

6.1 Solve Linear Systems by Graphing

2 equations intersect

Before

You graphed linear equations.

Now

You will graph and solve systems of linear equations.

Why?

So you can analyze craft fair sales, as in Ex. 33.



GOAL: Solve systems of linear equations exactly and approximately.

What is it??

A system of equations is two equations, both with two variables! Our goal will be to find an ordered pair that "satisfies" both equations!

(x, y)

Today, we will do this by graphing!

Example 1!

Consider the system:

$$y = 3x - 7$$

$$2y - 2x = 10$$

Show that $(6, 11)$ is a solution to the system, and that $(1, -4)$ is not a ~~system~~ solution!

$$y = 3x - 7$$

$$11 = 3(6) - 7$$

$$11 = 18 - 7$$

$$11 = 11$$

True

$$2y - 2x = 10$$

$$2(11) - 2(6) = 10$$

$$22 - 12 = 10$$

$$10 = 10$$

True

$(6, 11)$
solution

$$-4 = 3(1) - 7$$

$$-4 = 3 - 7$$

$$-4 = -4$$

True

$$2(-4) - 2(1) = 10$$

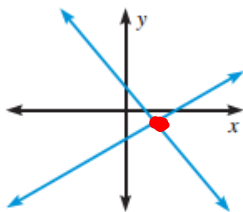
$$-8 - 2 = 10$$

$$-10 \neq 10$$

False

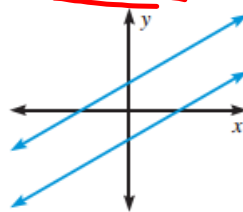
$(1, -4)$
is not a solution

Quick Review

CONCEPT SUMMARY*For Your Notebook***Number of Solutions of a Linear System**One solution

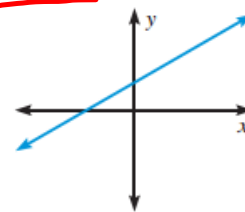
The lines intersect.

The lines have different slopes.

No solution

The lines are parallel.

The lines have the same slope and different y-intercepts.

Infinitely many solutions

The lines coincide.

The lines have the same slope and the same y-intercept.



Solve the system by
graphing!

$$y - 3x = -4$$

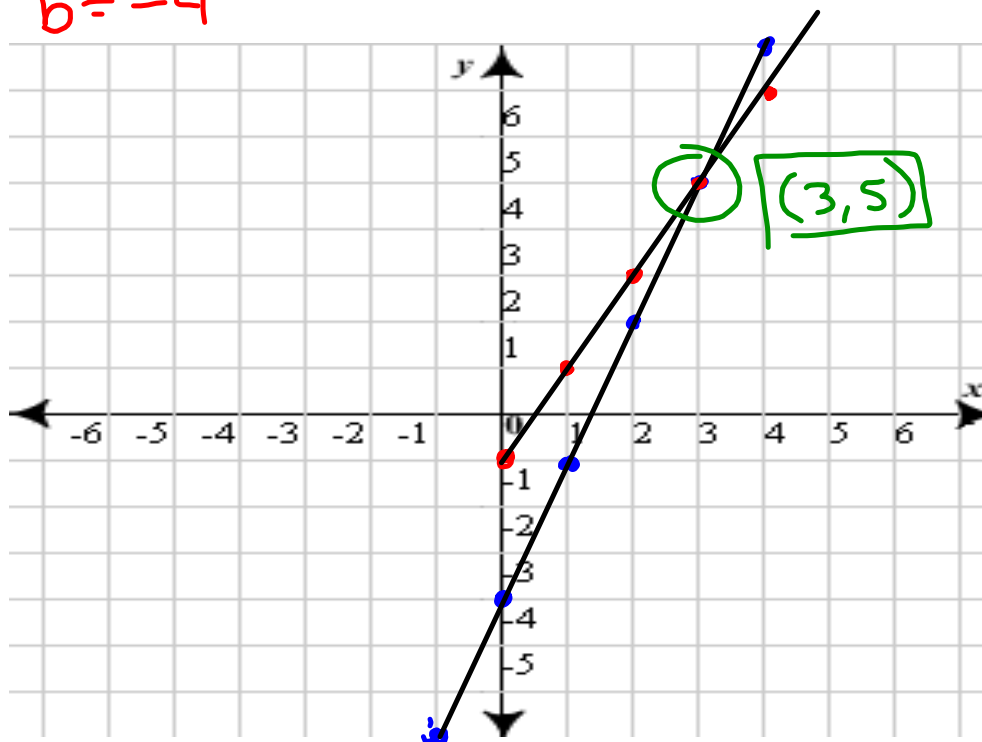
$$y = 2x - 1$$

$$\begin{array}{r} y - 3x = -4 \\ + 3x \quad + 3x \\ \hline \end{array}$$

$$\begin{array}{l} y = 3x - 4 \\ m = 3 = \frac{3}{1} \\ b = -4 \end{array}$$

$$y = 2x - 1$$

$$\begin{array}{l} m = 2 = \frac{2}{1} \\ b = -1 \end{array}$$



Solve the system by graphing!

$$3x + 6y = 0$$

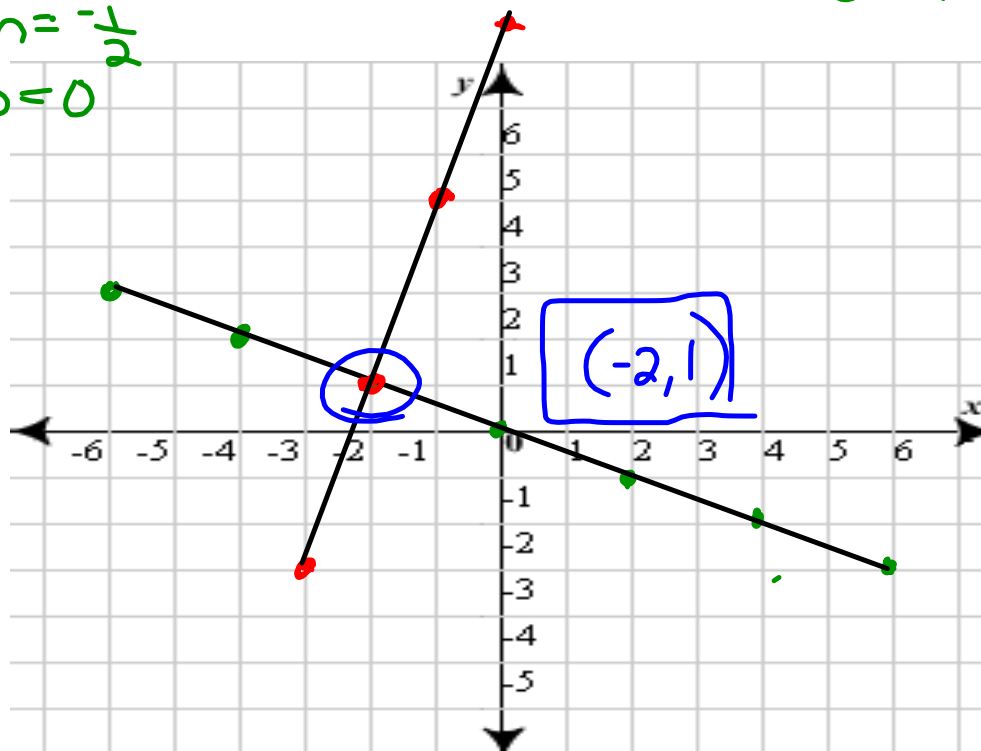
$$y = 4x + 9$$

$$\begin{array}{r} 3x + 6y = 0 \\ -3x \quad -3x \\ \hline 6y = -3x \\ \frac{6y}{6} = \frac{-3x}{6} \\ y = -\frac{1}{2}x + 0 \\ m = -\frac{1}{2} \\ b = 0 \end{array}$$

$$y = 4x + 9$$

$$m = 4$$

$$b = 9$$



Homework 6.1:
p.372-373: #3-5,8-10,12-14,22