



Sep 18-1:50 PM

3.2 Notes: Solve a system of Equations by Elimination

Day 25

1. If you do not have opposite coefficients, then multiply one or both equations by #(s), to get a pair of opposite coefficients $5x \div -5x$ $-y \div y$
2. ADD the 2 eqs to eliminate one of the remaining variables, solve for the remaining variable
3. Substitute that value into one of the original eqs and solve for the other variable

Answer: (x, y)

Sep 18-12:31 PM

Easiest Case:

If you already have opposite coefficients

$$\begin{cases} -5x - 4y = -22 \\ 5x - 6y = -8 \end{cases}$$

$$\begin{cases} x + y = 17 \\ x - y = 4 \end{cases}$$

Sep 18-1:37 PM

ex1

easiest if you have opposites, THEN ADD EVERY COLUMN

$$\begin{array}{r} -5x - 4y = -22 \\ + \\ 5x - 6y = -8 \\ \hline -10y = -30 \\ \hline y = 3 \end{array}$$

Plug back into 1 of the original eqs

$$5x - 6(3) = -8$$

$$\begin{array}{r} 5x - 18 = -8 \\ +18 \quad +18 \\ \hline 5x = 10 \\ \hline x = 2 \end{array}$$

$(2, 3)$

Sep 18-1:16 PM

2nd Easiest Case: There are variables with the SAME Coefficients

★ if that is the case, then multiply one of the eqs by -1, which is the same thing as changing everything in 1 eq to its opposite sign

New Problem Has opposites, Now ADD

$$\begin{cases} 5x + 7y = 18 \\ 9x + 7y = -4 \end{cases} \rightarrow \begin{cases} 5x + 7y = 18 \\ -9x + -7y = +4 \end{cases}$$

we multiplied the 2nd eq by -1

$$\begin{cases} 2x - y = 17 \\ x - y = 4 \end{cases} \rightarrow \begin{cases} -2x + y = 6 \\ -2x - 8y = 1 \end{cases}$$

Sep 18-1:40 PM

2nd: easiest case if there are terms exactly the same

★ To get opposites, multiply one eq. by -1

$$\begin{cases} 5x + 7y = 18 \\ 9x + 7y = -4 \end{cases}$$

once you have opposites, ADD

$$\begin{array}{r} -5x + -7y = -18 \\ +9x + 7y = -4 \\ \hline 4x = -22 \\ \frac{4x}{4} = \frac{-22}{4} \\ x = -5.5 \end{array}$$

$5(-5.5) + 7y = 18$
 $y = 6.5$
 (-5.5, 6.5)

Sep 18-1:21 PM

$$\text{ex 3) } \begin{cases} -3x - 7y = 2 \rightarrow -3x - 7y = 2 \\ 3(x + 3y = -2) \rightarrow 3x + 9y = -6 \end{cases}$$

$$\text{ex 4) } \begin{cases} 6(-7x + 9y = 3) \rightarrow -42x + 54y = 18 \\ 7(6x - 4y = 16) \rightarrow 42x - 28y = 112 \end{cases}$$

$$\text{ex 5} \begin{cases} 2(2x + 4y = 7) \text{ ADD} \\ 4x + 8y = 9 \\ -4x - 8y = -14 \end{cases} \quad y =$$

$0 \neq -5$ False Statement
No Solution

Sep 18-1:27 PM