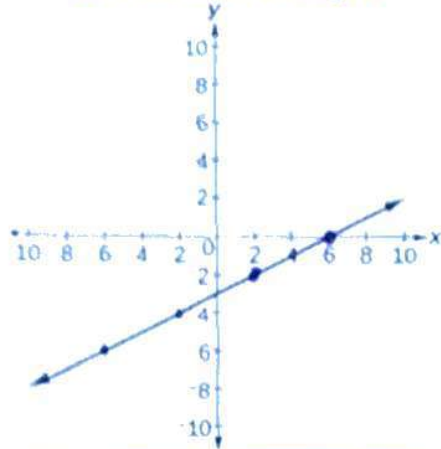


Got a GRAPH?

Given the Graph



Find the Points and Slope

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

$$(6, 0) \leftarrow$$

$$(2, 2)$$

$$(-2, 4)$$

$$(-6, 6)$$

Use Point - Slope Form

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

$$m = \frac{1}{2} \quad (6, 0)$$

$$x_1, y_1$$

$$y - 0 = \frac{1}{2}(x - 6)$$

Write the equation in Slope - Intercept Form

$$y = mx + b$$

$$y - 0 = \frac{1}{2}(x - 6)$$

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

$$m = \frac{1}{2} \quad b = (0, -3)$$

Got a Point & the Slope?

One Point & the Slope

$$(x_1, y_1) \quad m = \frac{\Delta y}{\Delta x}$$

$$(-3, 6) \quad m = -\frac{1}{3}$$

Use Point - Slope Form

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

$$m = -\frac{1}{3} \quad (-3, 6)$$

$$x_1, y_1$$

$$y - 6 = -\frac{1}{3}(x - (-3))$$

$$y - 6 = -\frac{1}{3}(x + 3)$$

Write the equation in Slope Intercept Form

$$y = mx + b$$

$$y - 6 = -\frac{1}{3}(x + 3)$$

$$y - 6 = -\frac{1}{3}x - 1$$

$$+6 \qquad +6$$

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

$$m = -\frac{1}{3} \quad b = (0, 5)$$

Write the equation in Standard Form (if necessary)

$$Ax + By = C$$

- X + y on same side
- A, B + C are integers
- A is positive

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

$$3\left(-\frac{1}{3}x + y = 5\right)$$

$$x - 3y = 15$$

GOT 2 POINTS?

Given 2 points

(x_1, y_1) and (x_2, y_2)

$(4, -2)$ and $(3, 1)$

Find the Slope

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

$$(4, -2) \quad (3, 1)$$

$$x_1, y_1 \quad x_2, y_2$$

$$\frac{1 + 2}{3 - 4} = \frac{3}{-1}$$

$$m = -3$$

Use Point - Slope Form

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

$$m = -3 \quad (3, 1)$$

$$x_1, y_1$$

$$y - 1 = -3(x - 3)$$

$$y - 1 = -3(x - 3)$$

Write the equation in Slope - Intercept Form

$$y = mx + b$$

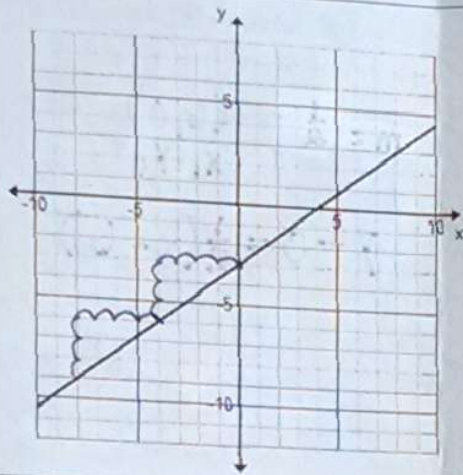
$$y - 1 = -3(x - 3)$$

$$y - 1 = -3x + 9$$

$$+1 \qquad +1$$

$$y = -3x + 10$$

STUDY

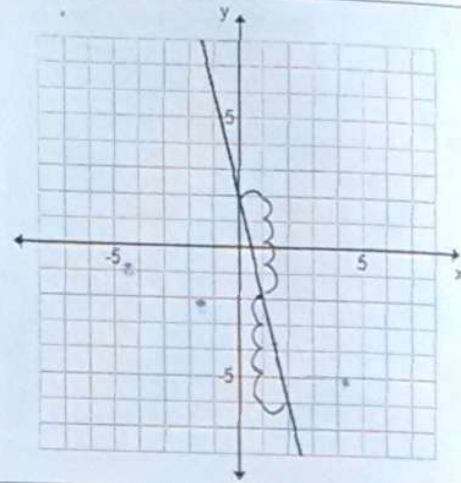


$$m = \frac{3}{4} \quad (4, 0)$$

$$x_1, y_1$$

$$y - 0 = \frac{3}{4}(x - 4)$$

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



$$m = -\frac{1}{4} \quad (0, 2)$$

$$x_1, y_1$$

$$y - 2 = -\frac{1}{4}(x - 0)$$

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

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

$$(-2, 10) \quad m = -\frac{3}{2}$$

$$x_1, y_1$$

$$y - 10 = -\frac{3}{2}(x + 2)$$

$$y - 10 = -\frac{3}{2}x - 3$$

$$y = -\frac{3}{2}x + 7$$

$$(1, -6) \quad m = 5$$

$$x_1, y_1$$

$$y - (-6) = 5(x - 1)$$

$$y + 6 = 5x - 5$$

$$y = 5x - 11$$

$$(-4, -2) \text{ and } (8, -5)$$

$$x_1, y_1 \quad x_2, y_2$$

$$m = \frac{-5 - (-2)}{8 - (-4)} = \frac{-3}{12} = -\frac{1}{4}$$

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

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

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

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

Alternative method when given 2 points:
Use calculator and Linear Regression

X	Y
-4	-2
8	-5

STAT → EDIT → Enter x in L1 + y in L2

STAT → CALC → 4(LinReg) → Calculate → ENTER

$$y = ax + b$$

$$a = -.25$$

$$b = -3$$

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