M10 - 6.3 - Slope Formula Notes

Find the Slope

$(3,4)$
(x_2, y_2)

$(2,1)$
(x_1, y_1)
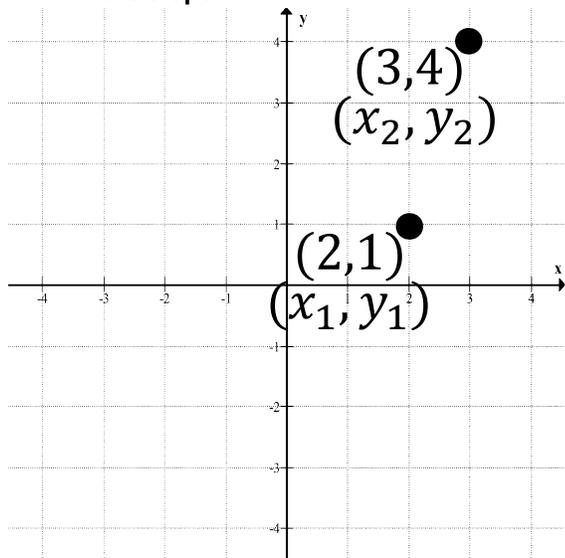
Slope Formula

$$Slope = \frac{rise}{run} = \frac{y_2 - y_1}{x_2 - x_1}$$ ← Vertical distance
← Horizontal distance

$(3,4) \quad (2,1)$
$(x_2, y_2) \quad (x_1, y_1)$

$$Slope = \frac{rise}{run} = \frac{y_2 - y_1}{x_2 - x_1}$$

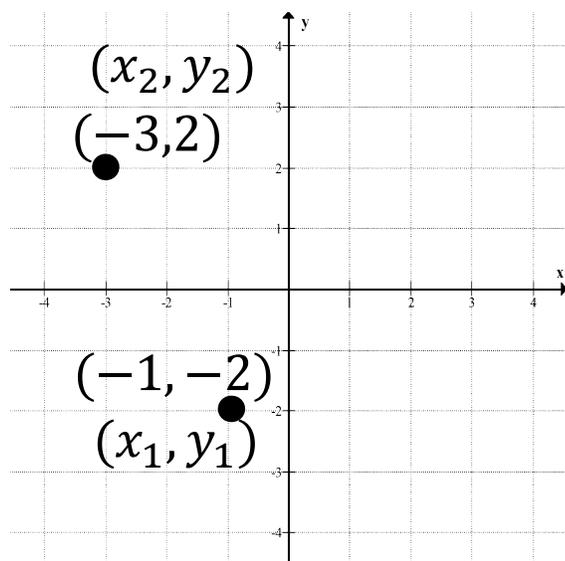$$= \frac{(4) - (1)}{(3) - (2)}$$ | Substitute with brackets

$$= \frac{3}{1}$$
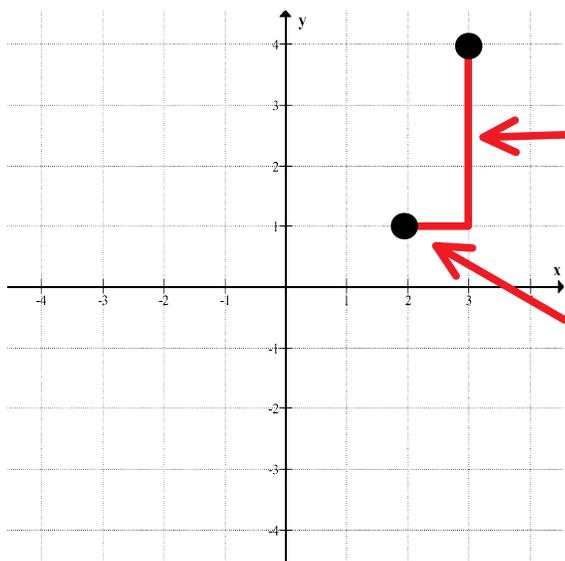
Slope = 3

Slope is how much you go up by over how much you go over by.

Vertical distance

1) Start at the point on the Left
2) Count straight up to the next point
3) count straight over to the next point

Horizontal distance

$$Slope = \frac{Up \ or \ Down}{Left \ or \ Right}$$

(x_2, y_2)
$(-3,2)$

$(-1,-2)$
(x_1, y_1)

$(-1,-2) \quad (-3,2)$
$(x_1, y_1) \quad (x_2, y_2)$

$$Slope = \frac{rise}{run} = \frac{y_2 - y_1}{x_2 - x_1}$$

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

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

$$= \frac{4}{-2}$$

$$Slope = -2$$