7.2 Solving a System of Linear Equations Graphically

- **Lesson Focus**

Use the graphs of equations of a linear system to estimate its solution

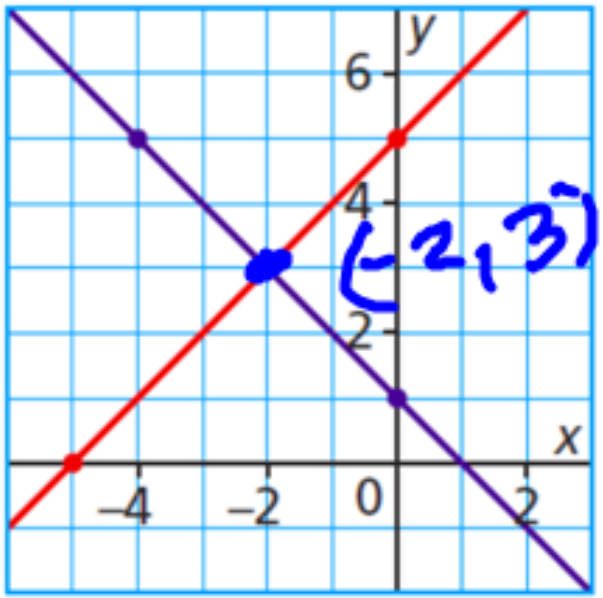
Definition: A **linear system** is a group of two or more linear equations.

To **solve** a system means to find their **intersection point.**

In this section we will learn **two methods** to solve graphically, but you will get to decide which **one you want to use!**

Explore

Two equations in a linear system are graphed on the same grid.



$y = mx + b$

$y = x + 5$

$y = mx + b$

$y = -x + 1$

What are the equations of the graphs? Explain your reasoning.
What are the coordinates of the point of intersection of the two lines?

Ex. 1 Solve the following linear system using the mini-table method.

$2(2)+(-2)=2$ ✓

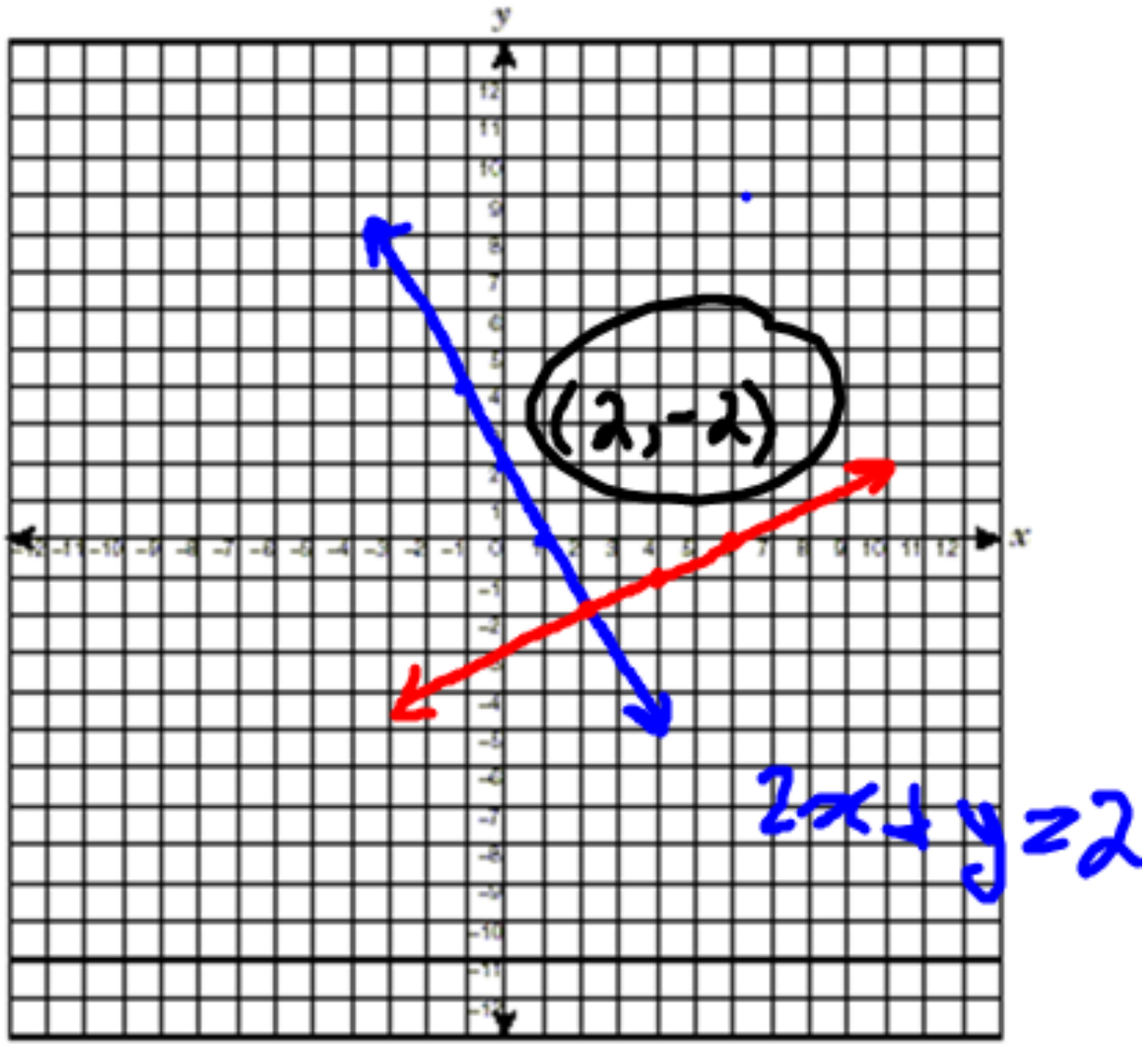
$$2x + y = 2$$

x	y
1	0
-1	4
0	2

$2-2(-2)=6$ ✓

$$x - 2y = 6$$

x	y
6	0
4	-1
2	-2



Ex. 3 Solve the following linear system using the slope intercept method.

$3(-2)-2(1)=-8$ ✓

$3x-2y=-8$

$3x-2y=-8$

$-2y=-3x-8$

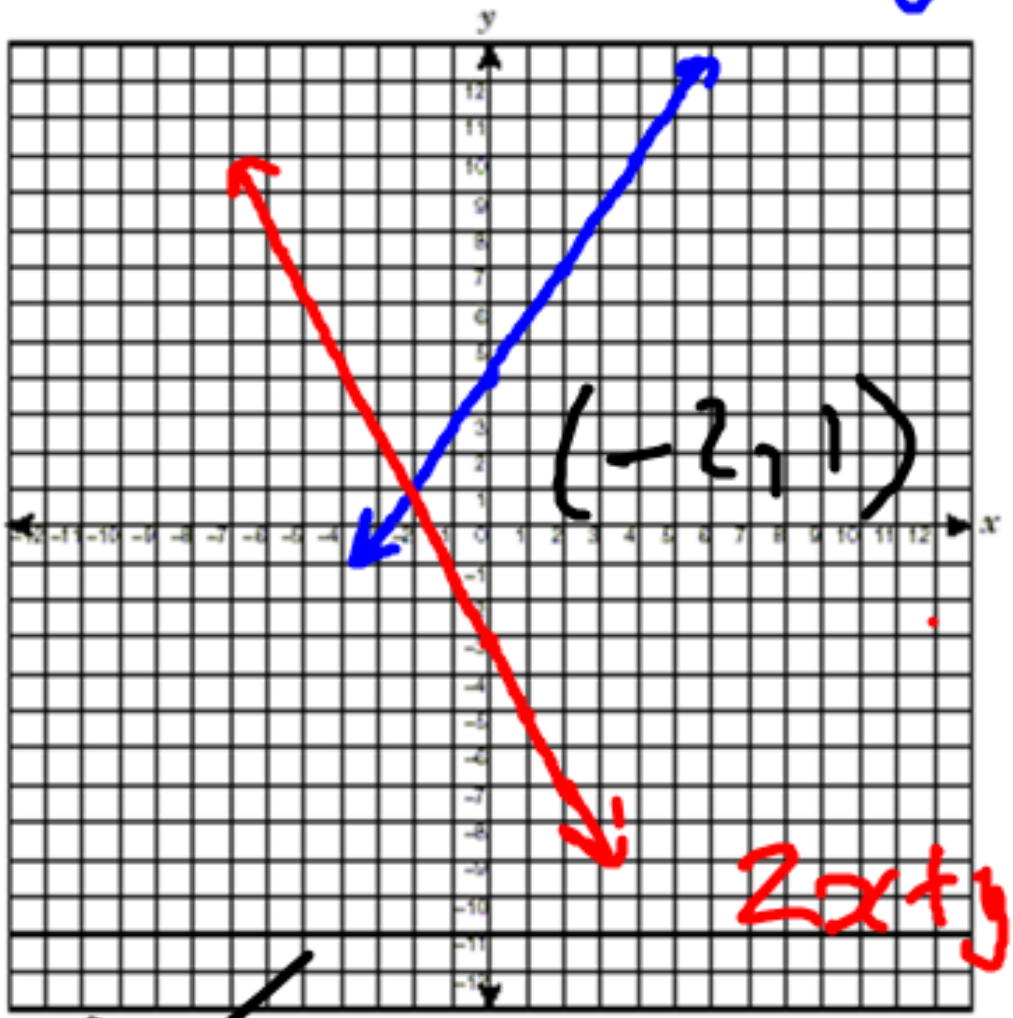
$y=-\frac{3}{-2}x-\frac{8}{-2}$

$y=\frac{3}{2}x+4$

$2x+y=-3$

$y=-2x-3$

1



$2(-2)+(+1)=-3$ ✓

Your turn!

Solve the linear system graphically using either method:

$$2x + 3y = 3$$
$$x - y = 4$$

(3) (-1)

$2x+3y=3$ ✓

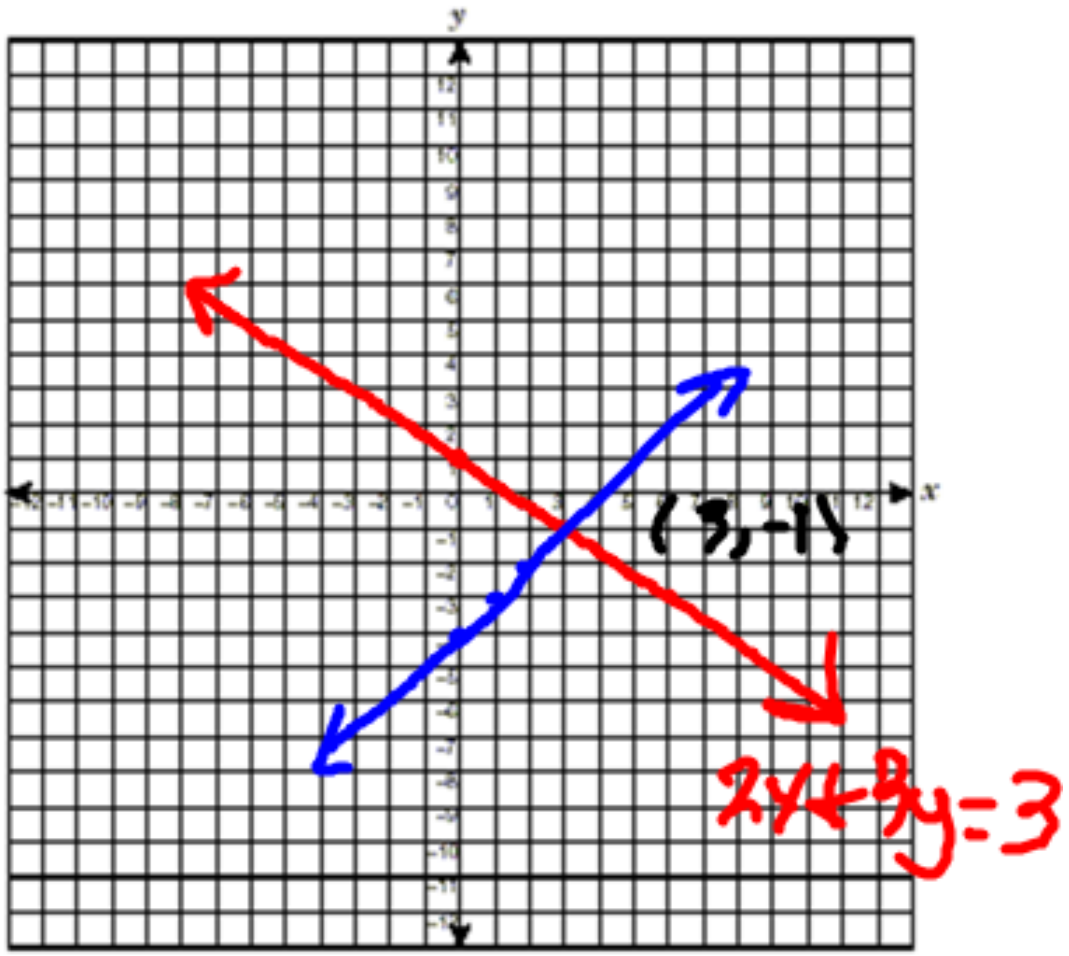
$3y=-2x+3$

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

3 -1

$x-4=y$ ✓

$\therefore$



Homework

P. 408-410

 # 3, 4, 5, 6