

Section 5.1 Notes (Day 2): Solving a System of Linear Equations by Graphing

Key Idea

Solving a System of Linear Equations by Graphing when **Not in Slope-Intercept Form**

- **Step 1:** Change the equation(s) so they are in Slope-Intercept Form
 $y = mx + b$
- **Step 2:** Graph the equations on the same coordinate plane
- **Step 3:** Locate/Estimate the point of intersection
- **Step 4:** Check the point of intersection from Step 3 in BOTH equations to make sure you have the correct solution of the system of linear equations

Example 1:

Solve the system of linear equations by graphing.

$y = -2x + 1$ slope = $\frac{-2}{1} = \frac{\text{Rise}}{\text{Run}}$

$-x + 2y = 12$

Change to $y = mx + b$

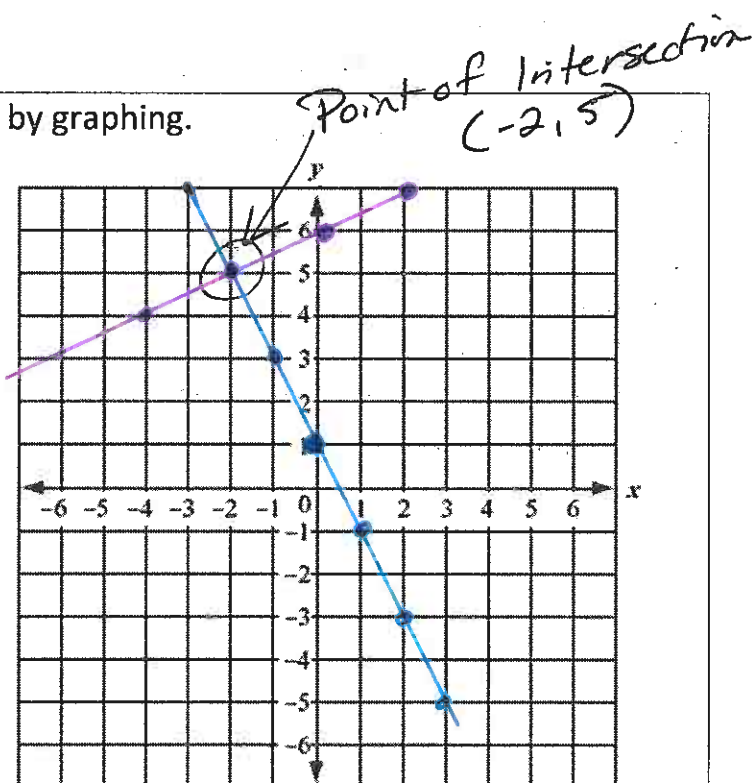
$-x + 2y = 12$

$+x \quad +x$

$\frac{2y}{2} = \frac{x+12}{2}$

$y = \frac{1}{2}x + 6$

*now graph



Solution Checks for

$(-2, 5)$
 $\begin{matrix} x & y \end{matrix}$

$y = -2x + 1$

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

$5 = 4 + 1$

$5 = 5 \checkmark$

$-x + 2y = 12$

$-(-2) + 2(5) = 12$

$2 + 10 = 12$

$12 = 12 \checkmark$

Solution: $(-2, 5)$

* $(-2, 5)$ worked in both equations, so we have shown it is the solution to the system

Example 2:

Solve the system of linear equations by graphing.

$$y = -3$$

$$3x + 2y = 6$$

change to $y = mx + b$

$$3x + 2y = 6$$
$$-3x \quad -3x$$

$$\frac{2y}{2} = \frac{-3x + 6}{2}$$

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

* now graph

Solution checks for

$$(4, -3)$$

x y

$$y = -3$$

$$-3 = -3 \checkmark$$

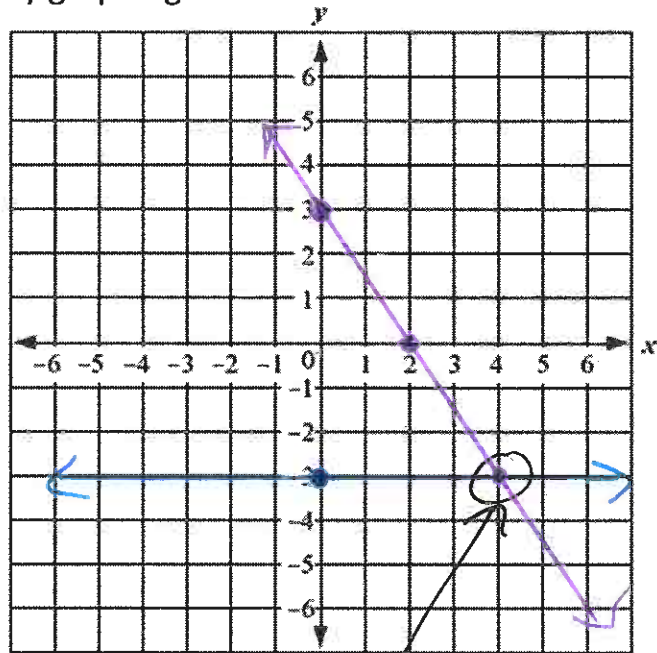
$$3x + 2y = 6$$

$$3(4) + 2(-3) = 6$$

$$12 - 6 = 6$$

$$6 = 6 \checkmark$$

* $(4, -3)$ worked in both equations so we know it is the solution to the system



Point of Intersection
 $(4, -3)$

Solution: $(4, -3)$