

## How Do We Write An Equation In Slope-Intercept Form?

$$y = mx + b$$

slope    y-int

Make the  
x-variable  
1st always  
(when needed)

1) Write the slope-intercept form of the equation of each line.

(a)  $x + y = 10$

$$\begin{array}{r} x + y = 10 \\ -x \quad -x \\ \hline y = -x + 10 \end{array}$$

$m = -1$   
 $b = 10$

(b)  $5x + y = 25$

$$\begin{array}{r} 5x + y = 25 \\ -5x \quad -5x \\ \hline y = -5x + 25 \end{array}$$

$m = -5$   
 $b = 25$

(c)  $2y - 8x = 14$

$$\begin{array}{r} 2y - 8x = 14 \\ +8x \quad +8x \\ \hline 2y = 8x + 14 \\ \frac{2y}{2} = \frac{8x}{2} + \frac{14}{2} \\ y = 4x + 7 \end{array}$$

$m = 4$   
 $b = 7$

(d)  $2y - 3x = -16$

$$\begin{array}{r} 2y - 3x = -16 \\ +3x \quad +3x \\ \hline 2y = 3x - 16 \\ \frac{2y}{2} = \frac{3x}{2} - \frac{16}{2} \\ y = \frac{3}{2}x - 8 \end{array}$$

$m = \frac{3}{2}$   
 $b = -8$

(e)  $9x - 7y = -7$

$$\begin{array}{r} 9x - 7y = -7 \\ -9x \quad -9x \\ \hline -7y = -9x - 7 \\ \frac{-7y}{-7} = \frac{-9x}{-7} - \frac{7}{-7} \\ y = \frac{9}{7}x + 1 \end{array}$$

$m = \frac{9}{7}$   
 $b = 1$

*can't have 2 negatives*

(f)  $x - 3y = 6$

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

$m = \frac{1}{3}$   
 $b = -2$

(g)  $6x + 5y = -15$

$$\begin{array}{r} 6x + 5y = -15 \\ -6x \quad -6x \\ \hline 5y = -6x - 15 \\ \frac{5y}{5} = \frac{-6x}{5} - \frac{15}{5} \\ y = -\frac{6}{5}x - 3 \end{array}$$

$m = -\frac{6}{5}$   
 $b = -3$

(h)  $4x - y = 1$

$$\begin{array}{r} 4x - y = 1 \\ -4x \quad -4x \\ \hline -y = -4x + 1 \\ \frac{-y}{-1} = \frac{-4x}{-1} + \frac{1}{-1} \\ y = 4x - 1 \end{array}$$

$m = 4$   
 $b = -1$

2) Find the slope and y-intercept of each line.

(a)  $y = -\frac{5}{2}x - 5$

$m = -\frac{5}{2}$   
 $b = -5$

(b)  $x + 2y = -8$

$$\begin{array}{r} x + 2y = -8 \\ -x \quad -x \\ \hline 2y = -x - 8 \\ \frac{2y}{2} = \frac{-x}{2} - \frac{8}{2} \\ y = -\frac{1}{2}x - 4 \end{array}$$

$m = -\frac{1}{2}$   
 $b = -4$

(c)  $4x - 3y = 9$

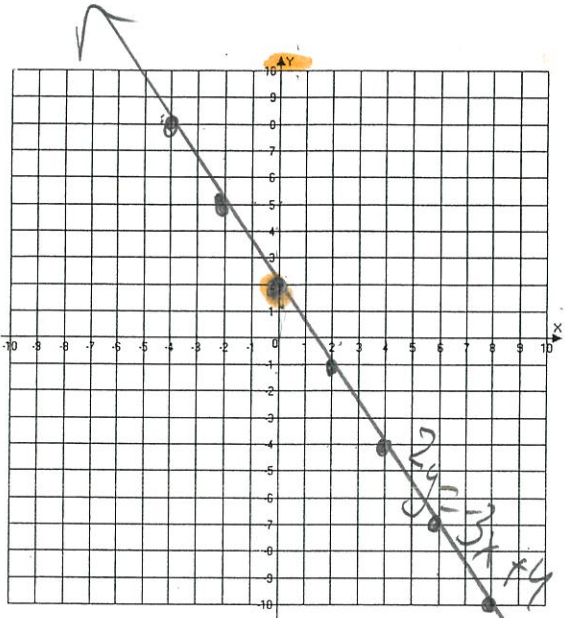
$$\begin{array}{r} 4x - 3y = 9 \\ -4x \quad -4x \\ \hline -3y = -4x + 9 \\ \frac{-3y}{-3} = \frac{-4x}{-3} + \frac{9}{-3} \\ y = \frac{4}{3}x - 3 \end{array}$$

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

3) Rewrite the following equations in slope-intercept form first. THEN graph the equations using the slope and the y-intercept.

\* You MUST write the Original Equation on the line

(a)  $2y = -3x + 4$



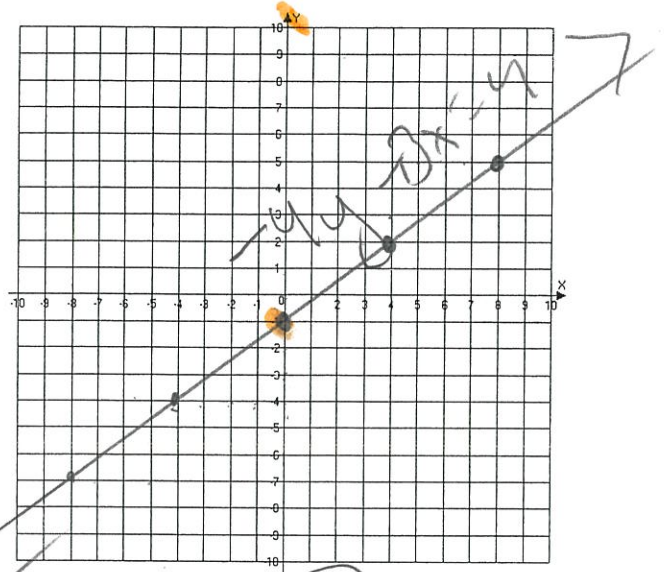
$$\frac{2y}{2} = \frac{-3x + 4}{2}$$

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

$m = -\frac{3}{2}$  (slope)

$b = 2$  (y-intercept)

(b)  $-4y + 3x = 4$



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

$$-y = -\frac{3}{4}x - 1$$

$$y = \frac{3}{4}x - 1$$

$m = \frac{3}{4}$  (slope)

$b = -1$  (y-intercept)