

Calculate slope

$(-7, 12)$

$x_1 \ y_1$

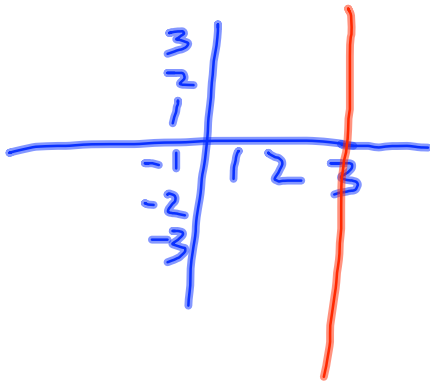
$(2, -4)$

$x_2 \ y_2$

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$\frac{-4 - 12}{2 - -7} = \frac{-16}{5}$$

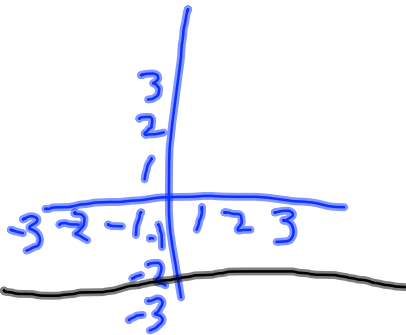
what is slope?



$$\begin{matrix} (3, 2) & (3, 3) \\ x_1, y_1 & x_2, y_2 \end{matrix}$$

$$\frac{3-2}{3-3} = \frac{1}{\cancel{0}}$$

undefined



$$\begin{matrix} (0, -2) & (3, -2) \\ x_1, y_1 & x_2, y_2 \end{matrix}$$

$$\frac{-2 - -2}{3 - 0} = \frac{\cancel{0}}{3}$$

what's slope and y intercept?

$$y = -\frac{3}{8}x + \frac{5}{7}$$

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

$$y = mx + b$$

$$b = \frac{5}{7}$$

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

$$-4x \quad -4x$$

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

$$m = -4$$

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

Is this a direct variation?

$$\underbrace{6x} = \underbrace{3y}$$

$$y = kx$$

$$2x = y$$

$$y = 2x$$

Yes

$$4y = 8x - 12$$

$$\bar{4} \quad \bar{4} \quad \bar{4}$$

$$y = 2x - 3$$

No

Write the equation of  
the line:

$$m = \frac{5}{6} \quad b = 2\frac{1}{3}$$

$$y = \frac{5}{6}x + 2\frac{1}{3}$$

$y$  varies directly with  $x$   
and  $y = 9$  when  $x = -6$ .

What direct variation relates  
 $x$  and  $y$ ? What is the value  
of  $y$  when  $x = 4$

$$y = kx$$

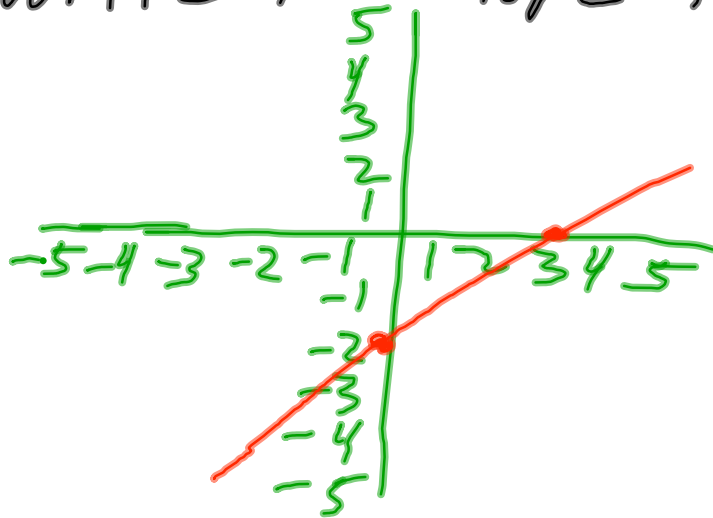
$$9 = -6k$$

$$-\frac{9}{6} = k$$

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

$$y = -\frac{3}{2} \cdot \frac{4}{1} = -\frac{12}{2} = -6$$

Write the slope intercept form



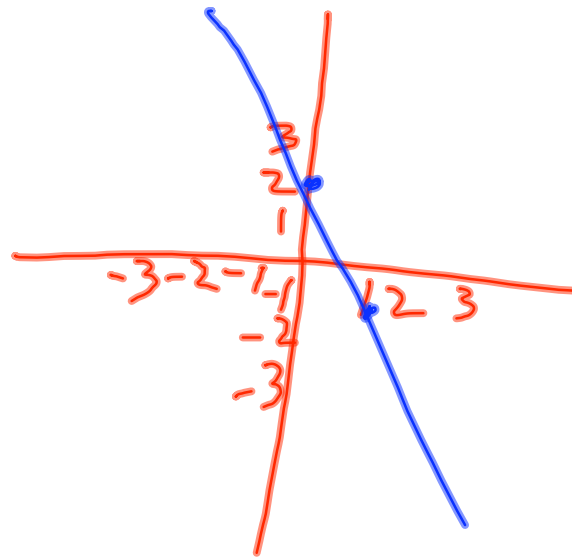
$$\begin{matrix} (3, 0) \\ x_1, y_1 \end{matrix} \quad \begin{matrix} (0, -2) \\ x_2, y_2 \end{matrix}$$

$$m = \frac{-2 - 0}{0 - 3} = \frac{-2}{-3} = \frac{2}{3}$$

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

Graph:  $y = -3x + 2$

x	y
0	2
1	-1



Write an equation in point slope form:

$$\begin{matrix} (-2, 5) \\ x_1, y_1 \end{matrix} \quad m = \frac{2}{3}$$

$$y - y_1 = m(x - x_1)$$

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

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

Graph

$$y + 3 = 2(x - 5)$$

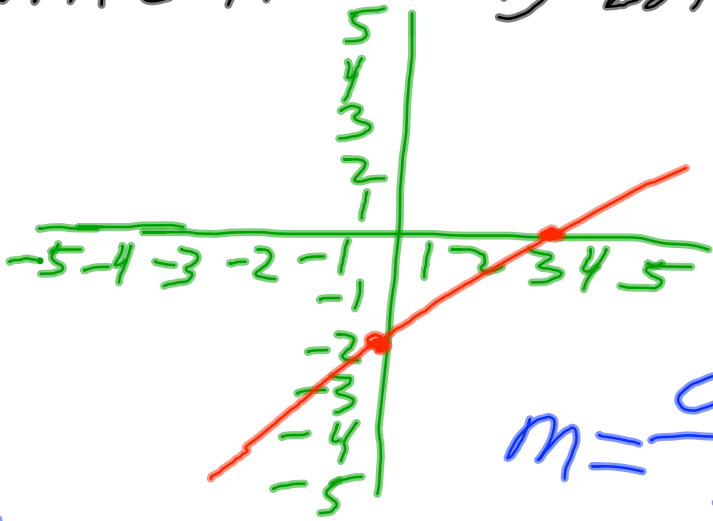
$$(5, -3)$$

$x_1, y_1$

$$m = \frac{2}{1}$$



Write the point slope form.  
(Write it using both points)



$$\begin{matrix} (0, -2) & (3, 0) \\ x_1, y_1 & x_2, y_2 \end{matrix}$$

$$m = \frac{0 - (-2)}{3 - 0} = \frac{2}{3}$$

$$y - y_1 = m(x - x_1)$$

$$y - (-2) = \frac{2}{3}(x - 0)$$

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

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

Find the  $x$  and  $y$  intercepts. Graph it.

$$-3x + 4y = 24$$

$$-3(0) + 4y = 24$$

$$\frac{4y}{4} = \frac{24}{4}$$

$$y = 6$$

$(0, 6)$   
y intercept

$$-3x + 4(0) = 24$$

$$\frac{-3x}{-3} = \frac{24}{-3}$$

$$x = -8$$

$(-8, 0)$   
x-intercept

Write an equation for a line that is parallel to the given line and passes through the given point:

$$y = 2x - 6 \quad (-4, 10)$$

$$m = 2 \quad (-4, 10)$$

$$y - 10 = 2(x - -4)$$

$$y - 10 = 2(x + 4)$$

$$y - 10 = 2x + 8$$

$$y = 2x - 2$$

Are these parallel, perpendicular or neither?

$$3x - 6y = 12$$

$$m = \frac{1}{2}$$

$$y = -3x + 4$$

$$m = -3$$

neither

$$\begin{array}{r} \cancel{3x} - 6y = 12 \\ -\cancel{3x} \quad \quad \quad -3x \end{array}$$

$$\begin{array}{r} -6y = -3x + 12 \\ \underline{\quad} \quad \underline{\quad} \quad \underline{\quad} \\ -6y = -3x + 12 \end{array}$$

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

Are these parallel, perpendicular  
or neither?

$$3x - 6y = 12 \quad m = \frac{1}{2}$$

$$y = \frac{1}{2}x + 16 \quad m = \frac{1}{2}$$

parallel

Are these parallel, perpendicular  
or neither?

$$3x - 6y = 12$$

$$m = \frac{1}{2}$$

$$y = -2x - 7$$

$$m = -2$$

perpendicular