



Simultaneous Equations - 3 Variables

SOLUTIONS



Tutorial
COLLEGE

1. $x = 1, y = 2, z = 3$
2. $x = 2, y = 1, z = -1$
3. $x = 3, y = 0, z = -2$
4. $x = 6, y = -2, z = -3$
5. $x = 3, y = -2, z = 1$ (S*)
6. $x = -2, y = 2, z = -2$
7. $x = 0, y = 2, z = 3$
8. $x = 2, y = 1, z = 3$
9. $x = 6, y = 4, z = 12$ (S*)
10. $x = 3, y = 8, z = -2$
11. $x = 12, y = -10, z = 3$





Question 5

$$[1] \quad 2x - 3y + 4z = 16$$

$$[2] \quad x + 3y - 2z = -5$$

$$[3] \quad 3x - 2y + 3z = 16$$

$$[1] \quad 2x - 3y + 4z = 16$$

$$[2] \quad x + 3y - 2z = -5$$

$$[A] \quad 3x + 2z = 11$$

$$[2](\times 2) \quad 2x + 6y - 4z = -10$$

$$[3](\times 3) \quad 9x - 6y + 9z = 48$$

$$[B] \quad 11x + 5z = 38$$

$$[A] \quad 3x + 2z = 11 \quad (\times 5)$$

$$[B] \quad 11x + 5z = 38 \quad (\times -2)$$

$$[A](\times 5) \quad 15x + 10z = 55$$

$$[B](\times -2) \quad -22x - 10z = -76$$

$$-7x = -21$$

$$x = 3$$

$$[A] \quad 3(3) + 2z = 11$$

$$2z = 11 - 9$$

$$2z = 2$$

$$z = 1$$

$$[2] \quad (3) + 3y - 2(1) = -5$$

$$3y = -5 - 3 + 2$$

$$3y = -6$$

$$y = -2$$





Question 9

$$[1] \quad \frac{x}{3} + \frac{y}{2} + z = 7 \quad (\times 12)$$

$$[2] \quad \frac{x}{2} + y + \frac{z}{3} = 11 \quad (\times 6)$$

$$[3] \quad \frac{x}{6} + \frac{y}{4} + \frac{z}{6} = 4 \quad (\times 12)$$

$$[1] \quad 4x + 6y + 3z = 84$$

$$[2] \quad 3x + 6y + 2z = 66$$

$$[3] \quad 2x + 3y + 2z = 48$$

$$[2] \quad 3x + 6y + 2z = 66$$

$$[3](\times -1) \quad -2x - 3y - 2z = -48$$

$$[A] \quad x + 3y = 18$$

$$[1](\times 2) \quad 8x + 12y + 6z = 168$$

$$[3](\times -3) \quad -6x - 9y - 6z = -144$$

$$[B] \quad 2x + 3y = 24$$

$$[A] \quad x + 3y = 18$$

$$[B] \quad 2x + 3y = 24 \quad (\times -1)$$

$$[A] \quad x + 3y = 18$$

$$[B](\times -1) \quad -2x - 3y = -24$$

$$-x = -6$$

$$x = 6$$

$$[A] \quad (6) + 3y = 18$$

$$3y = 18 - 6$$

$$3y = 12$$

$$y = 4$$

$$[3] \quad 2(6) + 3(4) + 2z = 48$$

$$2z = 48 - 12 - 12$$

$$2z = 24$$

$$z = 12$$

