

Solve the systems of linear equations.

$$\begin{cases} 2x - 11y = 21 \\ 3x + 11y = 4 \end{cases}$$

solve

$$\begin{array}{r} 5x = 25 \\ \hline x = 5 \end{array}$$

plug in and solve for y

$$3x + 11y = 4$$

$$3(5) + 11y = 4$$

$$15 + 11y = 4$$

$$\begin{array}{r} -15 \\ \hline 11y = -11 \\ \hline y = -1 \end{array}$$

\* Since the equations are lined up and the y's are opposites I can combine the equations and solve for x.

\* you can use either equation to plug x into

solution

$$(5, -1)$$

\* Multiplying the top equation by 5 creates opposites

$$\begin{cases} (x - 2y = -7) \cdot 5 \\ (-5x - 4y = 1) \end{cases}$$

\* Add the equations once you have opposites

$$\begin{array}{r} 5x - 10y = -35 \\ -5x - 4y = 1 \\ \hline -14y = -34 \\ \hline y = 2.43 \end{array}$$

x - 2y = -7 \* plug in 2.43 for y and solve for x

$$x - 2(2.43) = -7$$

$$x - 4.86 = -7$$

$$\begin{array}{r} + 4.86 \\ \hline x = -2.14 \end{array}$$

solution

$$(-2.14, 2.43)$$

$$\begin{cases} (2x - 8y = 16) \cdot 3 \\ (-5x + 6y = 2) \cdot 4 \end{cases}$$

$$\begin{array}{r} 6x - 24y = 48 \\ -20x + 24y = 8 \\ \hline -14x = 56 \\ \hline x = -4 \end{array}$$

\* Now that the y's are opposites we can combine the equations and solve for x

\* once you have what x equals, plug it in to one of the equations

$$-5x + 6y = 2$$

$$-5(-4) + 6y = 2$$

$$\begin{array}{r} 20 + 6y = 2 \\ -20 \\ \hline 6y = -18 \\ \hline y = -3 \end{array}$$

solution

$$(-4, -3)$$