

# Solving System of Three Equations

Solve.

$$\begin{aligned} \boxed{1} \quad & 6x - y + 3z = -9 \\ & 5x + 5y - 5z = 20 \\ & 3x - y + 4z = -5 \end{aligned}$$

$$\begin{aligned} \boxed{2} \quad & 2x + 2y + 2z = -14 \\ & 4x - 9y + 6z = 19 \\ & -3x + 2y + 4z = 34 \end{aligned}$$

$$\begin{aligned} \boxed{3} \quad & 6a + 6c + 2v = 52 \\ & 6a + 3c + v = 41 \\ & 5a + 2c + 4v = 39 \end{aligned}$$

$$\begin{aligned} \boxed{4} \quad & x + y + z = 30 \\ & x + y - 2z = -76 \\ & 3x + 3y + z = 3 \end{aligned}$$

$$\begin{aligned} \boxed{5} \quad & 2x - 3y - z = -17 \\ & 6x + 5y + z = -3 \\ & 2x + 2y + 2z = 8 \end{aligned}$$

$$\begin{aligned} \boxed{6} \quad & -2u - v - 4w = 6 \\ & -4u - 2w = -10 \\ & 5u + v + 6w = -1 \end{aligned}$$

$$\begin{aligned} \boxed{7} \quad & -5x - 3y + z = -4 \\ & -2x - 2y + 2z = 4 \\ & z = x + 5 \end{aligned}$$

$$\begin{aligned} \boxed{8} \quad & -5r - 5 - 3t = -32 \\ & -19 = -6r - 5s + 3t \\ & -2r - 9s = 24 - 9t \end{aligned}$$

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## Answers

$$\begin{aligned} \boxed{1} \quad & 6x - y + 3z = -9 \\ & 5x + 5y - 5z = 20 \\ & 3x - y + 4z = -5 \end{aligned}$$

$$x = -1, y = 6, z = 1$$

$$\begin{aligned} \boxed{3} \quad & 6a + 6c + 2v = 52 \\ & 6a + 3c + v = 41 \\ & 5a + 2c + 4v = 39 \end{aligned}$$

$$a = 5, c = 3, v = 2$$

$$\begin{aligned} \boxed{5} \quad & 2x - 3y - z = -17 \\ & 6x + 5y + z = -3 \\ & 2x + 2y + 2z = 8 \end{aligned}$$

$$x = -3, y = 2, z = 5$$

$$\begin{aligned} \boxed{7} \quad & -5x - 3y + z = -4 \\ & -2x - 2y + 2z = 4 \\ & z = x + 5 \end{aligned}$$

$$x = 0, y = 3, z = 5$$

$$\begin{aligned} \boxed{2} \quad & 2x + 2y + 2z = -14 \\ & 4x - 9y + 6z = 19 \\ & -3x + 2y + 4z = 34 \end{aligned}$$

$$x = -8, y = -3, z = 4$$

$$\begin{aligned} \boxed{4} \quad & x + y + z = 30 \\ & x + y - 2z = -76 \\ & 3x + 3y + z = 3 \end{aligned}$$

No solution

$$\begin{aligned} \boxed{6} \quad & -2u - v - 4w = 6 \\ & -4u - 2w = -10 \\ & 5u + v + 6w = -1 \end{aligned}$$

$$u = 5, v = 4, w = -5$$

$$\begin{aligned} \boxed{8} \quad & -5r - 5 - 3t = -32 \\ & -19 = -6r - 5s + 3t \\ & -2r - 9s = 24 - 9t \end{aligned}$$

$$r = -\frac{129}{14}, s = -\frac{155}{14}, t = -\frac{89}{14}$$