

## 3x3 Systems of Equations

Date \_\_\_\_\_ Period \_\_\_\_\_

**Solve each system by substitution.**

$$\begin{aligned} 1) \quad & -2a - b - 5c = 1 \\ & -2b - 2c = 6 \\ & b = -6a - c + 15 \end{aligned}$$

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

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

$$\begin{aligned} 4) \quad & x - 3y + 2z = 17 \\ & 2x + 4y = -8 \\ & 4x + 6y + z = -8 \end{aligned}$$

**Solve each system by elimination.**

$$\begin{aligned} 5) \quad & 3x + 4y - z = -21 \\ & -3x - 4y - 5z = 3 \\ & -4y + z = 15 \end{aligned}$$

$$\begin{aligned} 6) \quad & 2r + 5s + 3t = 19 \\ & -r - 2t = 8 \\ & -r - 5s - t = -27 \end{aligned}$$

$$\begin{aligned} 7) \quad & -2r - 2s + 2t = -12 \\ & -6r - 6s + 6t = 24 \\ & 2r - 6s + 4t = -18 \end{aligned}$$

$$\begin{aligned} 8) \quad & r + 4s - 6t = 7 \\ & 4r - 2s + t = -8 \\ & -4r + 3s - 4t = 10 \end{aligned}$$

$$\begin{aligned} 9) \quad & -4a - 3b + 4c = -9 \\ & -2a - 4b + 6c = 0 \\ & -6a - 2b + 2c = -18 \end{aligned}$$

$$\begin{aligned} 10) \quad & -6x + 6y - 6z = -30 \\ & -5x + 5y + 3z = -9 \\ & 3x + 4y - 5z = 20 \end{aligned}$$

**Solve each system.**

$$\begin{aligned} 11) \quad & -x - 5y - 2z = 12 \\ & -2x + 3y = -1 \\ & 3x + y + 2z = -10 \end{aligned}$$

$$\begin{aligned} 12) \quad & x = 5z - 27 \\ & x - 4y + 2z = -9 \\ & y = -2x + 4z - 12 \end{aligned}$$

$$\begin{aligned} 13) \quad & a - 4b + 4c = -9 \\ & -4a + 4b + c = 12 \\ & 2b - 4c = 4 \end{aligned}$$

$$\begin{aligned} 14) \quad & -a - 6b + 6c = -10 \\ & 4c = -12 \\ & a + 6b - 3c = -1 \end{aligned}$$

$$\begin{aligned} 15) \quad & 4x + 6y + 2z = -22 \\ & -5x - 2y = 22 \\ & -5x - 4z = 20 \end{aligned}$$

$$\begin{aligned} 16) \quad & 2y - 4z = -4 \\ & 3x - 6y + z = -26 \\ & -x + 5y - 6z = 4 \end{aligned}$$

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$$(3, -2, -1)$$

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

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

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$$(6, -3, 4)$$

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Infinitely many solutions

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No solution

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$$\begin{aligned} 15) \quad & 4x + 6y + 2z = -22 \\ & -5x - 2y = 22 \\ & -5x - 4z = 20 \end{aligned}$$

$$(-4, -1, 0)$$

$$\begin{aligned} 16) \quad & 2y - 4z = -4 \\ & 3x - 6y + z = -26 \\ & -x + 5y - 6z = 4 \end{aligned}$$

$$(2, 6, 4)$$