

Solving Systems of Three Equations

Solve the following linear systems of equations by elimination

$$\begin{aligned} \text{①} \quad & 3x + 3y - 3z = 21 \\ & 5x - 4y - 2z = 2 \\ & 4x + 2y - 3z = 21 \end{aligned}$$

$$\begin{aligned} \text{②} \quad & 6r - s + 3t = -9 \\ & 5r + 5s - 5t = 2 \\ & 3r - s + 4t = 21 \end{aligned}$$

$$\begin{aligned} \text{③} \quad & -6x - 2y - z = -17 \\ & 5x + y - 6z = 19 \\ & -4x - 6y - 6z = -20 \end{aligned}$$

$$\begin{aligned} \text{④} \quad & x + 3y - 3z = 12 \\ & 3x - y + 4z = 0 \\ & -x + 2y - z = 1 \end{aligned}$$

$$\begin{aligned} \text{⑤} \quad & -3x - 5y - 2z = -23 \\ & 6x - y + z = -14 \\ & -4x - y - 6z = 10 \end{aligned}$$

$$\begin{aligned} \text{⑥} \quad & 3x + 3y - 3z = 21 \\ & 5x - 4y - 2z = 2 \\ & 4x + 2y - 3z = 21 \end{aligned}$$

$$\begin{aligned} \text{⑦} \quad & -x - 2y + 4z = 14 \\ & -2x - 4y - 3z = 27 \\ & 4x - 6y + 2z = 26 \end{aligned}$$

$$\begin{aligned} \text{⑧} \quad & x + y + z = 3 \\ & 2x - y - z = 0 \\ & x + 2y - z = -1 \end{aligned}$$

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Answers

$$\begin{aligned} \text{①} \quad & 3x + 3y - 3z = 21 \\ & 5x - 4y - 2z = 2 \\ & 4x + 2y - 3z = 21 \end{aligned}$$

(4, 4, 1)

$$\begin{aligned} \text{③} \quad & -6x - 2y - z = -17 \\ & 5x + y - 6z = 19 \\ & -4x - 6y - 6z = -20 \end{aligned}$$

(2, 3, -1)

$$\begin{aligned} \text{⑤} \quad & -3x - 5y - 2z = -23 \\ & 6x - y + z = -14 \\ & -4x - y - 6z = 10 \end{aligned}$$

(-1, 6, -2)

$$\begin{aligned} \text{⑦} \quad & -x - 2y + 4z = 14 \\ & -2x - 4y - 3z = 27 \\ & 4x - 6y + 2z = 26 \end{aligned}$$

(-3, -6, 1)

$$\begin{aligned} \text{②} \quad & 6r - s + 3t = -9 \\ & 5r + 5s - 5t = 2 \\ & 3r - s + 4t = 21 \end{aligned}$$

(-1, 6, 1)

$$\begin{aligned} \text{④} \quad & x + 3y - 3z = 12 \\ & 3x - y + 4z = 0 \\ & -x + 2y - z = 1 \end{aligned}$$

(3, 1, -2)

$$\begin{aligned} \text{⑥} \quad & 3x + 3y - 3z = 21 \\ & 5x - 4y - 2z = 2 \\ & 4x + 2y - 3z = 21 \end{aligned}$$

(4, 2, 6)

$$\begin{aligned} \text{⑧} \quad & x + y + z = 3 \\ & 2x - y - z = 0 \\ & x + 2y - z = -1 \end{aligned}$$

(1, 0, 2)