

SOLVING SYSTEMS OF EQUATIONS BY GRAPHING

Review Activity

Solve for y.

Write the following equations in slope-intercept form:

$$y = mx + b$$

$$1) \quad \begin{array}{l} 3y - 3x = 6 \\ \downarrow + 3x \quad \downarrow + 3x \\ \hline 3y = 3x + 6 \\ \frac{3y}{3} = \frac{3x}{3} + \frac{6}{3} \end{array}$$

$$y = x + 2$$

$$2) \quad \begin{array}{l} x - 2y = 8 \\ -x \quad \downarrow -x \\ \hline -2y = -x + 8 \\ \frac{-2y}{-2} = \frac{-x}{-2} + \frac{8}{-2} \end{array}$$

$$y = \frac{1}{2}x - 4$$

$$y = 0.5x - 4$$

$$3) \quad \begin{array}{l} x - y = 3 \\ -2x \quad \downarrow -2x \\ \hline -x - y = -2x + 3 \\ \frac{-x - y}{-1} = \frac{-2x}{-1} + \frac{3}{-1} \end{array}$$

$$y = 2x - 3$$

$$y = 2x + -3$$

Solving Systems of Equations Graphically

**Given:** two equations

**Find:** the point that the two lines **intersect** at

**How:** write equations in  $y = mx + b$   
 graph both lines on same set of axes (graph)  
 find the point of intersection  
 \* check your answer \*



5-1 day 1

Examples:

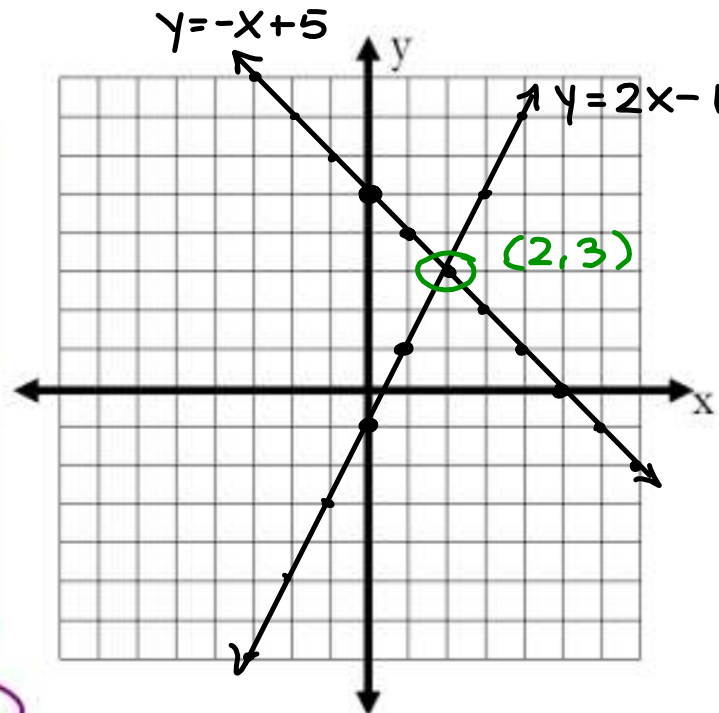
1)  $y = -x + 5$

$y = 2x - 1$

$y = -x + 5$   
 $y = -1x + 5$   
 Slope =  $\frac{-1 \downarrow 1 \uparrow 1}{1 \rightarrow 1 \leftarrow 1}$   
 Y-Intercept = 5

$y = 2x - 1$   
 Slope =  $\frac{2 \uparrow 2 \downarrow 2}{1 \rightarrow 1 \leftarrow 1}$   
 Y-Intercept = -1

Answer: (2,3)



CHECK YOUR SOLUTION IN BOTH EQUATIONS:

$\begin{matrix} x & y \\ (2, & 3) \end{matrix}$

$y = -x + 5$   
 $3 = -2 + 5$   
 $3 = 3 \checkmark$

$y = 2x - 1$   
 $3 = 2(2) - 1$   
 $3 = 4 - 1$   
 $3 = 3 \checkmark$

5-1 day 1

2)  $y + x = 3$  → solve for  $y$

$y = x - 1$

$$y + x = 3$$

$$\begin{array}{r} \downarrow -x \quad | \quad -x \\ \hline y = -1x + 3 \end{array}$$

Slope =  $-\frac{1}{1}$   $\begin{array}{l} \downarrow 1 \\ \rightarrow 1 \end{array}$   $\begin{array}{l} \uparrow 1 \\ \leftarrow 1 \end{array}$

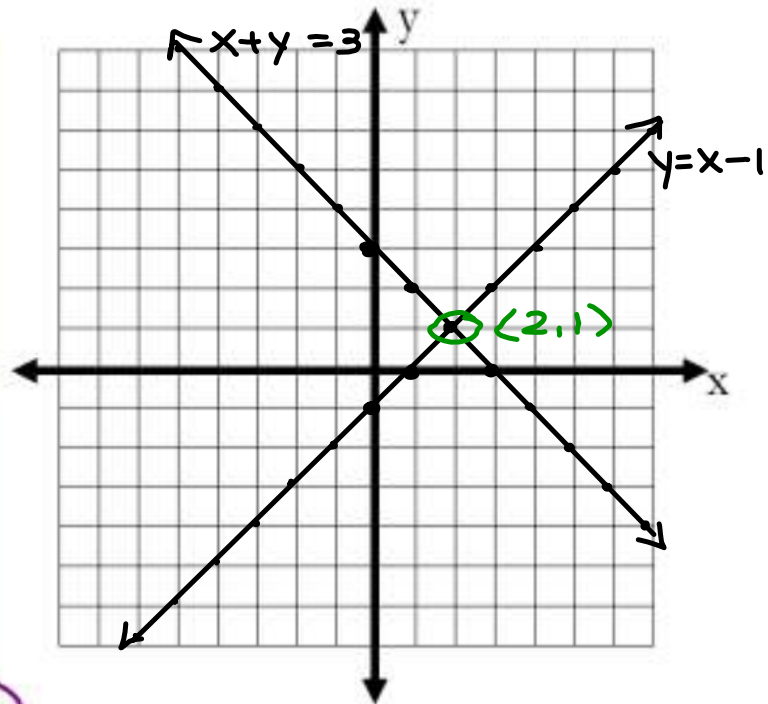
Y-Intercept = 3

$y = x - 1$

Slope =  $\frac{1}{1}$   $\begin{array}{l} \uparrow 1 \\ \rightarrow 1 \end{array}$   $\begin{array}{l} \downarrow 1 \\ \leftarrow 1 \end{array}$

Y-Intercept = -1

Answer: (2, 1)



CHECK YOUR SOLUTION IN BOTH EQUATIONS:  $\begin{matrix} x & y \\ (2, & 1) \end{matrix}$

$$y + x = 3$$

$$1 + 2 = 3$$

$$3 = 3 \checkmark$$

$$y = x - 1$$

$$1 = 2 - 1$$

$$1 = 1 \checkmark$$