

Solving Linear Systems by Elimination (1)

So far we have solved linear equations by:

1. graphing
2. substitution method

Today we are going to learn another algebraic method known as elimination.

Steps:

1. Add or subtract the two equations to eliminate one of the variables. Solve the resulting equation.
 - if the coefficients of a variable are equal and have the same sign, SUBTRACT
 - if the coefficients of a variable are equal and have the opposite sign, ADD
2. Substitute your answer back into either equation to find the value of the other variable.

Examples:

$$\begin{array}{r} \text{a) } 2x + y = 9 \quad \textcircled{1} \\ \textcircled{+} \quad -2x + 4y = -4 \quad \textcircled{2} \\ \hline 0 + 5y = 5 \\ \frac{5}{5} \quad \frac{5}{5} \\ y = 1 \end{array}$$

$$\begin{array}{l} 2x + y = 9 \\ 2x + \widehat{1} = 9 \\ 2x = 9 - 1 \\ 2x = 8 \\ \frac{2x}{2} = \frac{8}{2} \\ x = 4 \\ \text{PoI} = (4, 1) \end{array}$$

$$\begin{array}{r} \text{b) } 2x + y = 12 \quad \textcircled{1} \\ \textcircled{-} \quad -3x + y = 2 \quad \textcircled{2} \\ \hline 5x + 0 = 10 \\ 5x = 10 \\ \frac{5x}{5} = \frac{10}{5} \\ x = 2 \end{array}$$

$$\begin{array}{l} 2x + y = 12 \\ 2(2) + y = 12 \\ 4 + y = 12 \\ y = 12 - 4 \\ y = 8 \\ \text{PoI} = (2, 8) \end{array}$$