

Jan. 17, 2018

Sect. 2 - 3

Slope of a Line

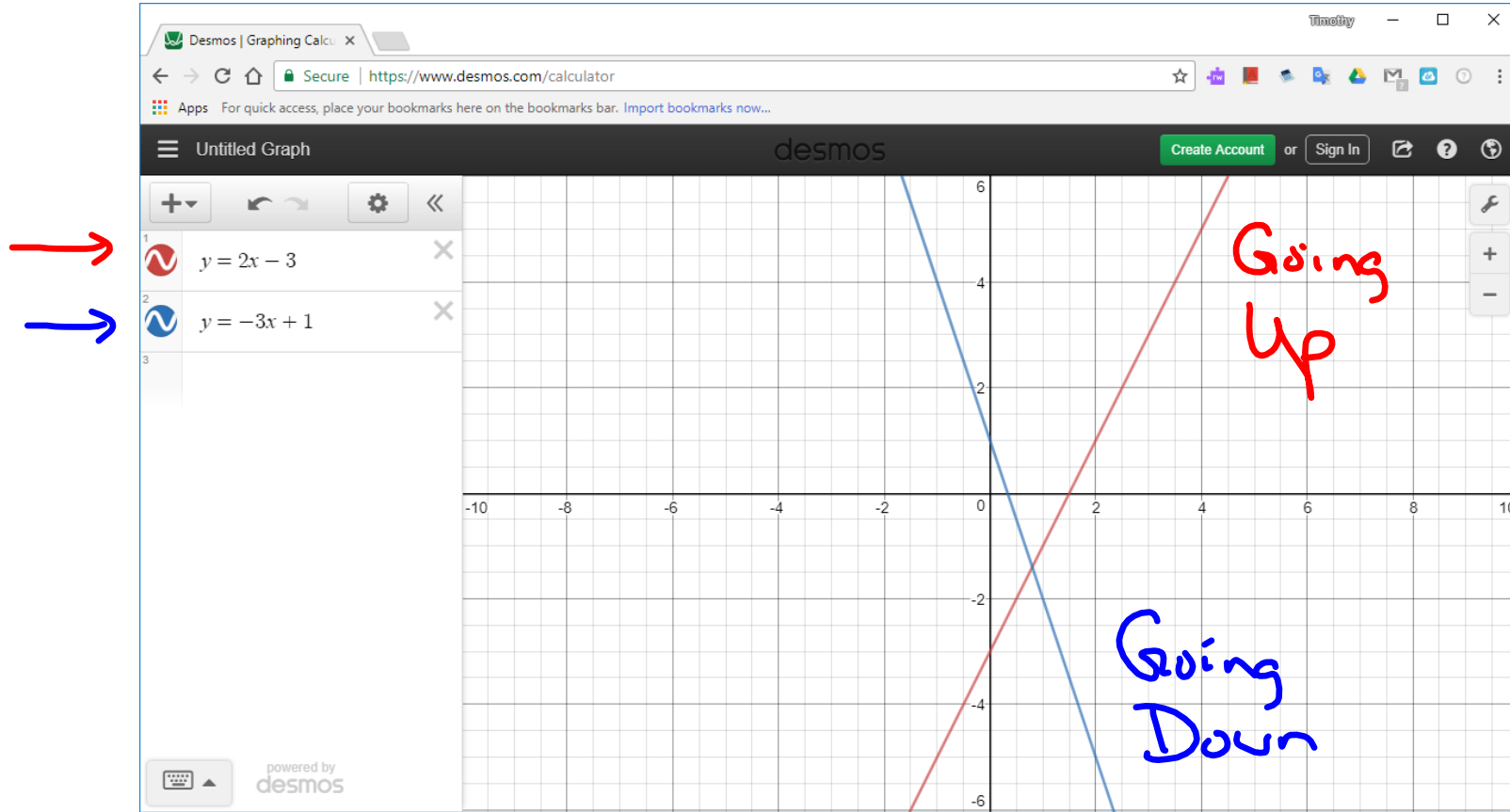
Defn

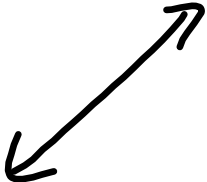
Find

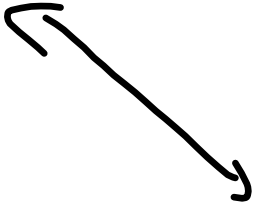
Sketch

Slope-Intercept Form

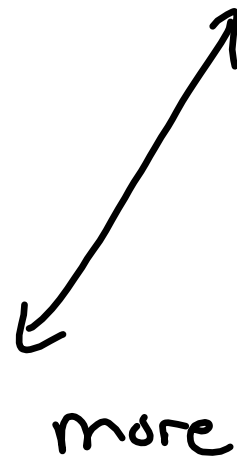
Parallel \perp Perpendicular



 Up \Rightarrow Positive Slope

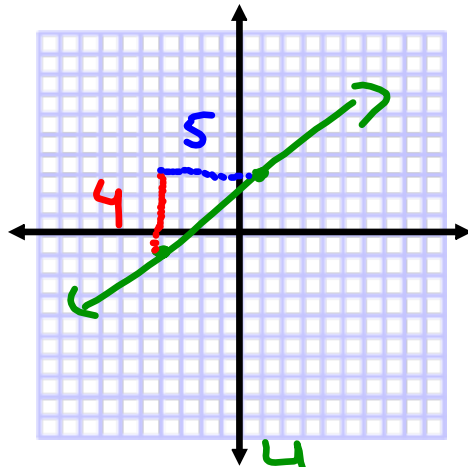
 Down \Rightarrow Negative Slope

Defn: Slope is a measure of "steepness"



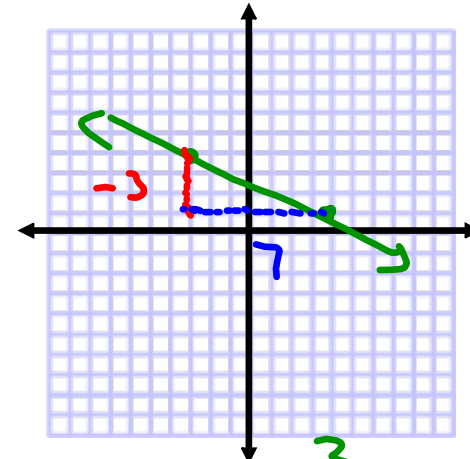
We can measure this steepness as

$$\frac{\text{rise}}{\text{run}} \quad (m)$$



$$m = \frac{4}{5}$$

remember
↗ + ↘ -



$$m = -\frac{3}{7}$$

Find the slope of the line
through $(-3, 1)$ and $(3, 4)$

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

$$m = \frac{4 - 1}{3 - (-3)} = \frac{3}{3 + 3} = \frac{3}{6} = \frac{1}{2}$$

Special Slopes

Horizontal



$$m = 0$$

~~"No Slope"~~

Don't say
this.

Vertical



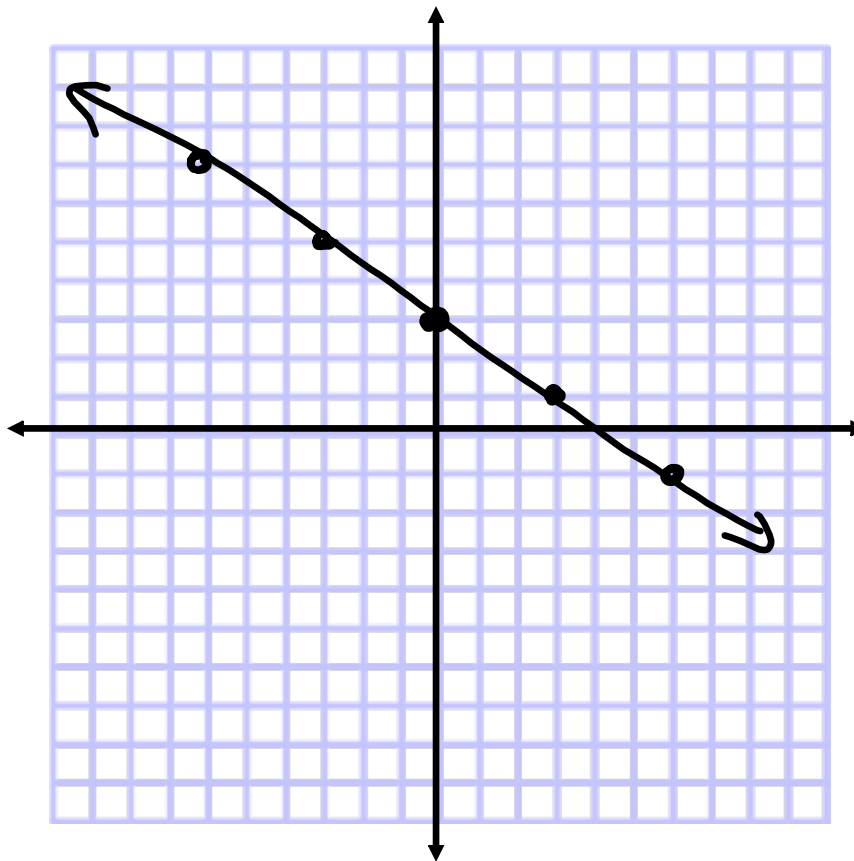
m is undefined

Sketch
the line

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

$$\text{pt} : (0, 3)$$

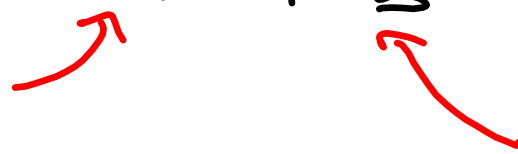
$$m = \frac{-2}{3} \text{ or } \frac{2}{-3}$$



Slope-Intercept Form

$$y = mx + b$$

slope



$(0, b)$ is y-int.

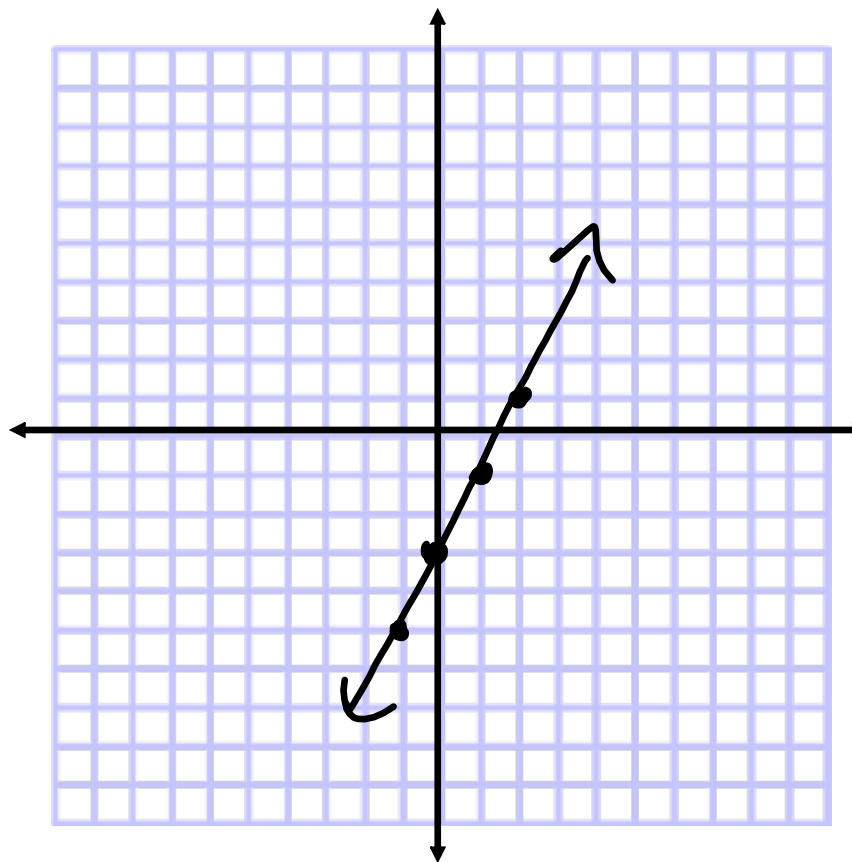
Sketch

$$y = 2x - 3$$

$$y\text{-int} : (0, -3)$$

$$\text{slope} = 2$$

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

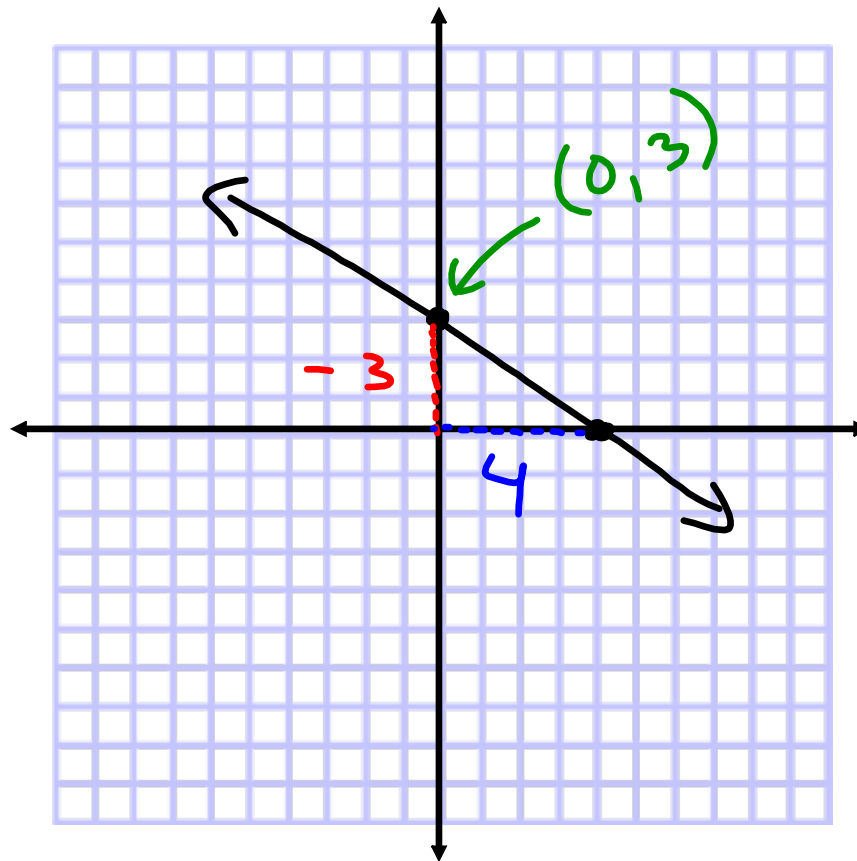


Given the
graph,
find the
eqn. in SIF

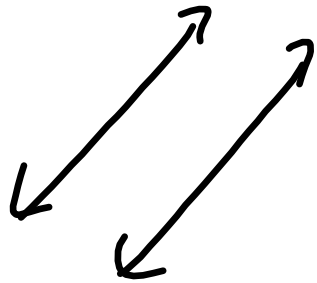
$$b = 3$$

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

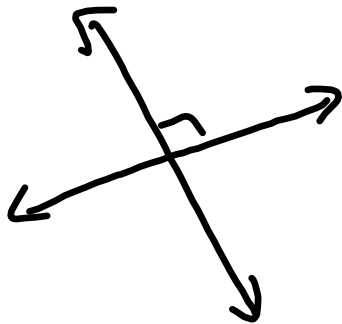
$$\text{So } y = -\frac{3}{4}x + 3$$



Parallel (\parallel) and Perpendicular (\perp)



Parallel \Rightarrow Same Slope



Perpendicular \Rightarrow Opposite (Sign)
Reciprocal (Fraction)
Slopes

$$m = \frac{2}{3} \Rightarrow \parallel m = \frac{2}{3} \Rightarrow \perp m = -\frac{3}{2}$$

$$m = -2 \Rightarrow \parallel m = -2 \Rightarrow \perp m = \frac{1}{2}$$