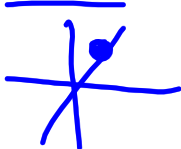


**WHY CAN  
YOU NOT  
MAKE A  
 $y = mx + b$   
EQUATION  
FOR THIS  
LINE?**

ALL LINES CAN BE FOUND USING...


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

POINT SLOPE FORM

Pt.  
  
( , )

ALL YOU NEED IS A...

1. POINT
2. AND SLOPE

Slope  
  
rise  
run  
(2,1) (3,4)  
 $\frac{y_2 - y_1}{x_2 - x_1}$

EXAMPLE #1:  $y - y_1 = m(x - x_1)$

FIND THE SLOPE-INTERCEPT EQUATION OF THE LINE THAT PASSES THROUGH PTS. (2,-2) & (4,8)

Pt.  
(4,8)

Slope<sup>m</sup>  

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{8 - (-2)}{4 - 2} = 5$$

$$y - 8 = 5(x - 4)$$

$$y - 8 = 5x - 20$$

$$y = 5x - 12$$

EXAMPLE #2:  $y - y_1 = m(x - x_1)$

FIND THE SLOPE-INTERCEPT EQUATION OF THE LINE THAT PASSES THROUGH PTS. (4,2) & (7,8)

Point Slope

(7,8)  $\frac{y_2 - y_1}{x_2 - x_1} = \frac{8 - 2}{7 - 4} = 2$

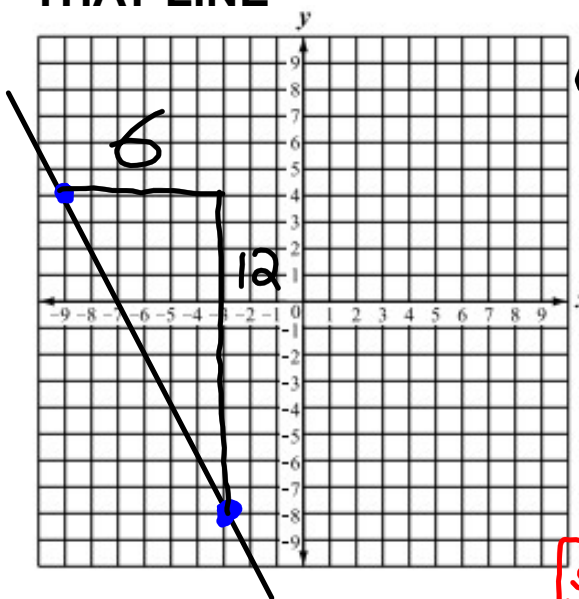
$y - 8 = 2(x - 7)$

$y - 8 = 2x - 14$

$\begin{matrix} +8 & & +8 \end{matrix}$

$y = 2x - 6$

**EXAMPLE #3:**  
**GRAPH (-9,4) & (-3,-8).**  
**FIND THE EQUATION OF**  
**THAT LINE**



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

Pt.

$$(-9, 4)$$

Slope

$$\frac{\text{rise}}{\text{run}} = \frac{12}{6}$$

$$= -2$$

$$y - 4 = -2(x - (-9))$$

$$y - 4 = -2(x + 9)$$

$$y - 4 = -2x - 18$$

$$+4$$

$$+4$$

$$\boxed{y(x) = -2x - 14}$$