

Warm-Up Solve by Elimination

$$1) \begin{cases} x + 6y = 48 \\ -x + y = 8 \end{cases}$$

~~$$\begin{array}{r} x + 6y = 48 \\ -x + y = 8 \\ \hline 0x + 7y = 56 \\ 7y = 56 \\ \hline y = 8 \end{array}$$~~

$$\begin{array}{r} 1x + 6(8) = 48 \\ 1x + 48 = 48 \\ -48 \quad -48 \\ \hline 1x = 0 \\ \hline x = 0 \end{array}$$

Solution (0, 8)

$$2) \begin{cases} -9x + 3y = -51 \\ -7x + 3y = -37 \end{cases}$$

~~$$\begin{array}{r} -9x + 3y = -51 \\ -7x + 3y = -37 \\ \ominus \\ \hline -2x + 0y = -14 \\ \hline -2x = -14 \\ \hline x = 7 \end{array}$$~~

Solution (7, 4)

$$\begin{array}{r} -9(7) + 3y = -51 \\ -63 + 3y = -51 \\ +63 \quad +63 \\ \hline 3y = 12 \\ \hline y = 4 \end{array}$$

HW Answers

1) (-1, 3) 2) (2.3, -1)

3) (-1, -2) 4) (-2, -1)

5) (0, -5)

$$6) \begin{array}{r} 1x - 2y = 5 \\ \ominus 3x - 2y = 9 \\ \hline -2x + 0y = -4 \\ \hline -2x = -4 \\ \hline x = 2 \end{array}$$

(2, -1.5)

Elimination (Day 2)

What if the numbers were not the same?

Consider this:

$$3 \cdot 5 = 5 \cdot 3$$

$$15 = 15$$

Ex 1

$$\begin{cases} 2 \cdot (7x + 4y = -4) \\ 5x + 8y = 28 \end{cases} \rightarrow \begin{array}{r} 14x + 8y = -8 \\ \ominus \quad 5x + 8y = 28 \\ \hline 9x \quad 0y = -36 \\ \frac{9x}{9} = \frac{-36}{9} \\ x = -4 \end{array}$$

$$\begin{array}{l} 5(-4) + 8y = 28 \\ -20 + 8y = 28 \\ +20 \quad +20 \\ \hline 8y = 48 \\ \frac{8y}{8} = \frac{48}{8} \\ y = 6 \end{array}$$

$(-4, 6)$

Ex 2

$$\begin{array}{r}
 5. (2x + 5y = -22) \rightarrow 10x + 25y = -110 \\
 10x + 3y = 22 \quad \ominus \quad 10x + 3y = 22 \\
 \hline
 0x \quad \frac{22y}{22} = \frac{-132}{22} \\
 y = -6
 \end{array}$$

$(4, -6)$

$$\begin{array}{r}
 10x + 3(-6) = 22 \\
 10x - 18 = 22 \\
 \quad +18 \quad +18 \\
 \hline
 10x = 40 \\
 \frac{10x}{10} = \frac{40}{10} \\
 x = 4
 \end{array}$$