

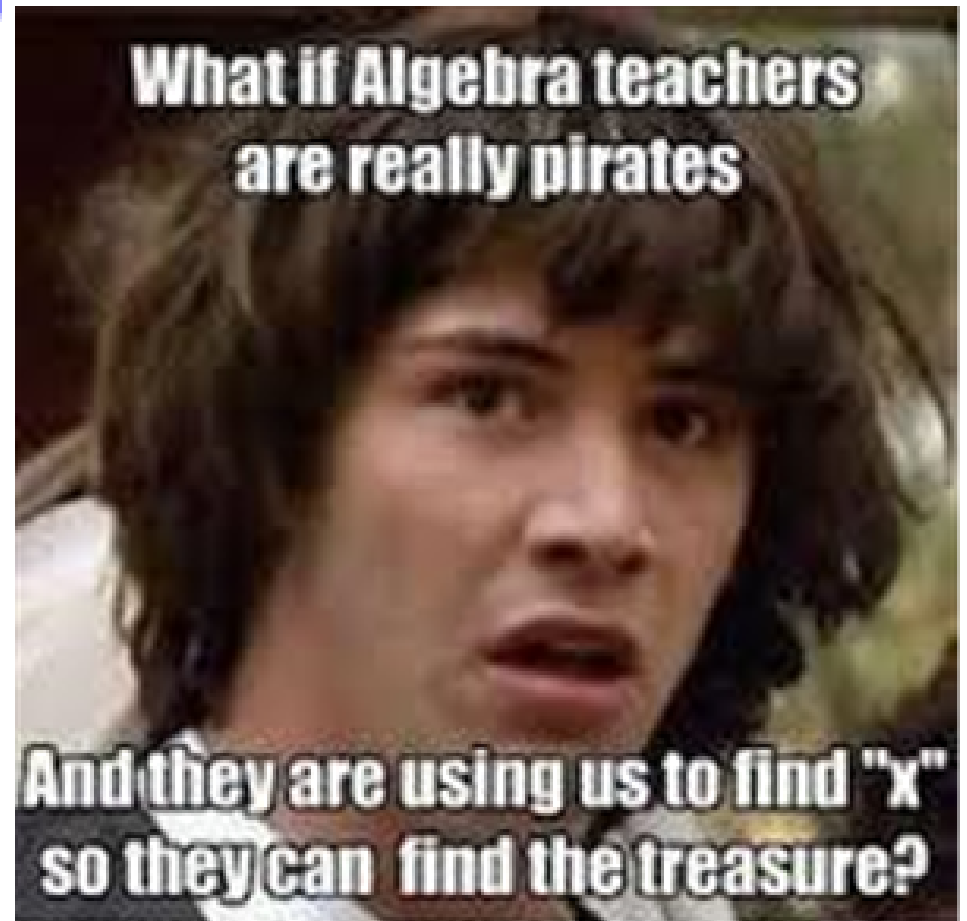
Warm-Up

Once you get your tests back...

Grab a Test Corrections Sheet &
an answer key off of the front
three desks by the door!

Graphing Systems of Equations

Unit 3: Solving Systems of Equations and Inequalities



Objectives for today....

- Understand what makes up a system of equations.
- Determine the number of solutions for a system of linear equations.
- Solve systems of linear equations and inequalities in two variables.
- Solve a system by graphing.

What is a system of linear equations?

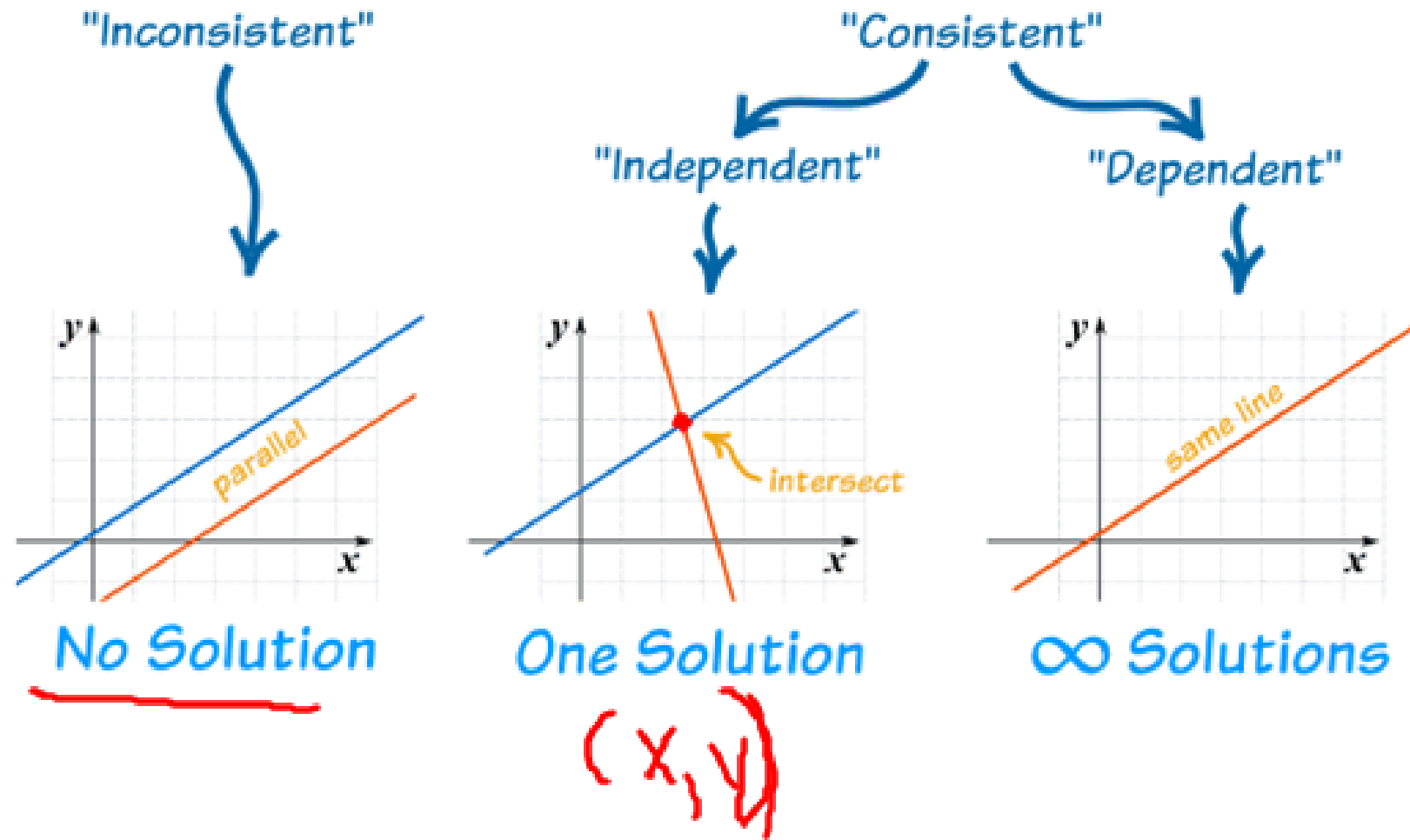
★ **A system consists of two or more equations.**

★ **An example would be, $y = 3x + 1$ and $y = 4x - 1$.**

★ **The solution is an ordered pair (x, y) that works in both equations after you plug the value into each.**

★ **Our solution here would be (2, 7)**

How do we classify our solutions???



Graph each system and determine the number of solutions that it has. If it has one solution, name it.

$$y = -3x + 10$$

$$y = x - 2$$

$$m = 1$$

$$b = -2$$

$$1 = -3(3) + 10$$

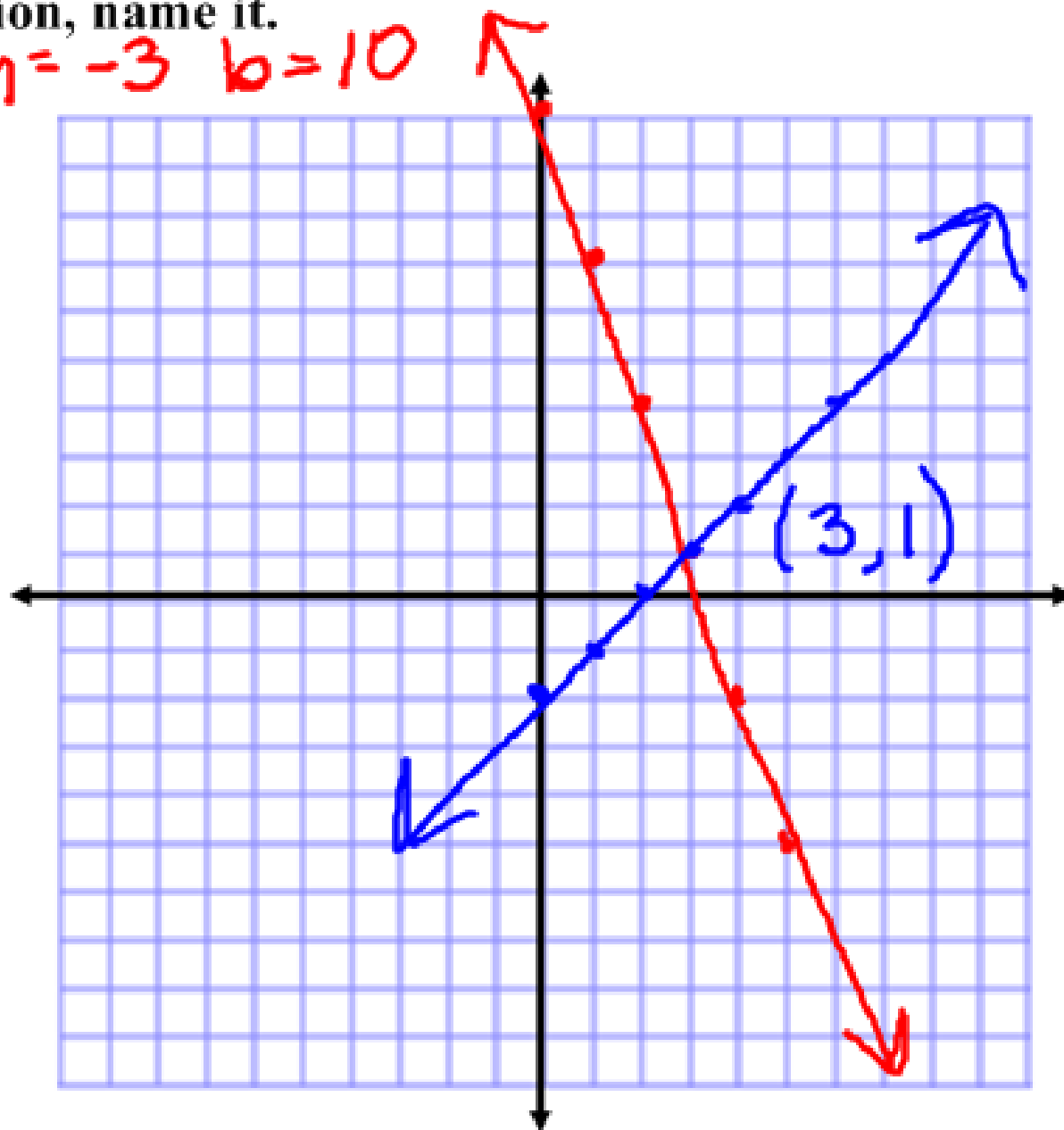
$$1 = -9 + 10$$

$$1 = 1 \checkmark$$

$$1 = 3 - 2$$

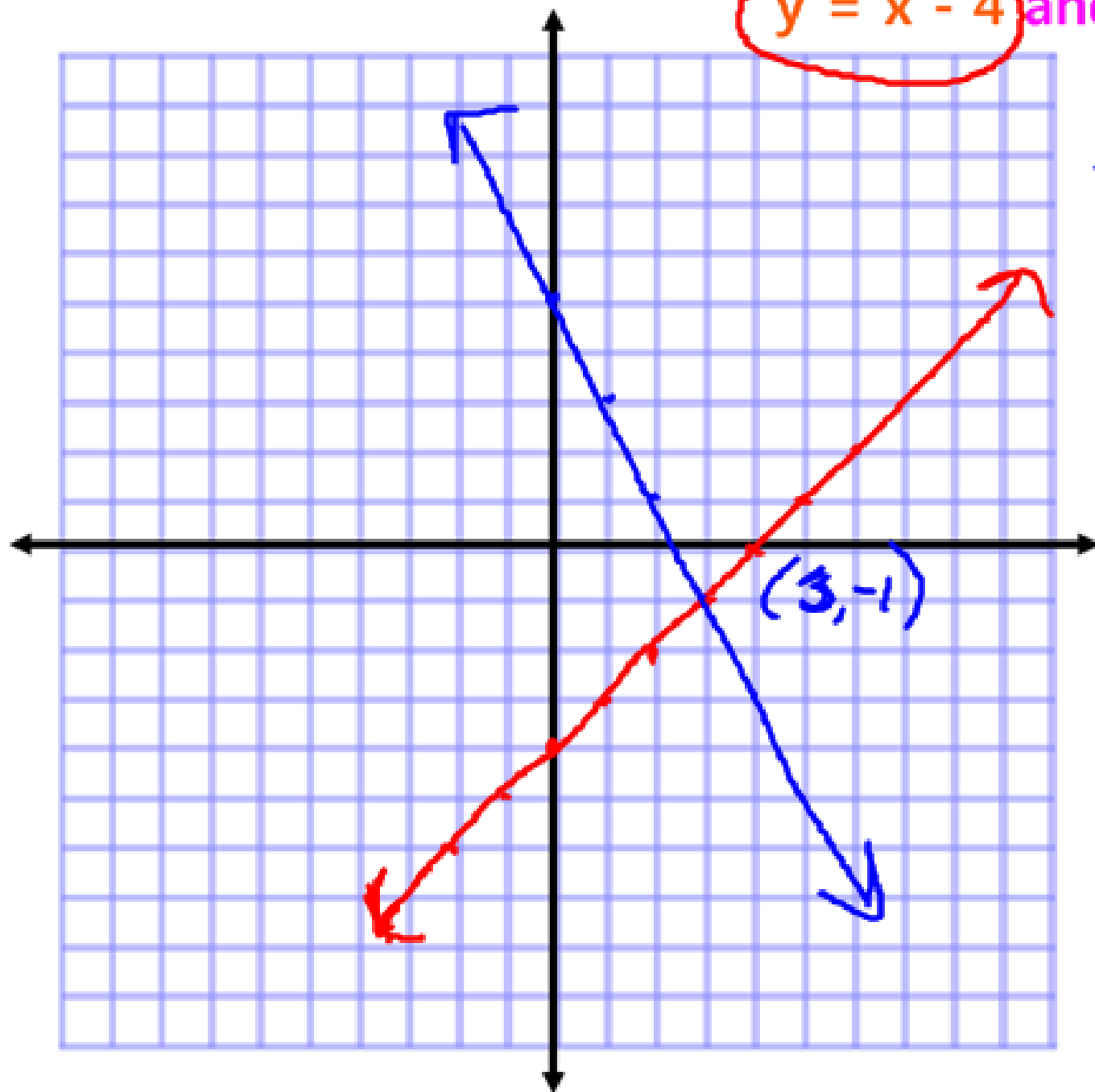
$$1 = 1 \checkmark$$

$$m = -3 \quad b = 10$$



$$y = x - 4$$

$$\text{and } y = -2x + 5$$



$$-1 = -2(3) + 5$$

$$-1 = -6 + 5$$

$$-1 = -1 \quad \checkmark$$

$$-1 = 3 - 4$$

$$-1 = -1 \quad \checkmark$$

$$x - y = 2$$

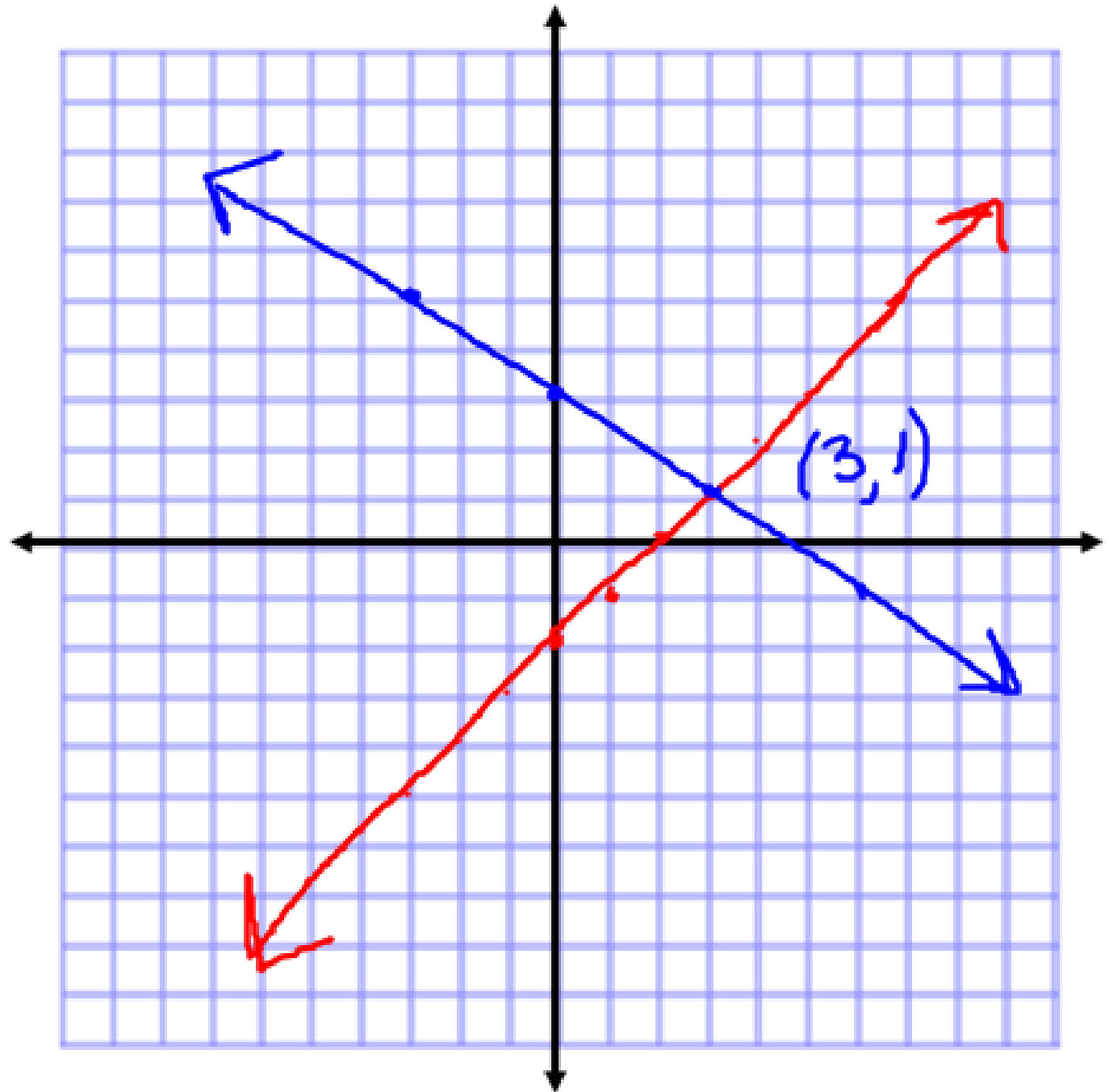
$$3y + 2x = 9$$

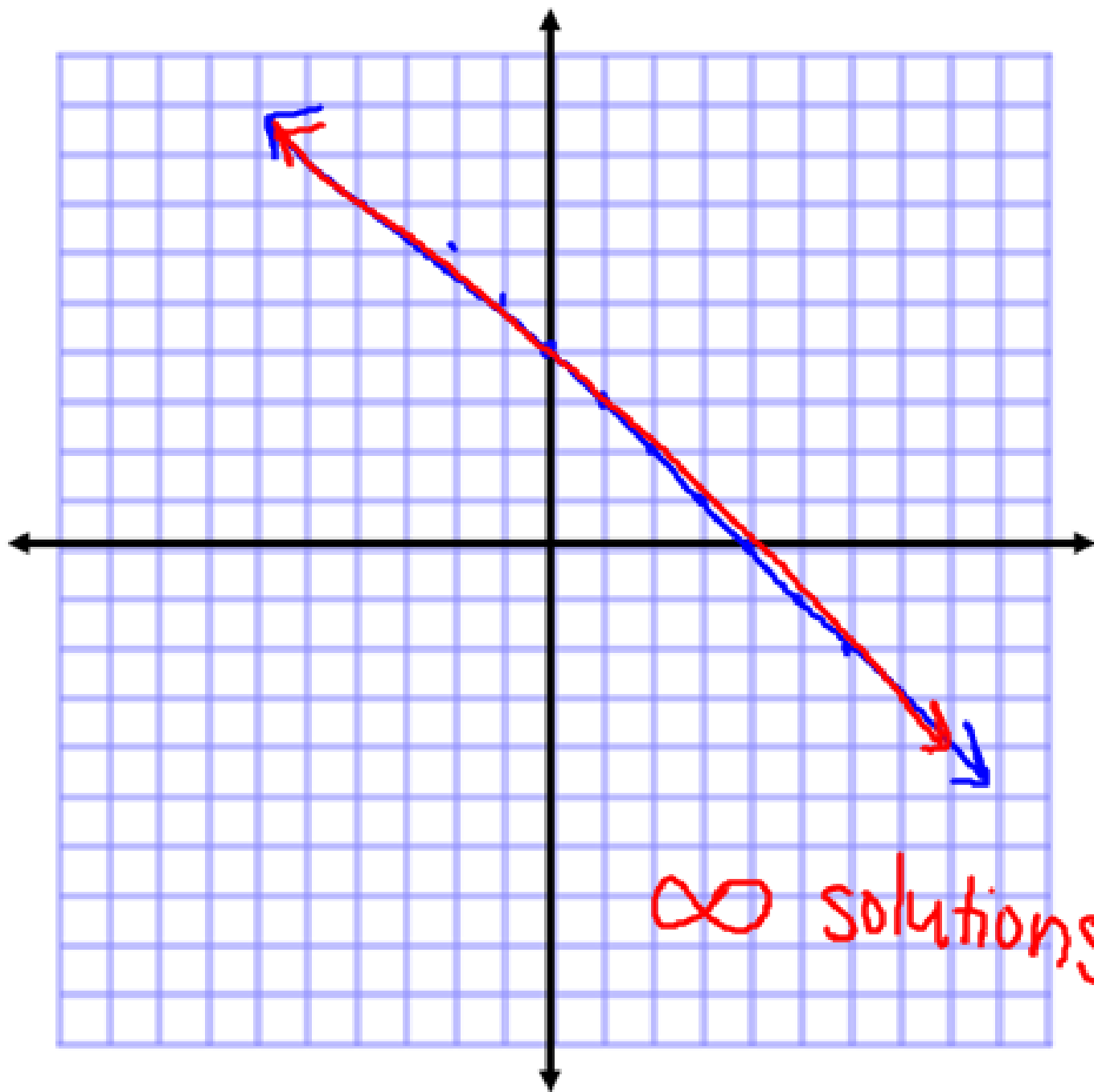
$$\begin{array}{r} x - y = 2 \\ -x \quad -x \\ \hline -y = -x + 2 \end{array}$$

$$y = x - 2$$

$$\begin{array}{r} 3y + 2x = 9 \\ -2x \quad -2x \\ \hline 3y = -2x + 9 \end{array}$$

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





$$x + y = 4$$

$$3x + 3y = 12$$

$$x + y = 4$$

$$-x \quad -x$$
$$y = -x + 4$$

$$3x + 3y = 12$$
$$-3x \quad -3x$$

$$\frac{3y}{3} = \frac{-3x + 12}{3}$$

$$y = -x + 4$$

∞ solutions

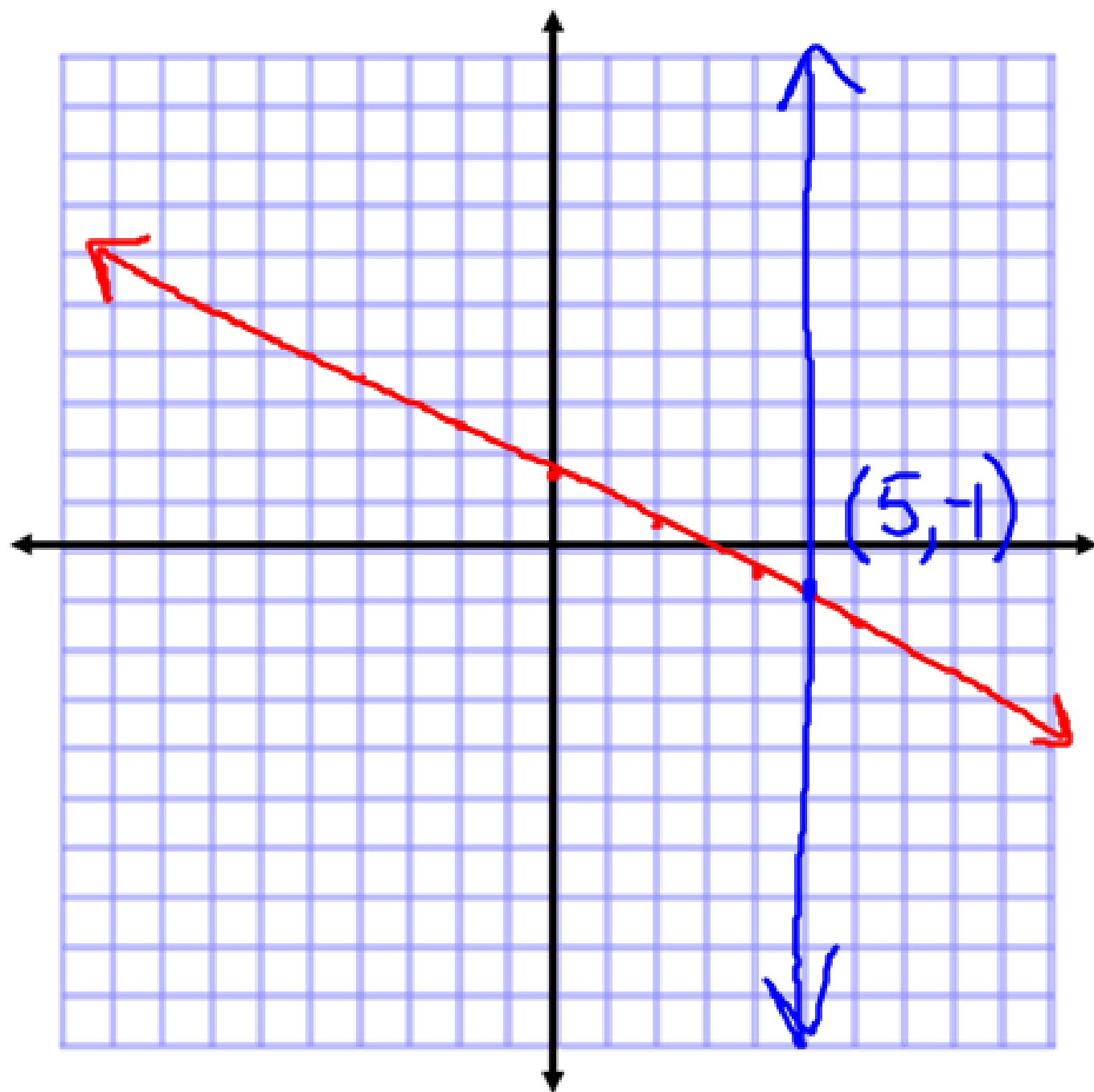
$$x + 2y = 3$$

$$x = 5$$

$$\begin{array}{r} x + 2y = 3 \\ -x \quad \quad -x \end{array}$$

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

$$y = -\frac{1}{2}x + \frac{3}{2}$$



Given the system

$$x + y = 2$$

$$x - y = 4$$

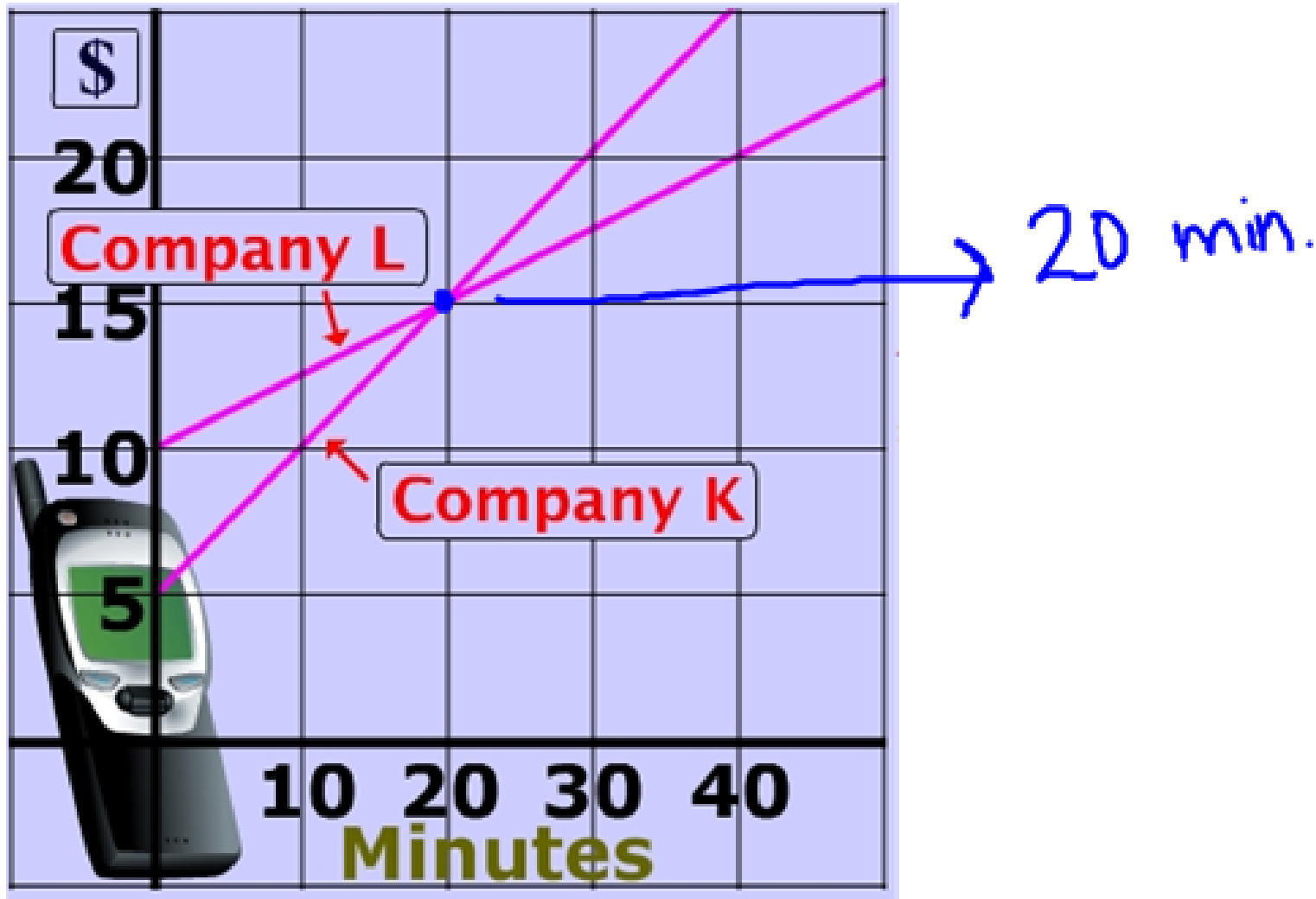
Is (3,-1) a solution?

$$3 + -1 = 2$$
$$2 = 2 \checkmark$$

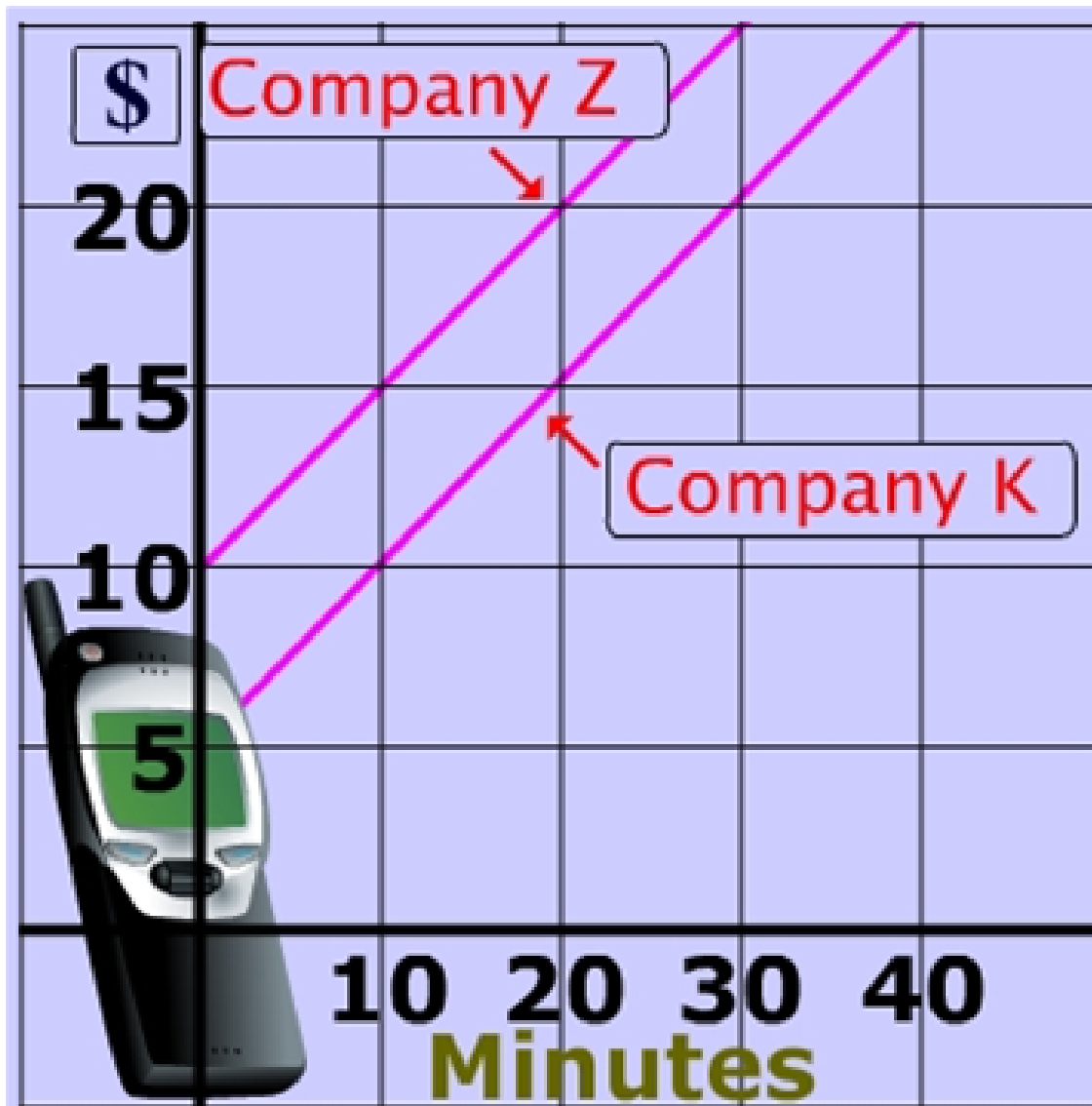
$$3 - -1 = 4$$
$$4 = 4 \checkmark$$

yes

At how many minutes do both companies charge the same amount?



At how many minutes do both companies charge the same amount?



*never
because of
parallel lines*

Solving Systems of Inequalities by Graphing

How I see math word problems: If you have 4 pencils and I have 7 apples, how many pancakes will fit on the roof? Purple, because aliens don't wear hats.

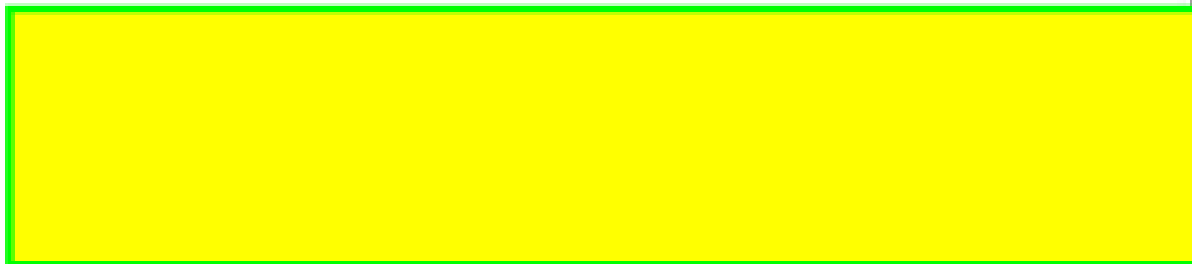
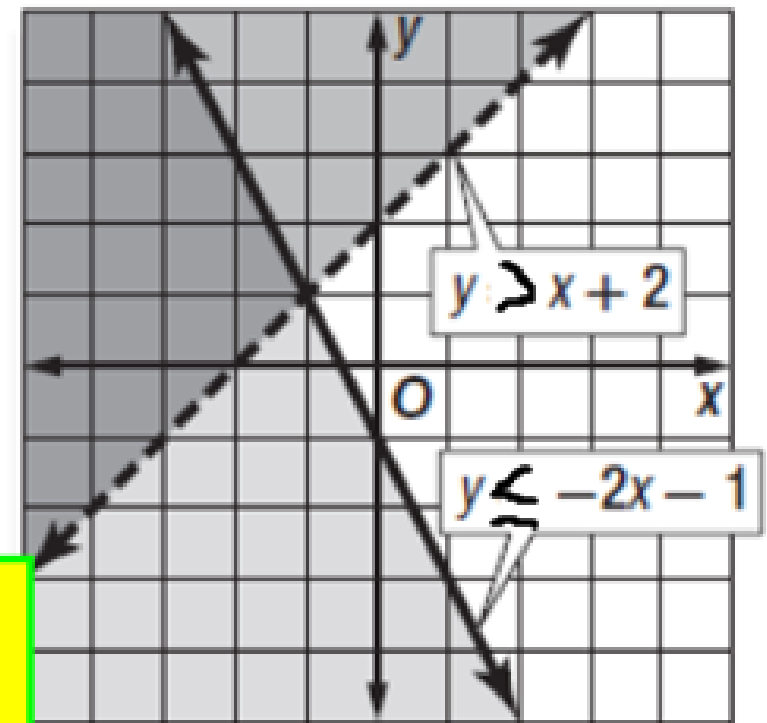


The solution set to a system of inequalities is a set of ordered pairs.

*** A common shaded region is an overlap of halfplanes from each inequality graphed.**

What does a shaded region give us?

*** Every solution point that will satisfy the inequality**



$$y \geq \left(\frac{2}{3}\right)x - 4$$

$$y \leq \left(-\frac{1}{5}\right)x + 4$$

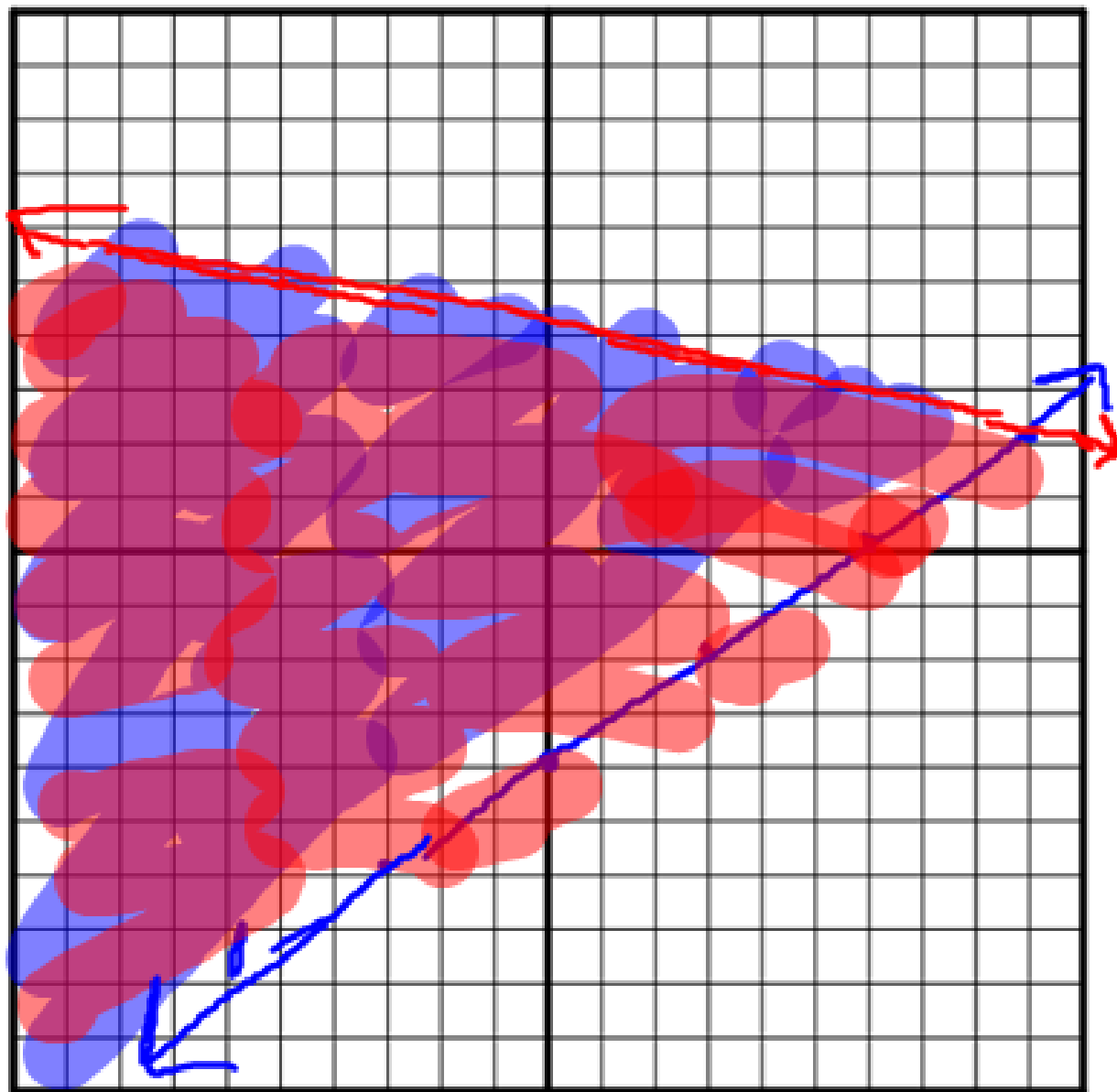
**Are the following
points in the solution
of the system of
inequalities?**

$(-2, 3)$ ✓

$(2, 1)$ ✓

$(-1, 1)$ ✓

$(-2, -1)$ ✓

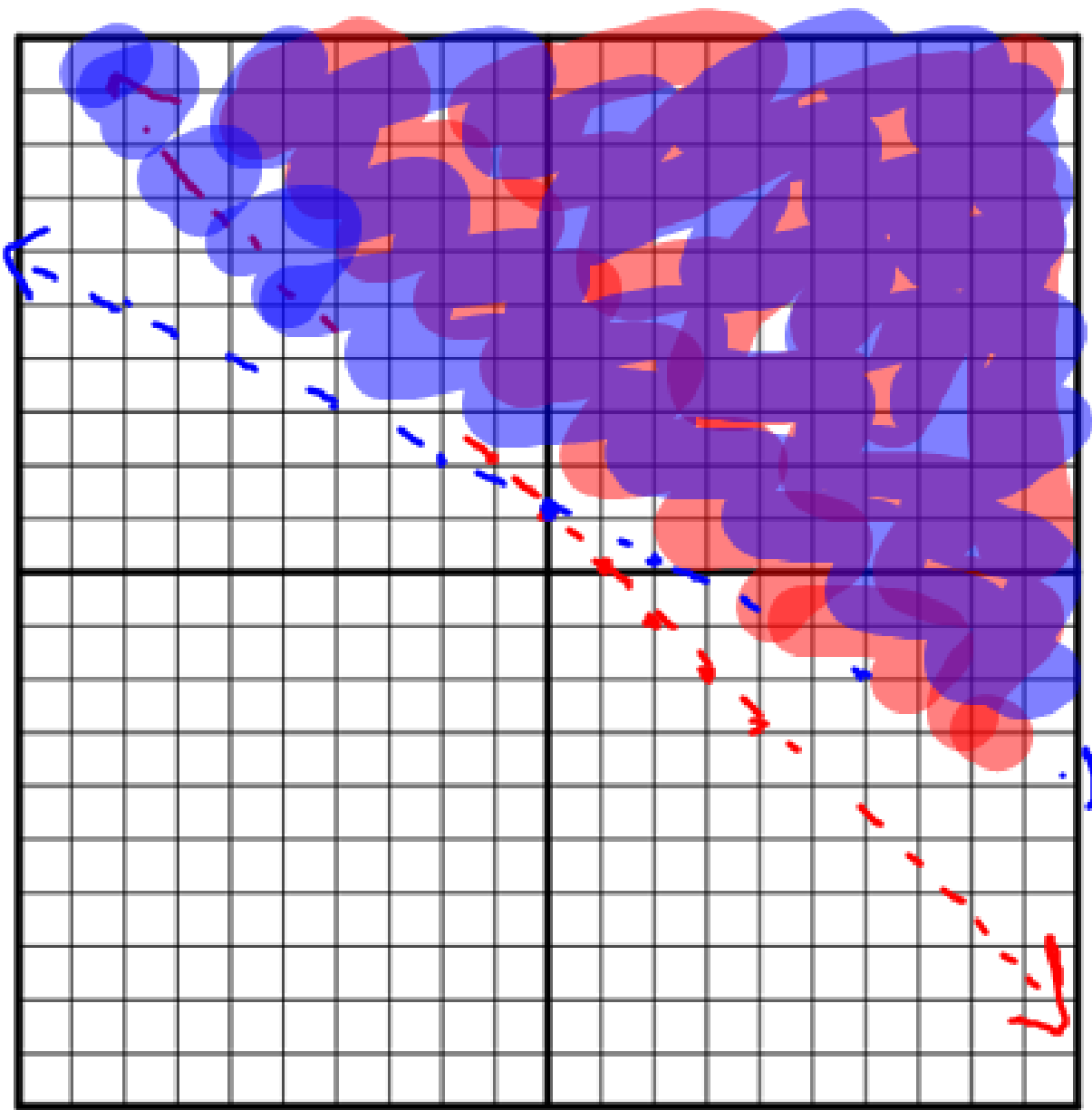


$$x + y > 1$$
$$2y > -x + 2$$

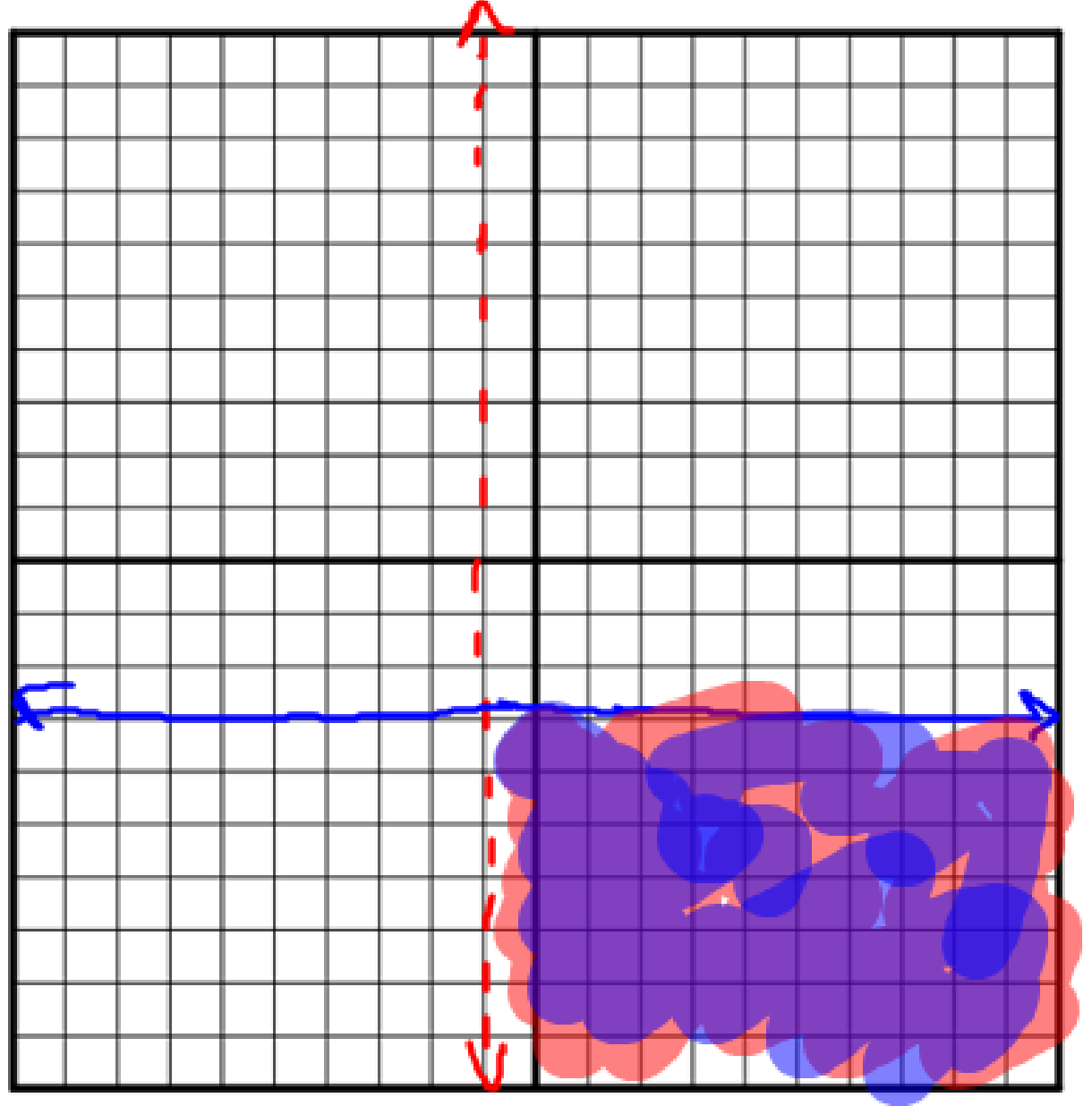
$$x + y > 1$$
$$\begin{array}{r} -x \\ \hline y > -x + 1 \end{array}$$

$$\frac{2y}{2} > \frac{-x + 2}{2}$$
$$y > -\frac{1}{2}x + 1$$

List 2 solution points and 2 non-solution points.



$$x > -1$$
$$y \leq -3$$



Homework!!!!

**Solving Systems of
Equations/Inequalities by Graphing
Worksheet**