

1. $A(3,-1)$ va $B(-1,2)$ nuqtalar berilgan. \overline{AB} vektorning uzunligini toping.
2. Agar $|a|=5$, $|b|=4$, $\alpha = \frac{\pi}{3}$ bo'lsa, \vec{a} va \vec{b} vektorlarning skalyar ko'paytmasini toping.
3. Agar $|\vec{a}|=2$, $|\vec{b}|=3$, $\alpha = \frac{\pi}{6}$ bo'lsa, \vec{a} va \vec{b} vektorlarning skalyar ko'paytmasini toping.
4. Agar $|a|=3$, $|b|=\sqrt{8}$, $\alpha = \frac{\pi}{4}$ bo'lsa, \vec{a} va \vec{b} vektorlarning skalyar ko'paytmasini toping.
5. $\vec{a} = \{1,-2\}$, $\vec{b} = \{3,0\}$ vektorlarning skalyar ko'paytmasini toping.
6. $\vec{a}\{8,1-4\}$, $\vec{b}\{2,-2,1\}$ vektorlar orasidagi burchakni aniqlang.
7. $\vec{a}(3, \lambda, -2)$, $\vec{b}(5, -1, \lambda)$ vektorlar λ ning qanday ma'nolarida o'zaro perpendikulyar bo'ladi?
8. \vec{a} va \vec{b} vektorlarning uzunliklari $|\vec{a}|=7$ va $|\vec{b}|=9$, ular orasidagi burchak $\alpha = 135^\circ$ berilgan. $|\vec{a}+\vec{b}|$ va $|\vec{a}-\vec{b}|$ lar topilsin.
9. \vec{a} va \vec{b} vektorlarni bilgan holda $[(\vec{a}+\vec{b}), (\vec{a}-\vec{b})]$ ni toping.
10. Tekislikda quyidagi vektorlar berilgan: $\vec{a}(3, -2)$, $\vec{b}(-2, 1)$, $\vec{c}(7, 4)$. Bazis vektorlar sifatida bu vektorlarning ixtiyoriy ikkitasini olib, ular orqali uchinchisining yoyilmasini yozing.
11. Uchta $\vec{p}(3;-2;1)$, $\vec{q}(-1;1;-2)$, $\vec{r}(2;1;-3)$ vektor berilgan. $\vec{c}(11;-6;5)$ vektorni \vec{p}, \vec{q} va \vec{r} orqali ifoda qiling.
12. Tekislikda $\vec{p}(2, -3)$, $\vec{q}(1, 2)$ vektorlar berilgan. $\vec{a}(9, 4)$ ni \vec{p} va \vec{q} vektorlarning chiziqli kombinatsiyasida yozing.
13. $\vec{a}\{1,10,2\}$, $\vec{b}\{4,0,3\}$ vektorlar berilgan. \vec{a} va \vec{b} vektorlarga perpendikulyar, uzunligi birga teng \vec{c} vektori topilsin.
14. $M_1(2,4)$ va $M_2(-2,4)$ nuqtalar berilgan. M_1M_2 kesmani $\lambda = 3$ nisbatda bo'luvchi C nuqtaning koordinatalarini toping.
15. Parallelogrammning uchta A, B, C uchining koordinatalari bo'yicha to'rtinchi uchining koordinatalarini toping: $A(1, 4)$, $B(3, -1)$, $C(0, 2)$
16. Uchburchak tomonlarining o'rtalari $M_1(3, -2)$, $M_2(1, 6)$, $M_3(-4, 2)$ nuqtalarda bo'lsa, uning uchlarining koordinatalarini aniqlang.
17. Uchburchakning tomonlarining o'rtalari P(2;1), H(-1;3), E(2;2) berilgan. Shu uchburchakning uchlarining koordinatalarini toping.
18. OX o'qida A(0; 5) va B(-3; -2) nuqtalardan teng masofada joylashgan nuqtani toping.
19. Parallelogrammning uch uchi A(8;-4), B(8;3), C(-4;5) berilgan bo'lib, to'rtinchisi D bo'lsa B ga qarama-qarshi joylashgan. Parallelogramm diagonallarining uzunliklari topilsin.
20. y ning qanday ma'nosida uchlar A(1;3), B(2;-1), C(4;y) nuqtalarda bo'lgan uchburchak teng yonli bo'ladi.
21. Uchlari A(7;-1), B(4;3) va C(-2;-5) nuqtalarda bo'lgan uchburchak berilgan. B uchidan o'tkazilgan bissektrisaning AC tomoni bilan kesishgan nuqtani toping.
22. Uchlari A(3;1), B(1;3), C(0;2) nuqtalarida bo'lgan uchburchak berilgan. Uchburchakning medianalarining kesisish nuqtasining koordinatalarini toping.

Determinantlarni hisobalang

$$23. \begin{vmatrix} 2 & 9 \\ -1 & 5 \end{vmatrix} \quad 24. \begin{vmatrix} 4 & 3 \\ 5 & 7 \end{vmatrix} \quad 25. \begin{vmatrix} 1 & -2 & 4 \\ 5 & 1 & 7 \\ 3 & 5 & -1 \end{vmatrix} \quad 26. \begin{vmatrix} 1 & -2 & 4 \\ 5 & 1 & 7 \\ 3 & 5 & -1 \end{vmatrix} \quad 27. \begin{vmatrix} b & a & b \\ a & 1 & a \\ b & a & b \end{vmatrix} \quad 28. \begin{vmatrix} 1 & -80 & 2 \\ -1 & -9 & 1 \\ 3 & 7 & 4 \end{vmatrix}$$

$$29. \begin{vmatrix} 1 & -3 & 4 \\ 2 & 5 & -1 \\ 101 & -99 & -7 \end{vmatrix} + \begin{vmatrix} 1 & -3 & 4 \\ -2 & -5 & 1 \\ -101 & 98 & 7 \end{vmatrix} \quad 30. \begin{vmatrix} 1 & 3 & 2 \\ -2 & -1 & 4 \\ -5 & 1 & 3 \end{vmatrix} \quad 31. \begin{vmatrix} 3 & 5 & 7 \\ 1 & 0 & 4 \\ 2 & 1 & 4 \end{vmatrix} \quad 32. \begin{vmatrix} 7 & 2 & 8 \\ 1 & 4 & 15 \\ 20 & 2 & 9 \end{vmatrix}$$

33. $\vec{a} = \{1, 2, -3\}$ va $\vec{b} = \{-1, 0, 1\}$ vektorlarning vektor ko'paytmasi topilsin.

34. $\vec{a}\{2, 1, -1\}$, $\vec{b}\{1, 2, 1\}$ vektorlarning vektor ko'paytmasini toping.

35. $\vec{a} = \{2; 4; -1\}$ va $\vec{b} = \{3; -1; 2\}$ vektorlar berilsa, $[(3\vec{a} - 2\vec{b}), (2\vec{a} - 3\vec{b})]$ vektor ko'paytmaning koordinatalari topilsin.

36. $\vec{a} = \{1, 3, -1\}$, $\vec{b} = \{0, 2, -5\}$, $\vec{c} = \{1, -2, 6\}$ vektorlarning aralash ko'paytmasi topilsin.

37. \vec{a} va \vec{b} vektorlardan tuzilgan parallelogramning yuzasini toping: bunda $\vec{a} = 4\vec{p} + \vec{q}$, $\vec{b} = \vec{p} - \vec{q}$, $|\vec{p}| = 7$, $|\vec{q}| = 2$, $(\vec{p} \wedge \vec{q}) = \frac{\pi}{4}$.

38. $\vec{a}\{-3, 1, 2\}$, $\vec{b}\{1, 2, -4\}$ vektorlardan tuzilgan parallelogram yuzasini toping.

39. $\vec{a} = \{1, 2, -3\}$ va $\vec{b} = \{-1, 0, 1\}$ vektorlardan tuzilgan parallelogram yuzasi topilsin.

40. $\vec{a}\{2, 1, -1\}$, $\vec{b}\{2, -2, 1\}$ vektorlardan tuzilgan parallelogram yuzasini toping.

41. $\vec{a}\{8, 1, -4\}$, $\vec{b}\{2, -2, 1\}$ vektorlardan tuzilgan parallelogram yuzasini toping.

42. $\vec{a}\{2, 1, -1\}$, $\vec{b}\{2, -2, 1\}$, $\vec{c}\{1, -0, 1\}$ vektorlardan tuzilgan paralelepipedning hajmini toping.

43. Uchlari A(2;3;1), B(4;1;-2), C(6;3;7), D(-5;-4;8) nuqtalarda bo'lgan paralelepipedning hajmini toping.

44. Uchlari A(4;2;3), B(2;3;4), C(5;5;7), D(-1;5;-2) nuqtalarda bo'lgan tetraedrning hajmini toping.

45. Uchlari A(2;1), B(-1;-1), C(3;2) nuqtalarda bo'lgan uchburchakning yuzasini toping.

46. Ordinatalar o'qida A(4;-6) nuqtadan 5 birlik masofada turgan nuqtani toping.

Chiziqli tenglamalar sistemasini Kramer va Gauss usulida yeching

$$47. \begin{cases} x_1 + x_2 + x_3 = 1 \\ x_1 + 2x_2 + 2x_3 = 2 \\ 2x_1 + 3x_2 + 3x_3 = 3 \end{cases} \quad 48. \begin{cases} x_1 + x_2 + 2x_3 = 4 \\ 2x_2 + x_3 = 3 \\ x_1 - x_2 = 2 \end{cases} \quad 49. \begin{cases} x_1 + x_2 + x_3 = 1 \\ 8x_1 + 3x_2 - 6x_3 = 2 \\ 4x_1 + x_2 - 3x_3 = 3 \end{cases} \quad 50. \begin{cases} 2x_1 + 3x_2 + 5x_3 = 10 \\ 3x_1 + 7x_2 + 4x_3 = 3 \\ x_1 + 2x_2 + 2x_3 = 3 \end{cases} \quad 51. \begin{cases} 2x_1 + x_2 - 3x_3 = 4 \\ 4x_1 - x_2 = 2 \\ 2x_1 + 3x_2 - x_3 = 8 \end{cases}$$

$$52. \begin{cases} x_1 - 4x_2 - 2x_3 = -3 \\ 3x_1 + x_2 + x_3 = 5 \\ 3x_1 - 5x_2 - 6x_3 = -9 \end{cases} \quad 53. \begin{cases} 5x_1 - 6x_2 + 4x_3 = 3 \\ 3x_1 - 3x_2 + 2x_3 = 2 \\ 4x_1 - 5x_2 + 2x_3 = 1 \end{cases} \quad 54. \begin{cases} 7x_1 - 5x_2 + x_3 = 3 \\ 5x_1 - 2x_2 - x_3 = 2 \\ 2x_1 + x_2 = 3 \end{cases} \quad 55. \begin{cases} 7x_1 - 5x_2 = 31 \\ 4x_1 + 11x_3 = -43 \\ 2x_1 + 3x_2 + 4x_3 = -20 \end{cases} \quad 56. \begin{cases} 4x_1 - 3x_2 + 2x_3 = -4 \\ 6x_1 - 2x_2 + 3x_3 = -1 \\ 5x_1 - 3x_2 + 2x_3 = -3 \end{cases}$$

Matritsalar va ular ustida amallar

$$57. A = \begin{pmatrix} 1 & 3 \\ 5 & 2 \end{pmatrix}, \quad B = \begin{pmatrix} 2 & 5 \\ 6 & -1 \end{pmatrix}, \quad A+B, 2A, 2A-3B, A \cdot B, B \cdot A \text{ ni hisoblang.} \quad 58. A = \begin{pmatrix} 0 & 3 \\ 2 & -5 \end{pmatrix}, \quad B = \begin{pmatrix} 4 & 2 \\ -6 & -3 \end{pmatrix}, \quad A+B, A \cdot B, B \cdot A \text{ ni hisoblang.}$$

$$59. A = \begin{pmatrix} 1 & 3 & 5 \\ 4 & 2 & -1 \\ 3 & 2 & 6 \end{pmatrix}, \quad B = \begin{pmatrix} 0 & 1 & 2 \\ 7 & -5 & 1 \\ 3 & 4 & 3 \end{pmatrix}, \quad A+B, A \cdot B, B \cdot A \text{ ni hisoblang.} \quad 60. A = \begin{pmatrix} 2 & 4 & 5 \\ 1 & 3 & -2 \\ 2 & 7 & 1 \end{pmatrix}, \quad B = \begin{pmatrix} 1 & 7 & 3 \\ 3 & -1 & 6 \\ 4 & 4 & 2 \end{pmatrix}, \quad A+B, A \cdot B, B \cdot A \text{ ni hisoblang.}$$

$$61. 3 \cdot \begin{pmatrix} 1 & -7 & 3 \\ 2 & 4 & 5 \\ -8 & 7 & 6 \end{pmatrix} - 5 \cdot \begin{pmatrix} 1 & 2 & 3 \\ 4 & 3 & 2 \\ 1 & 5 & 4 \end{pmatrix} + \begin{pmatrix} 1 & -4 & 3 \\ 0 & 2 & 7 \\ -5 & 1 & 9 \end{pmatrix} \quad 62. \begin{pmatrix} 7 & 4 & 1 \\ 3 & 3 & 9 \\ 4 & 2 & 5 \end{pmatrix} - 4 \cdot \begin{pmatrix} 1 & 3 & 3 \\ 2 & 9 & -7 \\ 4 & 1 & 3 \end{pmatrix} + 2 \cdot \begin{pmatrix} 1 & 0 & 5 \\ 2 & -7 & 3 \\ 4 & 6 & 9 \end{pmatrix}$$

$$63. A = \begin{pmatrix} 1 & 9 & 3 \\ -5 & 0 & 1 \\ -7 & 2 & -1 \end{pmatrix}, \quad B = \begin{pmatrix} 1 & -10 & 7 \\ -3 & 9 & 5 \\ -4 & 1 & -3 \end{pmatrix}, \quad C = \begin{pmatrix} 1 & 1 & 4 \\ 2 & 0 & 3 \\ 3 & 2 & 3 \end{pmatrix}, \quad 4A - B + 2C = ?$$

$$64. A = \begin{pmatrix} 2 & 0 & 5 \\ -1 & 1 & 2 \\ -3 & 4 & -4 \end{pmatrix}, \quad B = \begin{pmatrix} 3 & -15 & 0 \\ -6 & 3 & 4 \\ -7 & 4 & -1 \end{pmatrix}, \quad C = \begin{pmatrix} 0 & 6 & 3 \\ 3 & 5 & 7 \\ 1 & 1 & 2 \end{pmatrix}, \quad 2A - 3B + C = ?$$

$$65. A = \begin{pmatrix} a & 2 \\ 3 & a \end{pmatrix}, \quad B = \begin{pmatrix} 2 & a \\ 1 & 5 \end{pmatrix}, \quad A \cdot B, B \cdot A = ?$$

$$66. A = \begin{pmatrix} a & 3 \\ b & a \end{pmatrix}, \quad B = \begin{pmatrix} a & 3 \\ b & 7 \end{pmatrix}, \quad A \cdot B, B \cdot A = ?$$

67. Qutb koordinatalar sistemasida $A(12; \frac{4\pi}{9}), B(12; -\frac{2\pi}{9})$ nuqtalari berilgan. AB kesmasining o'rtasining qutb koordinatalarini toping.

68. Qutb o'qiga qarata simmetrik nuqtalarning qutb koordinatalarini toping. $A(5; -\frac{\pi}{3}), B(3; \frac{3\pi}{4})$

69. Qutb koordinatalar sistemasida $P(8; \frac{\pi}{4}), Q(6; -\frac{\pi}{4})$ nuqtalar berilgan. Ular orasidagi masofani toping.

70. Dekart reperda $A(-\sqrt{3}; 3), B(1; -1)$ nuqtalar berilgan. Ularning qutb koordinatalarini toping.

71. Dekart reperda $A(3;-\sqrt{3}), B(0;1)$ nuqtalar berilgan. Ularning qutb koordinatalarini toping.
72. Qutb koordinatalar sistemasida $A\left(10; \frac{5\pi}{3}\right), B\left(6; -\frac{\pi}{3}\right)$ nuqtalar berilgan. Ushbu nuqtalarning dekart reperdagi koordinatalari topilsin.
73. Dekart reperda $A(-5;5), B(3;0)$ nuqtalar berilgan. Ularning qutb koordinatalarini toping.
74. Qutb o'qiga qarata simmetrik nuqtalarning qutb koordinatalarini toping. $A\left(4; \frac{\pi}{3}\right), B\left(3; \frac{\pi}{4}\right)$
75. $M(5,6)$ nuqtaning $2x-3y+6=0$ to'g'ri chiziqqa proektsiyasini toping.
76. $P(-8;12)$ nuqtasining $A(2;-3)$ va $B(-5;1)$ nuqtalaridan o'tgan to'g'ridagi proektsiyasini toping.
77. $P(-5;13)$ nuqtasining $2x-3y-3=0$ to'g'risiga qarata simmetrik nuqtasini toping.
78. $3x-y=0, x+4y-2=0$ to'g'ri chiziqlarning kesisish nuqtasini toping.
79. Koordinatalar boshidan $3x-y+17=0, 2x+3y-6=0$ to'g'ri chiziqlarning kesishgan nuqtasigacha bo'lgan masofani toping.
80. $(2,-4)$ nuqtadan $x+2y-5=0$ to'g'ri chiziqgacha masofa topilsin.
81. $(-2,3)$ nuqtadan $2x+3y-10=0$ to'g'ri chiziqgacha masofa topilsin.
82. $(-3,4)$ nuqtadan $3x-ny+1=0$ to'g'ri chiziqgacha masofa topilsin (n - variant nomer).
83. $M(n;-1)$ nuqtadan va $2x-3y+1=0$ va $y-4=0$ to'g'ri chiziqlarning kesisish nuqtasidan o'tuvchi to'g'ri chiziq tenglamasini tuzing (bu yerda n - variant nomeri).
84. Uchlari $A(-3, -2), B(1, 2), C(4, -5)$ nuqtalarda bo'lgan uchburchak tomonlarining tenglamasini tuzing.
85. Uchburchakning uchlarining koordinatalari $A(3,4), B(-2,4), C(2,2)$. Tomonlarining tenglamalarini yozing.
86. $M(-3, -5)$ nuqtadan o'tib, $7x+4y+3=0$ to'g'ri chiziqqa parallel bo'lgan to'g'ri chiziqning tenglamasini yozing.
87. $A(1,-2)$ nuqtadan o'tib, $3x+4y-2=0$ to'g'ri chiziqqa parallel bo'lgan to'g'ri chiziq tenglamasini yozing.
88. $A(2,-3)$ nuqtadan o'tib, $7x+4y-5=0$ to'g'ri chiziqqa parallel bo'lgan to'g'ri chiziq tenglamasini yozing.
89. $A(3,-6), B(-5,2), C(4,-7)$ uchburchakning uchlari bo'lsa, A uchidan tushirilgan medianasining tenglamasini tuzing.
90. $A(3,-6), B(-5,2), C(4,-7)$ uchburchakning uchlari bo'lsa, C uchidan tushirilgan medianasining tenglamasini tuzing.
91. Uchlari $O(0;0), A(8;0)$ va $B(0;6)$ nuqtalarda bo'lgan uchburchakning medianalarining tenglamasini tuzing.
92. Uchlari $A(4;2), B(5;7)$ va $C(-3;4)$ nuqtalarda bo'lgan uchburchakning har bir medianasining uzunligini toping.
93. Uchburchakning ikki tomonining tenglamasi: $3x-y+8=0, 3x+5y-1=0$. Medianalarining kesishgan nuqtasi $M\left(-\frac{7}{3}; -1\right)$ ni bilgan holda, uning uchinchi tomonining tenglamasini toping.
94. $(7, n)$ nuqtadan o'tib, $3x-2y+4=0$ to'g'ri chiziqqa perpendikulyar bo'lgan to'g'ri chiziq tenglamasini tuzing (n - variant nomeri).
95. $M(-1,3)$ nuqtasidan o'tuvchi $x+2y-4=0$ to'g'risiga perpendikulyar bo'lgan to'g'ri chiziqning tenglamasini yozing.
96. Agar to'rtburchak tomonlarining tenglamasi mos holda $x=4, y=5, y=x, y=2x$ bo'lsa, uning diagonallarining tenglamasini tuzing.

97. $M(2,-1)$, $N(3,1)$ nuqtalardan o'tuvchi to'g'ri chiziq tenglamasini yozing.
98. Ikki nuqtadan o'tuvchi to'g'ri chiziqning tenglamasini tuzing: $M(2,-1)$, $N(3,n)$ (n - variant nomeri)
99. $2x-5y-1=0$ va $x+4y-7=0$ to'g'ri chiziqlarning kesisish nuqtasidan o'tuvchi, $A(4;-3)$ va $B(-1;2)$ nuqtalar orasidagi kesmani $\lambda = \frac{2}{3}$ nisbatta bo'luvchi to'g'ri chiziq tenglamasini tuzing.
100. Uchlari $A(4;2)$, $B(5;7)$ va $C(-3;4)$ nuqtalarda bo'lgan uchburchakning har bir medianasining uzunligini toping.
101. $5x-3y+15=0$ to'g'ri chiziqni kesma ko'rinishidagi tenglamasiga keltiring va yasang.
102. $6x-8y-15=0$ to'g'ri chiziq berilgan. Bu to'g'ri chiziqqa parallel va unnan $d=4$ masofada joylashgan to'g'ri chiziq tenglamasini tuzing.
103. $x-y+3=0$ va $7x-y-7=0$ to'g'ri chiziqlar orasidagi burchak topilsin.
104. $x-2y+3=0$, $2x+y-5=0$ to'g'ri chiziqlar orasidagi burchak topilsin.
105. $M(-2;-6)$ va $N(8;2)$ nuqtalari orqali o'tadigan to'g'ri chiziqning ordinata o'qi bilan kesisish nuqtasini toping.
106. Agar $x = \pm 8$ to'g'ri chiziqlar katta o'qi 12 ga teng bo'lgan ellipsning direktrisalari bo'lsa, ushbu ellipsning tenglamasini tuzing.
107. $M(0,4)$ nuqta orqali o'tuvchi fokuslari orasidagi masofa 6 ga teng bo'lgan ellipsning kanonik tenglamasini tuzing.
108. Katta o'qi 26 va eksentrisiteti $e = \frac{12}{13}$ bo'lgan ellipsning tenglamasini tuzing.
109. $A\left(4, \frac{9}{5}\right)$, $B\left(\frac{5\sqrt{5}}{3}, 2\right)$ nuqtalaridan o'tuvchi ellips tenglamasini tuzing.
110. $M(0,4)$ nuqta orqali o'tuvchi fokuslari orasidagi masofa 8 ga teng bo'lgan ellipsning kanonik tenglamasini tuzing.
111. $\frac{x^2}{25} + \frac{y^2}{16} = 1$ ellipsi berilgan, uning o'qlarining uzunligini, fokuslarining koordinatalarini va eksentrisitetini hisoblang.
112. $\frac{x^2}{6} + \frac{y^2}{3} = 1$ ellipsning o'qlarini toping.
113. $M(-1;2)$ nuqta orqali o'tuvchi fokuslari orasidagi masofa 10 ga teng bo'lgan ellipsning kanonik tenglamasini tuzing.
114. Katta o'qi 26 va eksentrisiteti $e = \frac{12}{13}$ bo'lgan ellipsning tenglamasini tuzing.
115. Katta o'qi 4 birlikga teng, fokuslari $F_1(1,0)$, $F_2(-1,0)$ nuqtalarda bo'lgan ellipsning tenglamasi tuzilsin.
116. $\frac{x^2}{9} - \frac{y^2}{16} = 1$ giperbolaning eksentrisiteti va direktrisasi topilsin.
117. Giperbolaning $F_1(20,0)$, $F_2(-20,0)$ fokuslari va uning $A(24,6\sqrt{5})$ nuqtasini bilgan holda uning tenglamasini tuzing.
118. $\frac{x^2}{6} - \frac{y^2}{4} = 1$ giperbolaning o'qlarini aniqlang.
119. Quyidagilar berilsa, giperbolaning tenglamasini tuzing, $2b=6$ giperbola $A(9;-4)$ nuqtadan o'tadi.
120. $4x^2 - 9y^2 = 144$ giperbolaning eksentrisitetini, fokuslarining koordinatalarini toping.