli uchburchak bo'lib, uning gipotenuzasi c va bir o'tkir burchagi α. Ostki asosining gipotenuzasi va usti asosidagi to'g'ri burchakning uchi orqali o'tkazilgan tekislik bilan β burchak tashkil etadi. Prizmadan tekislik kesib ajratgan uch burchakli piramidaning hajmini toping.

A) $\frac{1}{12}c^3\sin^2 2\alpha tg\beta$

B) $\frac{1}{24}c^3\sin^2 2\alpha tg\beta$

C) $\frac{1}{24}c^3\sin\alpha tg\beta$

D) $\frac{1}{12}c^3\sin\alpha tg\beta$

679. Piramida asosining tomonlari x va y bolgan to'g'ri to'rtburchakdan iborat va quyidagi $\begin{cases}|x| = 4\\ \log_2 x = y\end{cases}$ tenglamalar sistemasining yechimini. Piramidaning to'la sirti 18 bo'lsa, yon sirtini toping

A) 10 B) 28 C) 13 D) 5

680. Piramidaning asosi to'g'ri to'rtburchak, uning diaganallari orasidagi otkir burchagi α ga teng. Piramidaning yon qirralari asos tekisligi bilan φ burchak hosil qiladi. Shu piramidaga tashqi chizilgan sharning radiusi R. Piramida hajmini toping.

A) $\frac{2}{3}R^3\sin^2 2\varphi\sin\alpha tg^2\varphi$

B) $\frac{1}{3}R^3\sin^2 2\varphi\sin\alpha tg^2\varphi$

C) $\frac{2}{3}R^3\sin^3 2\varphi\sin\alpha tg\varphi$

D) $\frac{1}{3}R^3\sin^3 2\varphi\sin\alpha tg\varphi$

681. To'g'ri parallelepiped asosining tomonlari a va b, o'tkir burchagi α. Asosining katta diaganali parallelepiped kichik diaganaliga teng. Parallelepiped hajmini toping.

A) $\frac{\sin\alpha}{2}\sqrt{(ab)^3\cos\alpha}$

B) $\sin\alpha\sqrt{(ab)^3\cos\alpha}$

C) $2\sin\alpha\sqrt{(ab)^3\cos\alpha}$

D) $3\sin\alpha\sqrt{(ab)^3\cos\alpha}$

682. To'g'ri parallelepiped asosi ro'mbdan iborat bo'lib, uning diagonal kesimlarining yuzalari S_1 va S_2 ga teng. Parallelepipedning yon sirtini toping. A) $\frac{1}{2}\sqrt{S_1^2 + S_2^2}$ B) $\sqrt{S_1^2 + S_2^2}$

C) $2\sqrt{S_1^2 + S_2^2}$ D) $4\sqrt{S_1^2 + S_2^2}$

683. To'g'ri burchakli parallelepiped asosining tomonlari a va b ga teng. Parallelepiped diaganali yon qirrasi bilan φ burchak tashkilqilsa, uning hajmini toping. A) $ab\sqrt{a^2+b^2}\cdot tg\varphi$

B) $ab\sqrt{a^2+b^2}\cdot ctg\varphi$

C) $ab\sqrt{a^2+b^2}\cdot\cos\varphi$

D) $ab\sqrt{a^2+b^2}\cdot\sin\varphi$

684. To'rtburchakli muntazam prizma diaganali d ga teng bo'lib, yon yoq tekisligi bilan α burchak tashkil etadi. Prizma hajmini toling.

A) $d^3\sin^2\alpha\cdot\sqrt{\cos\alpha}$

B) $d^3\sin^2\alpha\cdot\sqrt{\cos 2\alpha}$

C) $d^3\sin^3\alpha\cdot\sqrt{\cos 2\alpha}$

D) $d^3\sin^3\alpha\cdot\sqrt{\sin 2\alpha}$

685. Uchburchakli piramidaning ikki yon yog'i teng yonli to'g'ri burchakli uchburchaklar bo'lib, ularning gipotenuzalari b va bu gipotenuzalar o'zaro α burchak hosil qiladi. Piramida hajmini toping. A) $\frac{1}{6}b^3\cos\frac{\alpha}{2}\sqrt{\cos\alpha}$

B) $\frac{1}{6}b^3\sin\frac{\alpha}{2}\sqrt{\cos\alpha}$

C) $\frac{1}{6}b^3\cos\frac{\alpha}{2}\sqrt{\sin\alpha}$

D) $\frac{1}{6}b^3\sin\frac{\alpha}{2}\sqrt{\sin\alpha}$

686. Tetraedrning qirrasi b. Qirralardan birinchi o'rtasidan bir-biri bilan kesishmaydigan ikkita qirrasiga parallel qilib tekislik o'tkazilgan. Hosil bo'lgan kesimning yuzini toping.

A) $\frac{b^2}{2}$ B) $\frac{b^2}{3}$ C) $\frac{b^2}{4}$ D) $\frac{b^2}{6}$

687. Tetraedrning qirrasi a ga teng. Shu tetraedrning bir qirrasi orqali o'tib, uning qarshisidagi qirrasi 2:1 nisbatda bo'luvchi tekislik bilan kesilgan. Hosil bo'lgan kesimning yuzini toping.

A) $\frac{\sqrt{17}a^2}{12}$ B) $\frac{\sqrt{19}a^2}{12}$

C) $\frac{\sqrt{17}a^2}{6}$ D) $\frac{\sqrt{19}a^2}{6}$

Silindr va kons

688. Qaysi jism(lar)ning simmetriya tekisligi cheksiz sonda?

1) shar; 2) prizma? 3) konus.

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

689. Konusning yasovchisi va asos tekisligi orasidagi α burchak ushbu $\sin 3\alpha\left(e-\cos 3\alpha\right)=0$ tenglamani qanoatlantiradi. Asosi uchun quydagi $x^2-2x+y=8$ tenglama o'rinli bo'lsa,konusning yon sirtini toping.

A) 6π B) 9π C) 18π D) 3π

690. Radiusi R bo`lgan sharga kesik qo`nus ichki chizilgan. Kesik qo`nusning asoslari shardan o`q kesimidagi yoylari a va β ga teng ikkita segment kesadi. Kesik konus yon sirtini toping.

A) $\pi R^2\sin\frac{\alpha+\beta}{2}\cos\frac{\alpha-\beta}{2}$

B) $2\pi R^2\sin\frac{\alpha+\beta}{2}\cos\frac{\alpha-\beta}{2}$

C) $2\pi R^2\sin\frac{\alpha-\beta}{2}\cos\frac{\alpha+\beta}{2}$

D) $\pi R^2\sin\frac{\alpha-\beta}{2}\cos\frac{\alpha+\beta}{2}$

691. Silindirning balandligi x va $9^x=3^x+6$ tenglamani qanoatlantiradi. Silindr o'q kesimining diagonali $2x$ ga teng. Silindr o'q kesimi yuzining 20% ini toping.

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

692. Silindr o'q kesimining tomonlari x,y va ushbu $\begin{cases}2x^2+y=89\\ y^2-81=0\end{cases}$ tengliklarni qanoarlantirsa, silindrgatashqi chizilgan sharning tola sirtini toping. A) 130π

B) 135π C) 120π D) 121π

693. Silindr o'qiga parallel qilib o'tkazilgan tekislik uning asosidan φ kattalikdagi yoyni ajratadi. Silindr o'qining uzunligi h bo'lib, undan kesuvchi tekislikkacha bo'lgan masofa a ga teng. Kesim yuzini toping.

A) $2ahtg\frac{\varphi}{2}$ B) $ahtg\frac{\varphi}{2}$

C) $2ahtg\varphi$ D) $ahtg\varphi$

694. ABC uchburchakning yuzi S, bir tomoni $AC=b$ va $\angle CAB=a$. Shu uchburchakni AB tomoni atrofida aylantirishdan hosil bo'lgan jism hajmini toping.

A) $\frac{\pi Sb\sin\alpha}{6}$ B) $\frac{\pi Sb\sin\alpha}{3}$

C) $\frac{4\pi Sb\sin\alpha}{3}$ D) $\frac{2\pi Sb\sin\alpha}{3}$

695. Uchburchakli muntazam prizma yon yog'ining diaganali asos tekisligi bilan φ burchak tashkil etadi. Prizma yon sirti S bo'lsa, uning hajmini toping.

A) $\frac{S\sqrt{S}}{3\sqrt{ctg\varphi}}$ B) $\frac{S\sqrt{S}}{3\sqrt{tg\varphi}}$

C) $\frac{S\sqrt{S}}{12\sqrt{ctg\varphi}}$ D) $\frac{S\sqrt{S}}{12\sqrt{tg\varphi}}$

696. Uchburchakli muntazam kesik piramidaning yon qirralari asos tekisligi bilan α burchak tashkil etadi. Ostki asosining tomoni a ga, ustki asosining tomoni b ga teng bo'lsa, kesik piramida hajmini toping.

A) $\frac{1}{12}\left(a^3-b^3\right)\sin\alpha$

B) $\frac{1}{12}\left(a^3-b^3\right)tg\alpha$

C) $\frac{1}{6}\left(a^3-b^3\right)tg\alpha$

D) $\frac{1}{12}\left(a^3-b^3\right)ctg\alpha$

697. Katta diaganali d va o'tkir burchagi φ bo'lgan romb, o'tkir burchagining uchi orqali kata diaganaliga perpendikulyar qilib o'tkazilgan o'q atrofida aylantirildi. Hosil bo'lgan jism hajmini toping.

A) $\frac{\pi d^3tg\frac{\varphi}{2}}{2}$ B) $\frac{\pi d^3tg\frac{\varphi}{2}}{3}$

C) $\frac{\pi d^3tg\frac{\varphi}{2}}{6}$ D) $\frac{2\pi d^3tg\frac{\varphi}{2}}{3}$

698. Uchburchakning b va c tomonlari va ular orasidagi burchak α berilgan. Shu uchburchak α burchagining uchi orqali uchburchak tashqarisidan o'tgan hamda b va c tomonlari bilan bir hil burchak hosil qiluvchi o'q atrofida aylantirildi. Hosil bo'lgan jismning hajmini toping.

A) $\frac{\pi bc\left(b+c\right)\sin\alpha\cos\frac{\alpha}{2}}{6}$

B) $\frac{\pi bc\left(b+c\right)\sin\frac{\alpha}{2}\cos\frac{\alpha}{2}}{6}$

C) $\frac{\pi bc\left(b+c\right)\sin\alpha\cos\frac{\alpha}{2}}{3}$

D) $\frac{\pi bc\left(b+c\right)\sin\frac{\alpha}{2}\cos\frac{\alpha}{2}}{3}$

699. Teng yonli trapetsiyaning diaganali yon tomoniga perpendikulyar. Yon tomoni b katta asosi bilan α burchak tashkil qiladi. Trapetsiyaning katta asosi atrofida aylantirishdan hosil bo'lgan jism sirtini toping.

A) $4\pi b^2tg\alpha\cdot\sin\frac{\alpha}{2}\cdot\cos\frac{3\alpha}{2}$

B) $4\pi b^2tg\alpha\cdot\sin\frac{\alpha}{2}\cdot\sin\frac{3\alpha}{2}$

C) $4\pi b^2ctg\alpha\cdot\sin\frac{\alpha}{2}\cdot\sin\frac{3\alpha}{2}$

D) $4\pi b^2ctg\alpha\cdot\sin\frac{\alpha}{2}\cdot\cos\frac{3\alpha}{2}$

700. Konus ichiga balandligi konus asosining radiusiga teng silindr ichki chizilgan. Silindr to'la sirtining konus asosining yuziga nisbati 3:2 kabi. Konus o'qi bilan yasovchisi orasidagi topilsin. A) 60^0 B) 30^0 C) $arctg\frac{1}{2}$ D) $arctg2$

701. Konus o'q kesimi uchidagi burchagi 2φ ga, o'q kesimi yuzi esa Q ga teng bo'lsa, konus hajmini toping.

A) $\frac{1}{3}\pi Q\sqrt{Qtg\varphi}$ B) $\frac{1}{2}\pi Q\sqrt{Qtg\varphi}$

C) $\frac{1}{6}\pi Q\sqrt{Qtg\varphi}$ D) $\frac{1}{3}\pi Q\sqrt{Qctg\varphi}$

702. a uzunlikdagi vatar silindr asosida π yoyni tortib turadi. Agar slinrdning balandligi H bo'lsa, uning to'la sirtini toping.

A) $a\pi\left(H+\frac{a}{4}\right)$ B) $a\pi\left(H+\frac{a}{2}\right)$

C) $a\pi(H+a)$ D) $a\pi H$

Sharvasfera va Shar

703. Agar shar kesimining radiusi $r=2$ va shar markazida kesmgacha masofa, tomoni $2r$ bo'lgan kvadratning diagonaliga teng bo'lsa, sharning sirtini toping. A) $144\pi^2$

B) 144π C) 50π D) 100π

704. Asosi tepaga qaratib qo'yilgan, o'q kesimi teng tomonli uchburchakdan iborat konus ichiga suv quyilgan va unga radiusi r ga teng shar solingan. Natijada suvning sathi sharga ust tomondan urinadi. Shar suvan olingandan keying suv sathini toping.

A) $r\sqrt[3]{15}$ B) $r\sqrt[3]{5}$ C) $r\sqrt[3]{25}$ D) $r\sqrt[3]{3}$

705. Uchnurchakli muntazam prizmaga shar ichki chizilgan, bu shar prizmaning uchala yog'iga va ikkala asosiga urinadi. Shar sirtining prizma to'la sirtiga nisbatini toping.

A) $\frac{\pi}{9\sqrt{3}}$ B) $\frac{2\pi}{9\sqrt{3}}$ C) $\frac{2\pi}{3\sqrt{3}}$ D) $\frac{\pi}{6\sqrt{3}}$

706. Radyusi R bo'lgan sharga kesik qonus ichki chizilgan. Kesik konusning asoslari shardan o'q kesimidagi yoylari α va β ga teng ikkita segmentga kesadi. Kesik konus yon sirtini toping.

A) $2\pi R^2\sin\frac{\alpha+\beta}{2}\cos\frac{\alpha-\beta}{2}$

B) $\pi R^2\sin\frac{\alpha+\beta}{2}\cos\frac{\alpha-\beta}{2}$

C) $2\pi R^2\sin\frac{\alpha-\beta}{2}\cos\frac{\alpha+\beta}{2}$

D) $\pi R^2\sin\frac{\alpha-\beta}{2}\cos\frac{\alpha+\beta}{2}$

707. Asosining radyusi R va balandligi bilan yasovchisi orasidagi burchagi 30^0 bo'lgan konus ichiga chizilgan shar konusning asosiga va yon sirtiga urinadi. Ko'nusning shar ustidagi qismining hajmini toping. A) $\frac{2\pi R^3}{9\sqrt{3}}$

B) $\frac{\pi R^3}{9\sqrt{3}}$ C) $\frac{\pi R^3}{18\sqrt{3}}$ D) $\frac{\pi R^3}{6\sqrt{3}}$

708. $\frac{\sqrt{3}}{2}$ radiusli sferaga muntazam to'rtburchakli piramida ichki chizilgan. Uchidagi yassi burchak 45^0 ga teng bo'lsa, piramida yon sirtining yuzini toping. A) 2 B) 3 C) 4 D) $2\sqrt{2}$