

1.2 Slopes & Intercepts

- Obj: 1. Determine slope
2. Write equations

x	y
-7	-2
-4	1
-1	4
2	7
5	10
8	13

$y = x + 5$

Slope: $\frac{\Delta y}{\Delta x} = \frac{3}{3} = 1$

$y = mx + b$

$y = x + b$

$13 = 8 + b$

$b = 5$

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Find the slope: $4x + 2y = 6$

$2y = -4x + 6$

Slope-intercept: $y = -2x + 3$

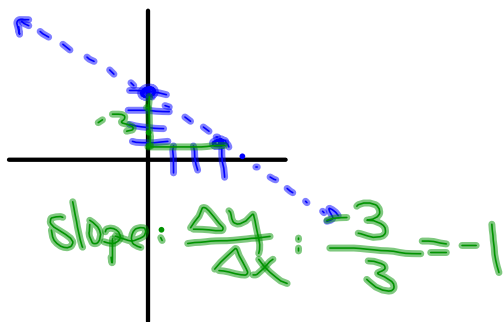
$m: -2$

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Find the slope of the line containing

$$\begin{matrix} (0, 4) & (3, 1) \\ x_1 & x_2 \\ y_1 & y_2 \end{matrix}$$

Graphically



Algebraically

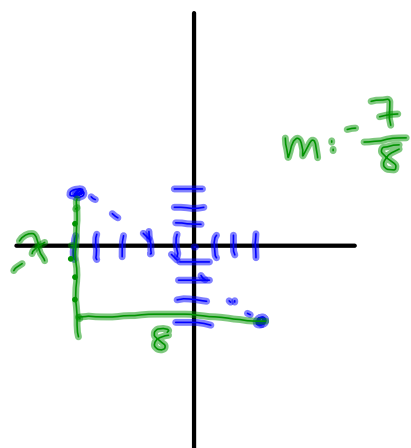
$$(x_1, y_1) \quad (x_2, y_2)$$

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

$$m = \frac{1 - 4}{3 - 0} = \frac{-3}{3} = -1$$

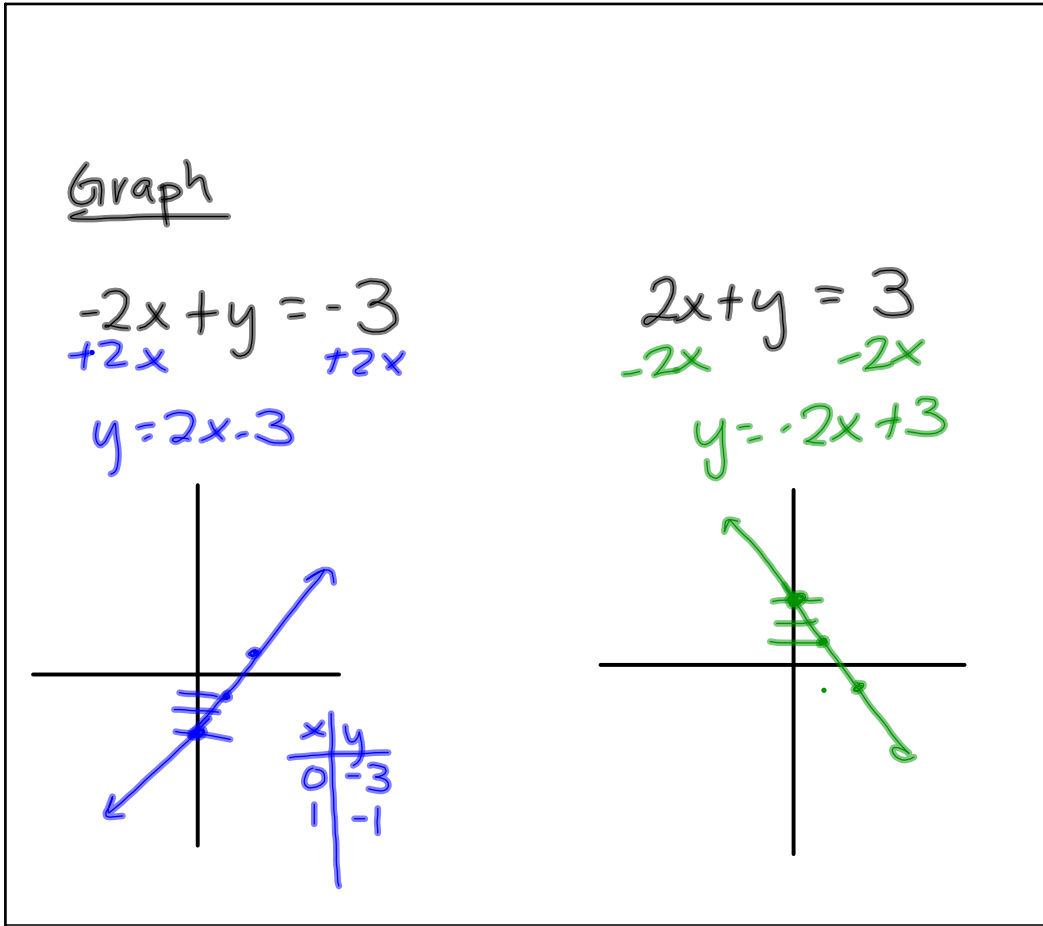
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Find the slope: $(-5, 3) \quad (3, -4)$

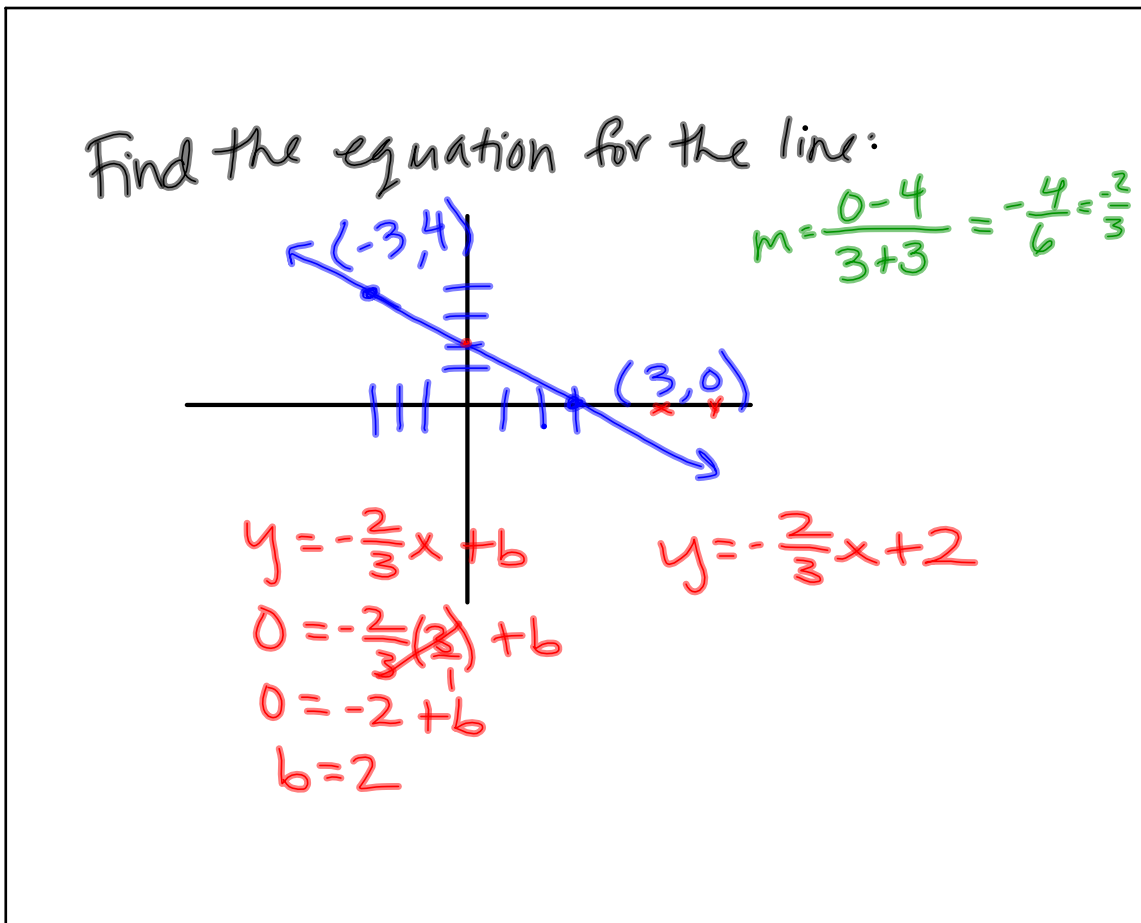


$$m = \frac{-4 - 3}{3 - (-5)} = \frac{-7}{8}$$

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Find an eq. in slope-intercept form of
the line through $(1, 4)$ $(3, 6)$

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

$$y = 1x + 3$$

$$\begin{aligned} y &= 1x + b \\ 6 &= 3 + b \\ -3 &= -3 \\ 3 &= b \end{aligned}$$

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Standard Form

$$Ax + By = C$$

* A, B, C : integers
* not fractions

Slope-int: * $y = \frac{3}{4}x + 2$

$$4\left(-\frac{3}{4}x\right) + (y) = (2) \cdot 4$$

Standard * $-3x + 4y = 8$

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Horizontal & Vertical Lines



* Horizontal

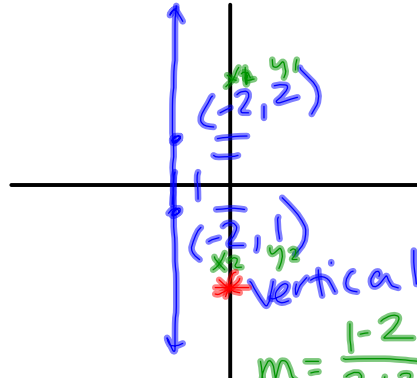
$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{3 - 3}{2 - (-3)} = \frac{0}{5} = 0$$

Slope: 0

$$y = 0x + b \quad y = 3$$

$$y = 0x + 3$$

$$y = k$$



* Vertical

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{2 - 1}{-2 - (-2)} = \frac{1}{0}$$

Slope: Undefined

$$x = -2$$

$$x = k$$

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