What's Going On?

Checking In

Minds on Partner Check

Action! Solving by Substitution

Consolidation Video Lesson

Learning Goal - I will be able to solve linear systems by substitution.

Minds on

Partner Check

$6x - 5 = -3x + 13$

$+3x \quad +3x$

$9x - 5 = 13$

$+5 \quad +5$

$\frac{9x}{9} = \frac{18}{9}$

$x = 2$

$5x - 2 = 2x + 7$

$-2x \quad -2x$

$3x - 2 = 7$

$+2 \quad +2$

$\frac{3x}{3} = \frac{9}{3}$

$x = 3$

$4x - 1 = 2x - 5$

$-2x \quad -2x$

$2x - 1 = -5$

$+1 \quad +1$

$\frac{2x}{2} = \frac{-4}{2}$

$x = -2$

$-2x + 3 = 6x - 13$

$-6x \qquad -6x$

$-8x + 3 = -13$

$-3 \qquad -3$

$\frac{-8x}{-8} = \frac{-16}{-8}$

$x = 2$

Move x's to left

Move #s to right

Divide by # on X

Action!

Solving by Substitution

This is it.

Today you learn one of the most fantastic mathematical skills of your life!

Today we will learn how to solve a system of linear equations **without graphing**!!!

Action!

Solving by Substitution

First, remember what a linear system is...

Two lines considered at the same time

Action!

Solving by Substitution

Now, what is a 'solution' to a linear system?

Action!

Solving by Substitution

Okay.
So a **system of linear equations** is a set of two or more *lines* represented by equations.

system of linear equations

$$y = -2x + 1$$
$$y = 4x - 5$$

Action!

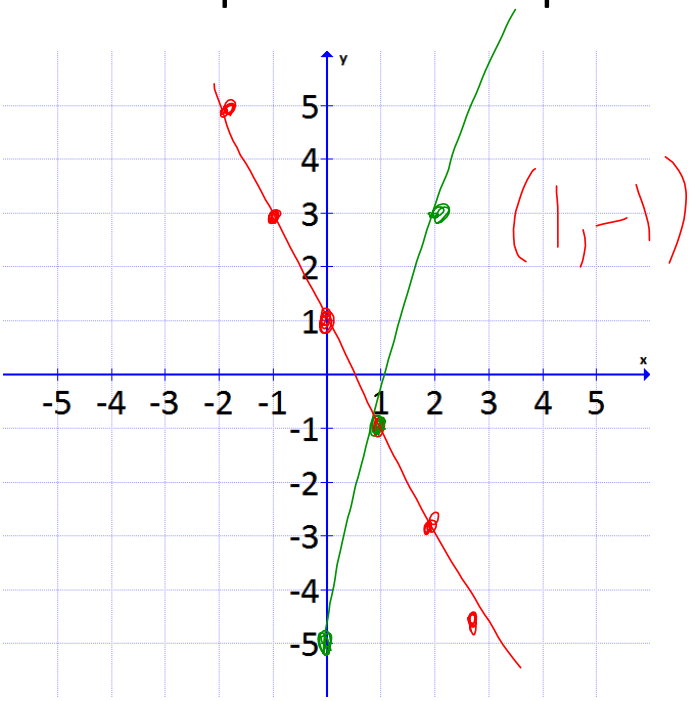
Solving by Substitution

A **solution** to a system of linear equations is the point of intersection!!

system of linear equations

$y = -2x + 1$

$y = 4x - 5$



Action!

Solving by Substitution

Today we learn how to find that point of intersection **without graphing**!!!

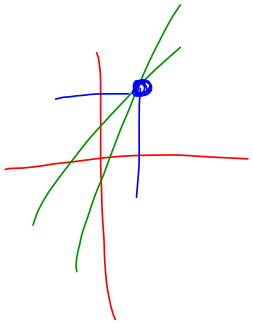
Action!

Solve the given system of linear equations without graphing.

$$y = -2x + 1$$
$$y = 4x - 5$$

Action!

Solving by Substitution



system of linear equations

$$y = -2x + 1$$

$$y = 4x - 5$$

At the **point of intersection** what do we know about the value of y for each equation?

The values of y are the same!!!

Action!

Solving by Substitution

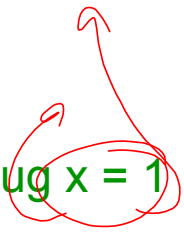
system of linear equations

$$y = -2x + 1$$
$$y = 4x - 5$$

If the values of y are the same.....

$$-2x + 1 = 4x - 5$$
$$-4x \quad\quad -4x$$
$$-6x + 1 = -5$$
$$-1 \quad\quad -1$$
$$\frac{-6x}{-6} = \frac{-6}{-6}$$
$$x = 1$$

Action!



To find the y-value of the point of intersection, plug x = 1 into either equation.

$$y = -2x + 1$$
$$y = 4x - 5$$

$x = 1$

$y = -2x + 1$

$y = -2(1) + 1$

$y = -2 + 1$

$y = -1$

$y = 4x - 5$

$y = 4(1) - 5$

$y = 4 - 5$

$y = -1$

$\therefore$ the POI is $(1, -1)$

Consolidation

Exit Card

What is the solution to the system of linear equations below?