

Solving Systems of Three Equations w/ Elimination

Date _____ Period _____

Solve each system by elimination.

$$\begin{aligned} 1) \quad & -x - 5y - 5z = 2 \\ & 4x - 5y + 4z = 19 \\ & x + 5y - z = -20 \end{aligned}$$

$$\begin{aligned} 2) \quad & -4x - 5y - z = 18 \\ & -2x - 5y - 2z = 12 \\ & -2x + 5y + 2z = 4 \end{aligned}$$

$$\begin{aligned} 3) \quad & -x - 5y + z = 17 \\ & -5x - 5y + 5z = 5 \\ & 2x + 5y - 3z = -10 \end{aligned}$$

$$\begin{aligned} 4) \quad & 4x + 4y + z = 24 \\ & 2x - 4y + z = 0 \\ & 5x - 4y - 5z = 12 \end{aligned}$$

$$\begin{aligned} 5) \quad & 4x - y + 6z = 27 \\ & -4x - 2y + 3z = 21 \\ & 4x - 6y + 2z = 12 \end{aligned}$$

$$\begin{aligned} 6) \quad & -5a - b - 3c = -17 \\ & -2a - b + 6c = 1 \\ & -6a - b + 3c = -14 \end{aligned}$$

$$\begin{aligned} 7) \quad & 3x - 6y + 5z = 2 \\ & 3x + 3y - z = 5 \\ & 5x + 6y + 5z = -6 \end{aligned}$$

$$\begin{aligned} 8) \quad & -4x - 2y + z = -19 \\ & -6x + 2y - 6z = -8 \\ & -4x + 2y - 5z = -6 \end{aligned}$$

$$\begin{aligned} 9) \quad & 6x - 6y - 4z = -10 \\ & -5x + 4y - z = -12 \\ & 2x + 3y - 2z = 9 \end{aligned}$$

$$\begin{aligned} 10) \quad & 3r + 2s + 3t = 23 \\ & -r - 4s + 4t = -21 \\ & 3r + s - t = 19 \end{aligned}$$

$$\begin{aligned} 11) \quad & -x + 2z = -9 \\ & -x - 3y - 4z = 2 \\ & -3x - 2y + 2z = 17 \end{aligned}$$

$$\begin{aligned} 12) \quad & 2y + 2z = 6 \\ & -6x + 5y + 2z = 12 \\ & -4x - y - z = 1 \end{aligned}$$

Critical thinking question:

13) Write a system of equations with the solution $(2, 1, 0)$.

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Solve each system by elimination.

$$\begin{aligned} 1) \quad & -x - 5y - 5z = 2 \\ & 4x - 5y + 4z = 19 \\ & x + 5y - z = -20 \end{aligned}$$

$$(-2, -3, 3)$$

$$\begin{aligned} 2) \quad & -4x - 5y - z = 18 \\ & -2x - 5y - 2z = 12 \\ & -2x + 5y + 2z = 4 \end{aligned}$$

$$(-4, 0, -2)$$

$$\begin{aligned} 3) \quad & -x - 5y + z = 17 \\ & -5x - 5y + 5z = 5 \\ & 2x + 5y - 3z = -10 \end{aligned}$$

$$(-1, -4, -4)$$

$$\begin{aligned} 4) \quad & 4x + 4y + z = 24 \\ & 2x - 4y + z = 0 \\ & 5x - 4y - 5z = 12 \end{aligned}$$

$$(4, 2, 0)$$

$$\begin{aligned} 5) \quad & 4x - y + 6z = 27 \\ & -4x - 2y + 3z = 21 \\ & 4x - 6y + 2z = 12 \end{aligned}$$

$$(-1, -1, 5)$$

$$\begin{aligned} 6) \quad & -5a - b - 3c = -17 \\ & -2a - b + 6c = 1 \\ & -6a - b + 3c = -14 \end{aligned}$$

$$(3, -1, 1)$$

$$\begin{aligned} 7) \quad & 3x - 6y + 5z = 2 \\ & 3x + 3y - z = 5 \\ & 5x + 6y + 5z = -6 \end{aligned}$$

$(2, -1, -2)$

$$\begin{aligned} 8) \quad & -4x - 2y + z = -19 \\ & -6x + 2y - 6z = -8 \\ & -4x + 2y - 5z = -6 \end{aligned}$$

No unique solution

$$\begin{aligned} 9) \quad & 6x - 6y - 4z = -10 \\ & -5x + 4y - z = -12 \\ & 2x + 3y - 2z = 9 \end{aligned}$$

$(4, 3, 4)$

$$\begin{aligned} 10) \quad & 3r + 2s + 3t = 23 \\ & -r - 4s + 4t = -21 \\ & 3r + s - t = 19 \end{aligned}$$

$(5, 4, 0)$

$$\begin{aligned} 11) \quad & -x + 2z = -9 \\ & -x - 3y - 4z = 2 \\ & -3x - 2y + 2z = 17 \end{aligned}$$

No unique solution

$$\begin{aligned} 12) \quad & 2y + 2z = 6 \\ & -6x + 5y + 2z = 12 \\ & -4x - y - z = 1 \end{aligned}$$

$(-1, 0, 3)$

Critical thinking question:

13) Write a system of equations with the solution $(2, 1, 0)$.

Many answers. Ex: $x + y + z = 3$, $2x + y + z = 5$, $x + 2y - z = 4$