

## 8.3 Systems of Equations (Elimination) Answers

Solve each system by elimination.

$$\begin{array}{r}
 1) \quad -4x - 4y = 8 \\
 \quad -x + 4y = 12 \\
 \hline
 \quad -5x = 20 \\
 \quad x = -4 \\
 \quad -x + 4y = 12 \quad (-4, 2) \\
 \quad -(-4) + 4y = 12 \\
 \quad -4 \quad -4 \\
 \hline
 \quad \quad 4y = 8 \\
 \quad \quad y = 2
 \end{array}$$

$$\begin{array}{r}
 2) \quad 3x + 2y = -3 \\
 \quad -3x + y = 12 \\
 \hline
 \quad \quad 3y = 9 \\
 \quad \quad y = 3 \\
 \quad -3x + y = 12 \\
 \quad -3x + 3 = 12 \\
 \quad -3x = 9 \\
 \quad x = -3 \\
 \hline
 \boxed{(-3, 3)}
 \end{array}$$

$$\begin{array}{r}
 3) \quad \begin{array}{l} x - 2y = -9 \\ -4x - 2y = -4 \end{array} \\
 \quad -x + 2y = 9 \\
 \hline
 \quad -5x = 5 \\
 \quad x = -1 \\
 \hline
 \boxed{(-1, 4)} \\
 \begin{array}{l} x - 2y = -9 \\ -1 - 2y = -9 \\ -2y = -8 \\ y = 4 \end{array}
 \end{array}$$

$$\begin{array}{r}
 4) \quad \begin{array}{l} -2x + y = 4 \\ -2x + 2y = 0 \end{array} \\
 \quad 2x - y = -4 \\
 \hline
 \quad \quad y = -4 \\
 \hline
 \boxed{(-4, -4)} \\
 \begin{array}{l} -2x + y = 4 \\ -2x + (-4) = 4 \\ -2x = 8 \\ x = -4 \end{array}
 \end{array}$$

$$\begin{array}{r}
 5) \quad \begin{array}{l} -4x - y = 8 \\ -12x + 3y = -24 \end{array} \\
 \quad -12x - 3y = 24 \\
 \hline
 \quad -24x = 0 \\
 \quad x = 0 \\
 \quad -4x - y = 8 \\
 \quad -4(0) - y = 8 \\
 \quad -y = 8 \\
 \quad y = -8 \\
 \hline
 \boxed{(0, -8)}
 \end{array}$$

$$\begin{array}{r}
 6) \quad \begin{array}{l} -x + 4y = -1 \\ -2x - 8y = 14 \end{array} \\
 \quad -2x + 8y = -2 \\
 \hline
 \quad -4x = 12 \\
 \quad x = -3 \\
 \quad -x + 4y = -1 \\
 \quad 3 + 4y = -1 \\
 \quad 4y = -4 \\
 \quad y = -1 \\
 \hline
 \boxed{(-3, -1)}
 \end{array}$$

$$\begin{array}{l} 5 \downarrow \\ 7) [-6x + 3y = 3] \\ 6) [5x - 8y = -8] \end{array}$$

$$\begin{array}{r} -36x + 15y = 15 \\ 30x - 48y = -48 \\ \hline -33y = -33 \\ y = 1 \end{array} \quad \begin{array}{r} -6x + 3y = 3 \\ -6x + 3 = 3 \\ -6x = 0 \\ x = 0 \end{array}$$

$(0, 1)$

$$\begin{array}{l} 2 \downarrow \\ 8) [4x - 3y = -16] \\ 3) [5x + 2y = 3] \end{array}$$

$$\begin{array}{r} 8x - 6y = -32 \\ 15x + 6y = 9 \\ \hline 23x = -23 \\ x = -1 \end{array}$$

$(-1, 4)$

$$\begin{array}{r} 4x - 3y = -16 \\ 4(-1) - 3y = -16 \\ -4 - 3y = -16 \\ +4 \quad +4 \\ \hline -3y = -12 \\ y = 4 \end{array}$$

$$\begin{array}{l} -4 \downarrow \\ 9) [3x + 2y = 10] \\ 3) [4x + 5y = 18] \end{array}$$

$$\begin{array}{r} -12x - 8y = -40 \\ 12x + 15y = 54 \\ \hline 7y = 14 \\ y = 2 \end{array} \quad \begin{array}{r} 3x + 2y = 10 \\ 3x + 2(2) = 10 \\ 3x = 6 \\ x = 2 \end{array}$$

$(2, 2)$

$$\begin{array}{l} 2 \downarrow \\ 10) [-5x - 6y = -3] \\ 3) [2x + 4y = 6] \end{array}$$

$$\begin{array}{r} -10x - 12y = -6 \\ 6x + 12y = 18 \\ \hline -4x = 12 \\ x = -3 \end{array}$$

$(-3, 3)$

$$\begin{array}{r} 2x + 4y = 6 \\ 2(-3) + 4y = 6 \\ -6 + 4y = 6 \\ 4y = 12 \\ y = 3 \end{array}$$

11) Is the point (0, 0) a solution of the system of linear equations below?

$$\begin{array}{l} 2x + y = 2 \\ 4x - 2y = 2 \end{array}$$

$$2(0) + 0 = 2$$

$$0 = 2?$$

No!

12) Is the point  $(\frac{5}{4}, 7)$  a solution of the system of linear equations below?

$$\begin{array}{l} 4x + y = 12 \\ -4x + 3y = 16 \end{array}$$

$$4(\frac{5}{4}) + 7 = 12$$

$$5 + 7 = 12$$

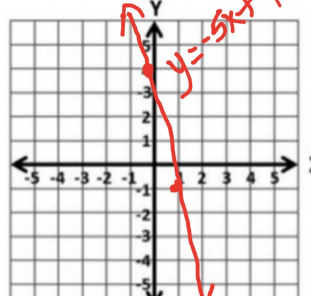
$$12 = 12$$

$$-4(\frac{5}{4}) + 3(7) = 16$$

$$-5 + 21 = 16$$

$$16 = 16$$

yes!

Solve for x.	Evaluate if x = -1	Graph and label each line.
1. $-12x = 3(x - 2)$ $-12x = 3x - 6$ $-15x = -6$ $x = \frac{2}{5}$	3. $2x^3 - 3x$ $2(-1)^3 - 3(-1)$ $-2 + 3 = 1$	5. Graph the line $y = -5x + 4$ 
2. $-28 = -1 - \frac{x}{4}$	4. $6 - 5x^4$	6. Graph the line $y = -\frac{1}{2}x + 2$