

Algebra: Please clear your desk except for...

1. Assignments #18

2. SNB

Find the slope and describe the line through the given points.

A. (2, 1) and (-2, -5) B. (-2, 0) and (-2, 5)

C. (-6, 2) and (1, 1/2) D. (-6, 5) and (0, 5)

A. (2, 1) and (-2, -5)

$$m = \frac{\Delta y}{\Delta x} = \frac{-5-1}{-2-2} = \frac{-6}{-4} = \frac{3}{2}$$

$$m = \frac{\Delta y}{\Delta x} = \frac{1-(-5)}{2-(-2)} = \frac{6}{4} = \frac{3}{2}$$

$m = \frac{3}{2}$ Inc. Line

B. (-2, 0) and (-2, 5)

$$m = \frac{\Delta y}{\Delta x} = \frac{5-0}{-2-(-2)} = \frac{5}{0}$$

undefined Vert. Line



C. (-6, 2) and (1, 1/2)

$$m = \frac{\Delta y}{\Delta x} = \frac{2-\frac{1}{2}}{-6-1} = \frac{\frac{3}{2}}{-7}$$

$$m = \frac{3}{2} \left(\frac{-1}{7} \right)$$

$m = -\frac{3}{14}$ Dec. Line

D. (-6, 5) and (0, 5)

$$m = \frac{\Delta y}{\Delta x} = \frac{5-5}{0-(-6)} = \frac{0}{6}$$

$m = 0$

Horizontal
Line

Slope-Intercept Form

1. Sketch the graph using intercepts.
2. Write y as a function of x .

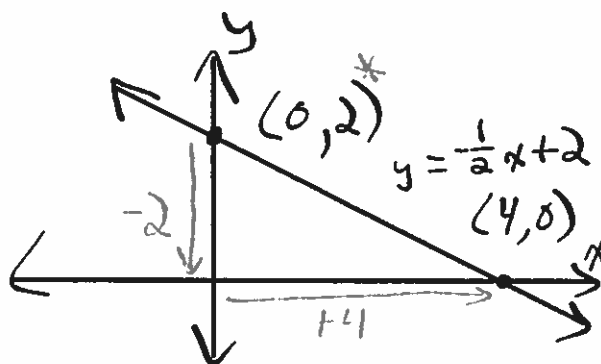
A. $x + 2y = 4$ B. $3x - 2y = 6$

A. $x + 2y = 4$

x -int: $y = 0$
 $x = 4$ $(4, 0)$

y -int: $x = 0$
 $2y = 4$
 $y = 2$ $(0, 2)$

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



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

$$B. 3x - 2y = 6$$

$$x\text{-int: } y = 0$$

$$3x = 6 \quad (2, 0)$$

$$x = 2$$

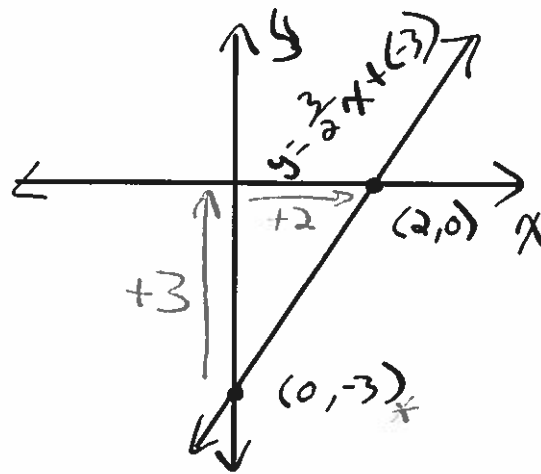
$$y\text{-int: } x = 0$$

$$-2y = 6 \quad (0, -3)$$

$$y = -3$$

$$y = \underline{\underline{\frac{3}{2}x + (-3)}}^*$$

$$m = \frac{\Delta y}{\Delta x} = \underline{\underline{\frac{3}{2}}}$$



Slope-Intercept Form

$$y = mx + b$$

slope

y-coordinate
of the
y-intercept

Name the slope and y-intercept of each function.

1. $y = -3x - 2$

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

$$m = -3 \quad b = -2$$

$$y\text{-int: } (0, -2)$$

2. $3x - y = 5$

$$\begin{array}{r} +(-3x) \qquad \qquad +(-3x) \\ 3x - y = 5 \end{array}$$

$$\frac{-y}{-1} = \frac{-3x + 5}{-1}$$

$$y = 3x + (-5)$$

$$m = 3 \quad b = -5$$

$$y\text{-int: } (0, -5)$$

Sketch the Graph of a Linear Equation using Slope
You must label at least THREE points.

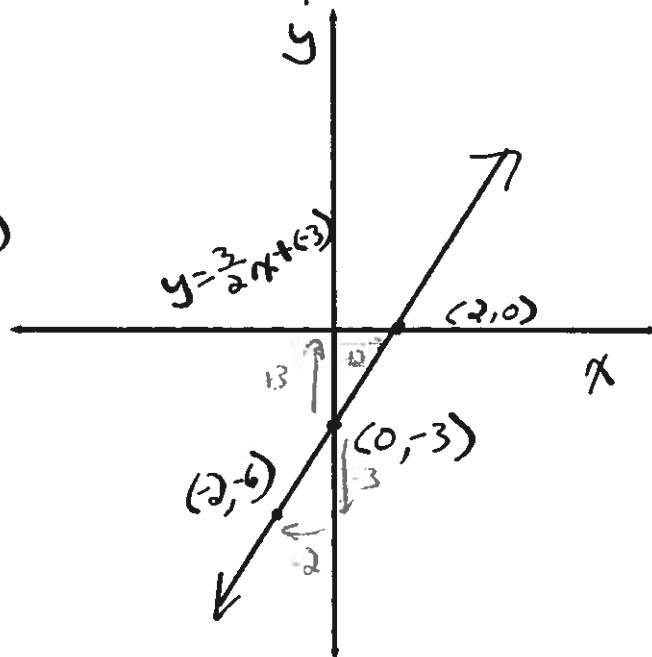
Ex 1: $3x - 2y = 6$

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

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

$$m = \frac{3}{2} = \frac{\Delta y}{\Delta x} = \frac{-3}{-2}$$

$$y\text{-int: } (0, -3)$$



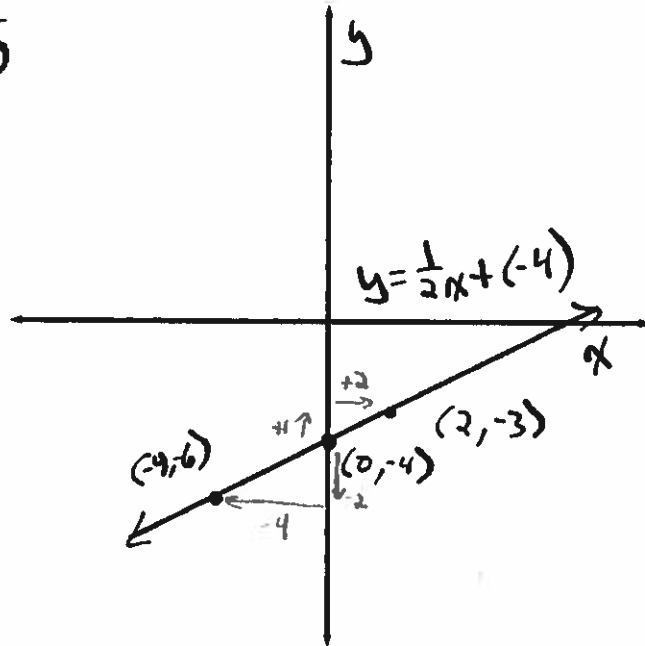
Ex 2: $2x - 4y = 16$

$$-4y = -2x + 16$$

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

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

y-int: $(0, -4)$

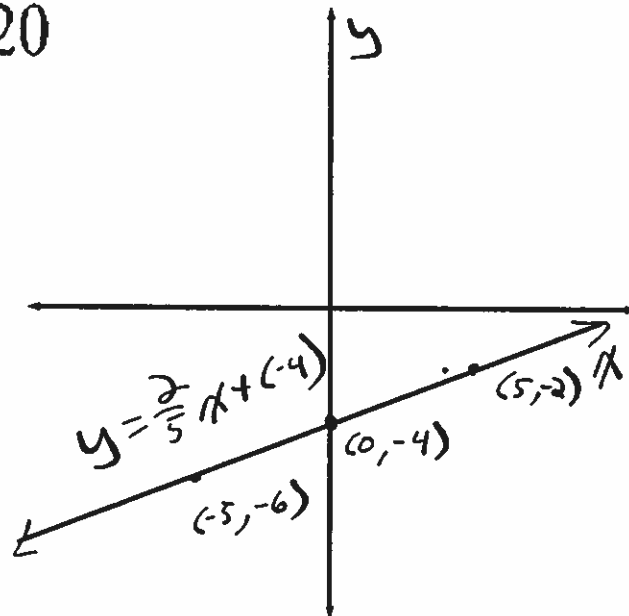


Ex 3: $-2x + 5y = -20$

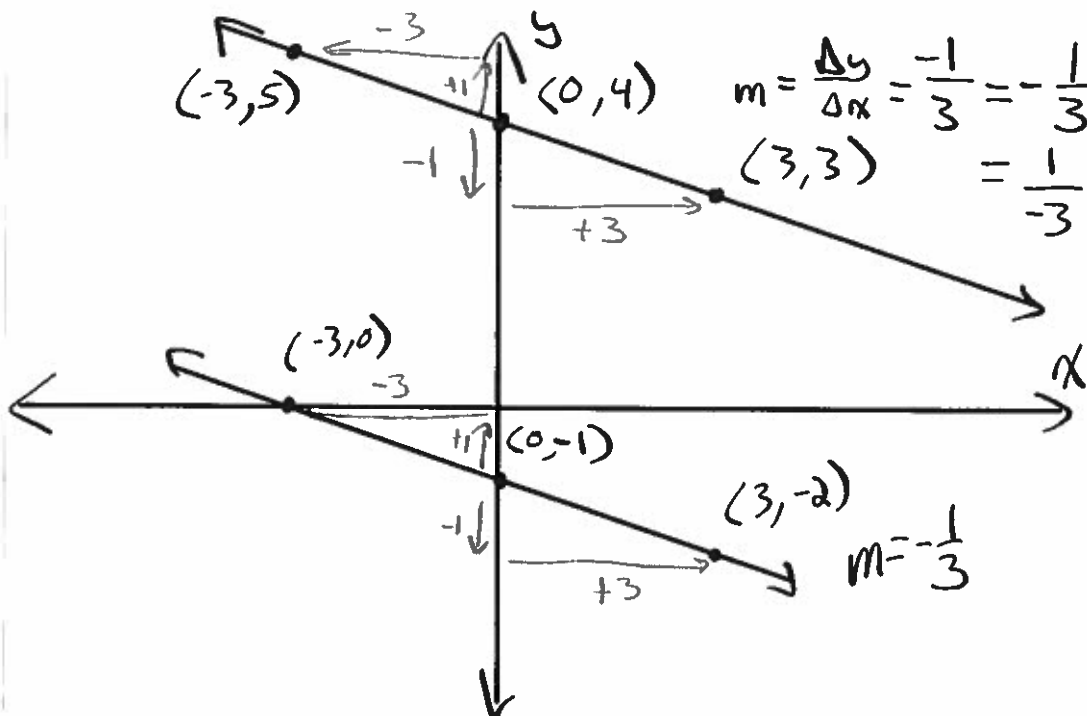
$$y = \frac{2}{5}x + (-4)$$

$$m = \frac{2}{5} = \frac{\Delta y}{\Delta x} = \frac{-2}{-5}$$

y-int: $(0, -4)$



Lines that have the same slope are parallel.



Are these lines parallel?

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

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

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

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

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

Same slope means parallel lines!