

Solving Systems of Three Equations w/ Substitution Date _____ Period _____

Solve each system by substitution.

$$\begin{aligned} 1) \quad & -x - y - 3z = -9 \\ & z = -3x - 1 \\ & x = 5y - z + 23 \end{aligned}$$

$$\begin{aligned} 2) \quad & x = -4z - 19 \\ & y = 5x + z - 4 \\ & -5y - z = 25 \end{aligned}$$

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

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

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

$$\begin{aligned} 6) \quad & x = 3y - 3z + 8 \\ & z = 4x + 5y - 14 \\ & 3y + 2z = 14 \end{aligned}$$

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

$$\begin{aligned} 8) \quad & -4x + 2z = 14 \\ & y = x + z + 12 \\ & -2x - 4z = 22 \end{aligned}$$

$$\begin{aligned} 9) \quad & 3x - 3y = -6 \\ & z = -3x - 3y + 9 \\ & -4x + 5y + z = 8 \end{aligned}$$

$$\begin{aligned} 10) \quad & x = -5y + 4z + 1 \\ & x - 2y + 3z = 1 \\ & 2x + 3y - z = 2 \end{aligned}$$

$$\begin{aligned} 11) \quad & a - 2b + c = -6 \\ & a + 5c = -12 \\ & -a + 6b + 4c = 3 \end{aligned}$$

$$\begin{aligned} 12) \quad & -2x + 3y + 5z = -21 \\ & -4z = 20 \\ & 6x - 3y = 0 \end{aligned}$$

$$\begin{aligned} 13) \quad & 2x - 4z = 20 \\ & -3x + y - 4z = 20 \\ & -4x + 2y + 3z = -15 \end{aligned}$$

$$\begin{aligned} 14) \quad & x + 3y = -17 \\ & 3x = -6 \\ & 4x - 3y + 6z = 25 \end{aligned}$$

$$\begin{aligned} 15) \quad & 5r + 4s - 6t = -24 \\ & -2s + 2t = 0 \\ & s - t = 2 \end{aligned}$$

$$\begin{aligned} 16) \quad & -5r + 5s + 3t = -23 \\ & -5r + 3s - 3t = -11 \\ & -6r + 6t = -12 \end{aligned}$$

Solving Systems of Three Equations w/ Substitution Date _____ Period _____

Solve each system by substitution.

1) $-x - y - 3z = -9$

$z = -3x - 1$

$x = 5y - z + 23$

$(-2, -4, 5)$

2) $x = -4z - 19$

$y = 5x + z - 4$

$-5y - z = 25$

$(1, -4, -5)$

3) $y = x + z + 5$

$z = -3y - 3$

$2x - y = -4$

$(-2, 0, -3)$

4) $-2y + 5z = -3$

$y = -5x - 4z - 5$

$x = 4z + 4$

$(0, -1, -1)$

5) $y = x + 4z - 5$

$4x + 3y - 2z = 5$

$z = -2x + 2$

$(0, 3, 2)$

6) $x = 3y - 3z + 8$

$z = 4x + 5y - 14$

$3y + 2z = 14$

$(2, 2, 4)$

7) $-5x - 3y + z = -4$

$-2x - 2y + 2z = 4$

$z = x + 5$

$(0, 3, 5)$

8) $-4x + 2z = 14$

$y = x + z + 12$

$-2x - 4z = 22$

$(-5, 4, -3)$

$$\begin{aligned} 9) \quad & 3x - 3y = -6 \\ & z = -3x - 3y + 9 \\ & -4x + 5y + z = 8 \end{aligned}$$

$(1, 3, -3)$

$$\begin{aligned} 10) \quad & x = -5y + 4z + 1 \\ & x - 2y + 3z = 1 \\ & 2x + 3y - z = 2 \end{aligned}$$

No unique solution

$$\begin{aligned} 11) \quad & a - 2b + c = -6 \\ & a + 5c = -12 \\ & -a + 6b + 4c = 3 \end{aligned}$$

$(3, 3, -3)$

$$\begin{aligned} 12) \quad & -2x + 3y + 5z = -21 \\ & -4z = 20 \\ & 6x - 3y = 0 \end{aligned}$$

$(1, 2, -5)$

$$\begin{aligned} 13) \quad & 2x - 4z = 20 \\ & -3x + y - 4z = 20 \\ & -4x + 2y + 3z = -15 \end{aligned}$$

$(0, 0, -5)$

$$\begin{aligned} 14) \quad & x + 3y = -17 \\ & 3x = -6 \\ & 4x - 3y + 6z = 25 \end{aligned}$$

$(-2, -5, 3)$

$$\begin{aligned} 15) \quad & 5r + 4s - 6t = -24 \\ & -2s + 2t = 0 \\ & s - t = 2 \end{aligned}$$

No unique solution

$$\begin{aligned} 16) \quad & -5r + 5s + 3t = -23 \\ & -5r + 3s - 3t = -11 \\ & -6r + 6t = -12 \end{aligned}$$

$(1, -3, -1)$