

Solving Systems of Three Equations w/ Cramer's Rule Date _____ Period _____

Use Cramer's Rule to solve each system.

$$\begin{aligned} 1) \quad & -2x - 5y + 4z = 21 \\ & -5x - 5y + z = 21 \\ & -4y - 4z = 8 \end{aligned}$$

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

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

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

$$\begin{aligned} 5) \quad & x - 3y + z = -7 \\ & -4x - 6z = 4 \\ & 2x + 3y + 2z = 4 \end{aligned}$$

$$\begin{aligned} 6) \quad & 6x + 3y - 3z = -18 \\ & 6x + y + 4z = -28 \\ & 5z = -10 \end{aligned}$$

$$\begin{aligned} 7) \quad & -12x - 4y + 4z = -21 \\ & -4z = 6 \\ & 12x + 12y + 4z = -1 \end{aligned}$$

$$\begin{aligned} 8) \quad & 4x + 5y = -6 \\ & 10x - 30y + 50z = -27 \\ & 4x + 4y + z = -6 \end{aligned}$$

$$\begin{aligned} 9) \quad & 36x - 6y + 6z = -1 \\ & 12x + 6z = -3 \\ & 18x - 6y + 6z = -1 \end{aligned}$$

$$\begin{aligned} 10) \quad & -2x + y - 4z = 4 \\ & 5x - 2y = 18 \\ & x - 5z = 17 \end{aligned}$$

$$\begin{aligned} 11) \quad & -3z = 6 \\ & 2x + y - 2z = 6 \\ & -6x - 3y = -6 \end{aligned}$$

$$\begin{aligned} 12) \quad & 6y + 6z = -30 \\ & 4x - 6y - 3z = 26 \\ & x + y + z = -3 \end{aligned}$$

$$\begin{aligned} 13) \quad & -6x - y + z = -7 \\ & 4z = -6 \\ & 4x - 24y + 24z = 17 \end{aligned}$$

$$\begin{aligned} 14) \quad & 3x + 6y = -4 \\ & x + y - z = -2 \\ & 9x - 12y + 15z = 28 \end{aligned}$$

$$\begin{aligned} 15) \quad & 5x + 5y + 30z = 24 \\ & 5x - 5y - 20z = -11 \\ & -4y + 10z = 1 \end{aligned}$$

$$\begin{aligned} 16) \quad & 3x - 1 = 3z \\ & 4 = 6y - 3z - 3x \\ & -2x + 6z = 10y - 7 \end{aligned}$$

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Use Cramer's Rule to solve each system.

1) $-2x - 5y + 4z = 21$

$-5x - 5y + z = 21$

$-4y - 4z = 8$

$(-1, -3, 1)$

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

$-3y - 6z = -21$

$-x - y - z = -6$

$(5, -5, 6)$

3) $-4x - 6z = -12$

$-6x - 4y - 2z = 6$

$-x + 2y + z = 9$

$(-3, 1, 4)$

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

$4x + 2y = 14$

$-3y + z = -10$

No solution

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

$-4x - 6z = 4$

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

$(-1, 2, 0)$

6) $6x + 3y - 3z = -18$

$6x + y + 4z = -28$

$5z = -10$

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

7) $-12x - 4y + 4z = -21$

$-4z = 6$

$12x + 12y + 4z = -1$

$\left(\frac{5}{3}, -\frac{5}{4}, -\frac{3}{2}\right)$

8) $4x + 5y = -6$

$10x - 30y + 50z = -27$

$4x + 4y + z = -6$

$\left(\frac{1}{2}, -\frac{8}{5}, -\frac{8}{5}\right)$

$$\begin{aligned} 9) \quad & 36x - 6y + 6z = -1 \\ & 12x + 6z = -3 \\ & 18x - 6y + 6z = -1 \end{aligned}$$

$$\left(0, -\frac{1}{3}, -\frac{1}{2}\right)$$

$$\begin{aligned} 10) \quad & -2x + y - 4z = 4 \\ & 5x - 2y = 18 \\ & x - 5z = 17 \end{aligned}$$

$$(2, -4, -3)$$

$$\begin{aligned} 11) \quad & -3z = 6 \\ & 2x + y - 2z = 6 \\ & -6x - 3y = -6 \end{aligned}$$

Infinitely many solutions

$$\begin{aligned} 12) \quad & 6y + 6z = -30 \\ & 4x - 6y - 3z = 26 \\ & x + y + z = -3 \end{aligned}$$

$$(2, -1, -4)$$

$$\begin{aligned} 13) \quad & -6x - y + z = -7 \\ & 4z = -6 \\ & 4x - 24y + 24z = 17 \end{aligned}$$

$$\left(\frac{5}{4}, -2, -\frac{3}{2}\right)$$

$$\begin{aligned} 14) \quad & 3x + 6y = -4 \\ & x + y - z = -2 \\ & 9x - 12y + 15z = 28 \end{aligned}$$

$$\left(0, -\frac{2}{3}, \frac{4}{3}\right)$$

$$\begin{aligned} 15) \quad & 5x + 5y + 30z = 24 \\ & 5x - 5y - 20z = -11 \\ & -4y + 10z = 1 \end{aligned}$$

$$\left(\frac{4}{5}, 1, \frac{1}{2}\right)$$

$$\begin{aligned} 16) \quad & 3x - 1 = 3z \\ & 4 = 6y - 3z - 3x \\ & -2x + 6z = 10y - 7 \end{aligned}$$

$$\left(0, \frac{1}{2}, -\frac{1}{3}\right)$$