lulumath

Introduction to Systems of Equations and Solving Systems of Equations by Graphing

(Video Notes)

Video Link

Introduction to Systems of Equations and Solving Systems of Equations by Graphing

What is a solution?

a set of values that satisfy an equation or inequality

$$2x + 5 = -11$$
$$\underline{ -5 \quad -5}$$
$$\frac{2x}{2} = \frac{-16}{2}$$
$$\underline{x = -8}$$
↑ solution

$$2x + 5 = -11$$
$$2(-8) + 5 = -11$$
$$\underline{-16 + 5 = -11}$$
$$-11 = -11$$

$$2x + 5 > -11$$
$$x > -8$$

$$x = -7$$
$$2(-7) + 5 > -11$$
$$\underline{-14 + 5 > -11}$$
$$-9 > -11$$

$$5x + 2y = 16$$
$$\underline{}$$
$$5(2) + 2(3) = 16$$
$$10 + 6 = 16$$
$$16 = 16 \checkmark$$

one solution of ∞ solutions is $(\underset{x}{2}, \underset{y}{3})$

What is a system of equations?

A set of equations that has at least two variables and has one solution that satisfies ALL the equations simultaneously (at the same time).

Solve the following system of equations by graphing:
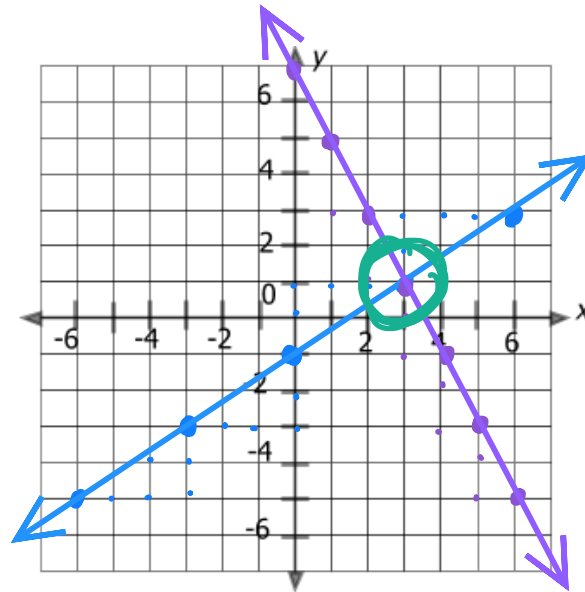
$3y - 2x = -3$

$y + 2x = 7$

$$3y - 2x = -3$$

(Isolate $y \rightarrow y = mx + b$)

$$3y - 2x = -3$$
$$\underline{ + 2x \quad +2x.}$$

$$\frac{3y}{3} = \frac{2x}{3} - \frac{3}{3}$$

$$y = \tfrac{2}{3}x - 1$$

Solution

$$\left(\underset{x}{3}, \underset{y}{1}\right)$$

$$y + 2x = 7$$
$$\underline{ -2x \quad -2x}$$

$$y = \frac{-2x + 7}{1}$$