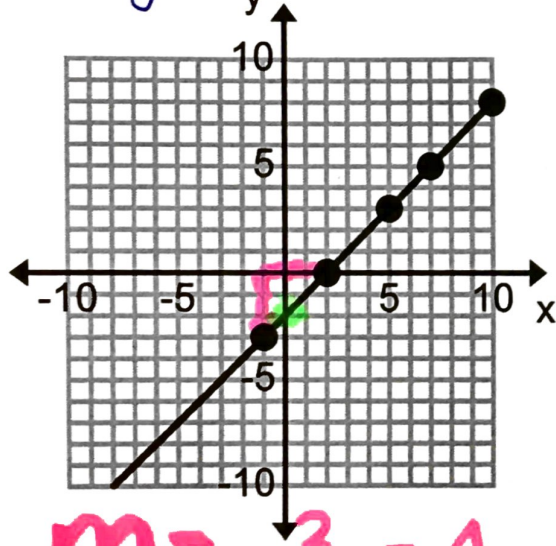


Vocabulary	Definition
<p>Slope: <b>m</b></p> <p>Constant rate of change</p>	<p>rise = <math>\frac{y_2 - y_1}{x_2 - x_1}</math> steep a line is</p> <p>run = <math>\frac{y_2 - y_1}{x_2 - x_1}</math></p> <p><b>move</b></p> <p>+ slope</p> <p>- slope</p>
<p>y-intercept:</p> <p><math>x=0</math></p> <p>(0,4)</p> <p>(0,-1)</p>	<p>where a line hits/crosses the y axis</p> <p><b>b</b> the y axis</p> <p><b>begin</b></p> <p>(0,2)</p> <p>(0,-)</p>
<p>Slope-Intercept Form:</p>	<p><math>y = mx + b</math></p> <p>↙ slope ↘</p> <p>↙ y-intercept ↘</p>

Ex. 1 & 2: Identify the **slope** and the **y-intercept** for the graph below. Show how the slope and y-intercept are connected to the equation.

$y = 1x - 2$

$y = mx + b$



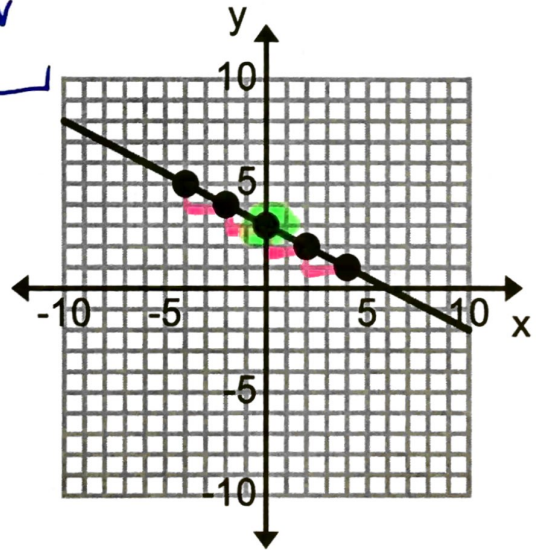
$m = \frac{3}{3} = 1$

$b = -2$

$y = mx + b$

$y = \underline{\quad}x + \underline{\quad}$

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



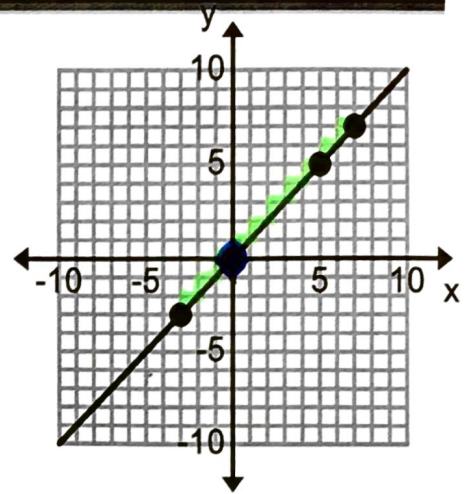
Ex. 3: Identify the slope and the y-intercept for the graph to the right. Show how the slope and y-intercept are connected to the equation.

$$y = 1x +$$

$$y = \underline{1}x + \underline{0}$$

$$m = 1$$

$$b = 0$$



Ex. 4: Identify the slope ( $m$ ), y-intercept ( $b$ ) and then graph the equation. ( $y = mx + b$ )

$$y = mx + b$$

$$y = \frac{2}{3}x - 5$$

$$m = \frac{2}{3}$$

$$b = -5$$

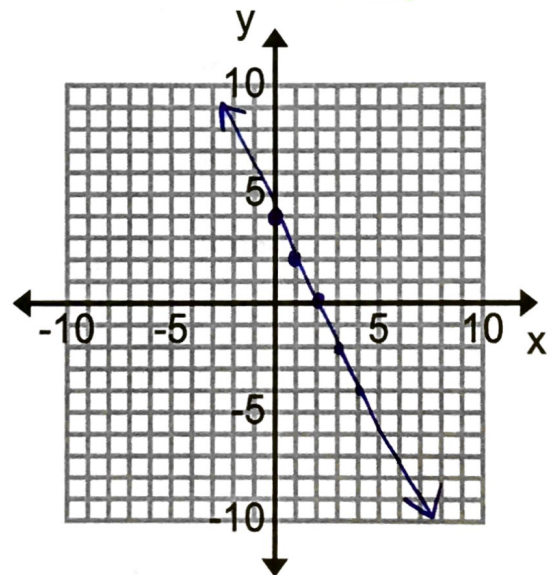
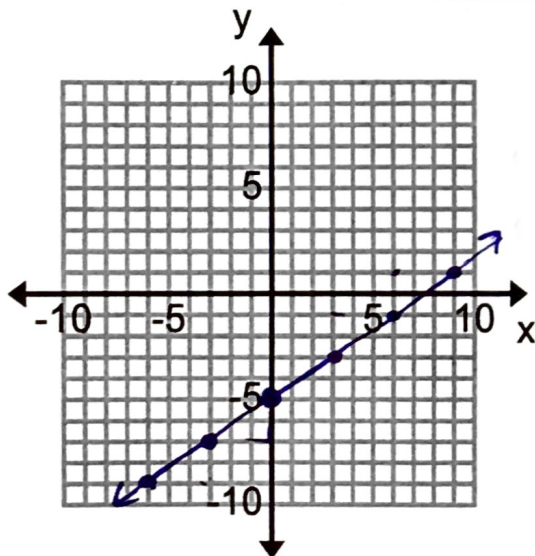
$$y = mx + b$$

$$y = -2x + 4$$

$$m = -2$$

$$b = 4$$

-2 rise  
1 run



Ex. 5: Change to slope-intercept form. (Solve for y).

A)  $-4x + 3y = 9$

$$\begin{array}{r} +4x \\ \hline 3y = 4x + 9 \\ \div 3 \\ \hline y = \frac{4x}{3} + \frac{9}{3} \\ \boxed{y = \frac{4x}{3} + 3} \end{array}$$

B)  $5x - 2y = 6$

$$\begin{array}{r} -5x \\ \hline -2y = -5x + 6 \\ \div -2 \\ \hline y = \frac{5x}{2} - 3 \\ \boxed{y = \frac{5x}{2} - 3} \end{array}$$



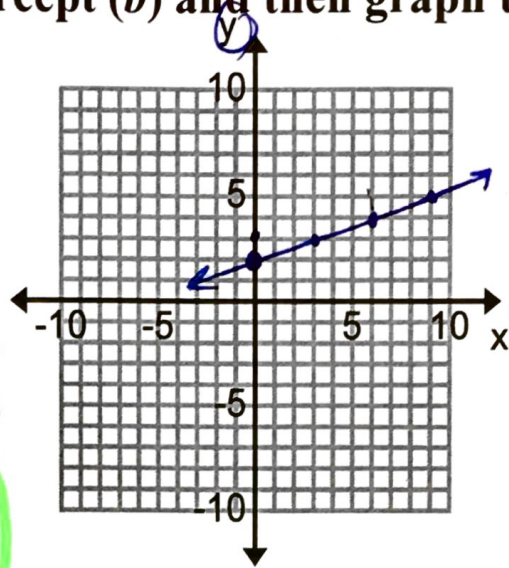
Ex. 6: Identify the slope ( $m$ ),  $y$ -intercept ( $b$ ) and then graph the equation. ( $y = mx + b$ )

$x - 3y = -6$

$m = \frac{1}{3}$

$b = \frac{2}{y \text{ axis}}$

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



Ex. 7, 8, & 9: Given the graph, identify the slope ( $m$ ),  $y$ -intercept ( $b$ ) and write the equation of the line in slope-intercept form ( $y = mx + b$ ).

$m = -3$

$b = 1$

Equation =  $y = -3x + 1$

$m = \frac{3}{4}$

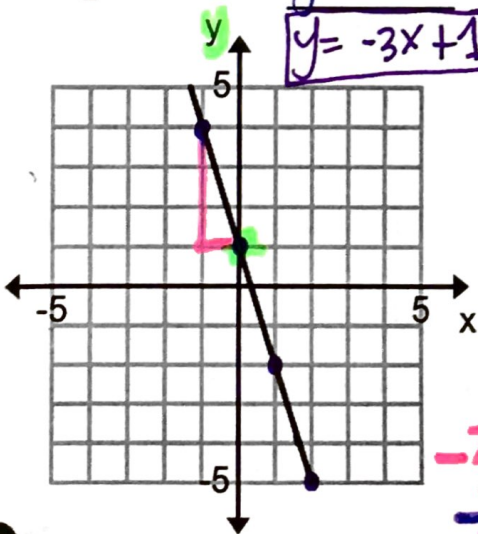
$b = -2$

Equation =  $y = \frac{3}{4}x - 2$

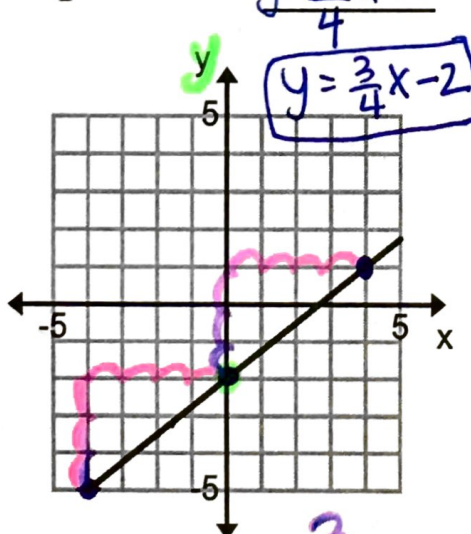
$m = 0$

$b = -3$

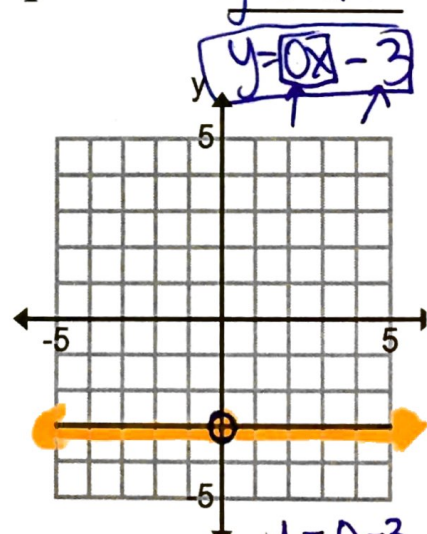
Equation =  $y = 0x - 3$



$-3$   
 $\frac{1}{-3}$



$\frac{3}{4}$



$y = 0x - 3$   
 $y = -3$

Ex. 10 & 11: Given the table, identify the slope ( $m$ ), y-intercept ( $b$ ) and write the equation of the line in slope-intercept form ( $y = mx + b$ ).

$$m = -2$$

$$b = -1$$

$$\text{Equation} = y = -2x + -1$$

$$y = -2x - 1$$

x	y
-3	5
-1	1
0	-1
3	-7

$$\frac{1 - 5}{-1 - (-3)} = \frac{-4}{2} = -2$$

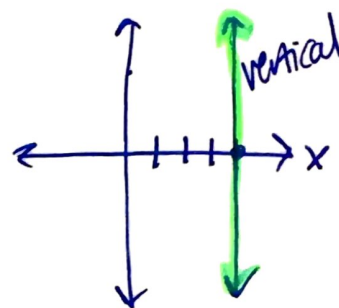
$$-1 + 3$$

$$m = \text{undefined}$$

$$b = \text{none}$$

$$\text{Equation} = x = 4$$

x	y
4	8
4	0
4	-3
4	-10



Ex. 12: Liam is reading a 254-page book for school. He can read 40 pages in one hour. The equation for the number pages he has left to read is  $y = 254 - 40x$ , where  $x$  is the number hours he reads.

a. State the slope and the y-intercept of the equation.

b. Graph the equation.

c. Interpret what the slope and the y-intercept represent.

