Slope: a number that states direction

$+, -, 0$, undefined

Slope Formula:

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

x_1 y_1 y_2 x_2

Ex. What is the slope of a line that passes through (-2, 5) and (-6, 2)

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-3}{-4}$$

$$= \frac{2 - 5}{-6 - (-2)}$$

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

Equation of a Line: $y = mx + b$; Slope-intercept form

m : slope b : y-intercept

Standard form for the Equation of a Line is $Ax + By = C$

Ex. Find the slope of the following lines

1) (1,0) (4,4) x_1 y_1 x_2 y_2

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{4-0}{4-1} = \frac{4}{3} \quad m =$$

2) (4,4) (5,-5)

$$= \frac{-5-4}{5-4} = \frac{-9}{1}$$

3) (-5,4) (0,4)

4) (x_1, y_1) $(-3, 4)$ (x_2, y_2) $(5, 2)$

$$= \frac{y_2 - y_1}{x_2 - x_1} = \frac{2-4}{5-(-3)} = \frac{-2}{8} = \frac{-1}{4}$$

Steps to Graphing a Linear Equation:

1. Put the equation in slope-intercept form
2. Plot the y-intercept on the graph
3. Plot the slope and draw the line

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Graph the following lines given their equation:

$y = 2x - 3$ | $y = -\frac{4}{5}x + 4$ | $2x - 3y = 6$

$\star\ y = mx + b$

Graph the following lines given their equation:

(1) $y = 2x - 3$

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

$b = -3$

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

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

$b = 4$

(3) $2x - 3y = 6$

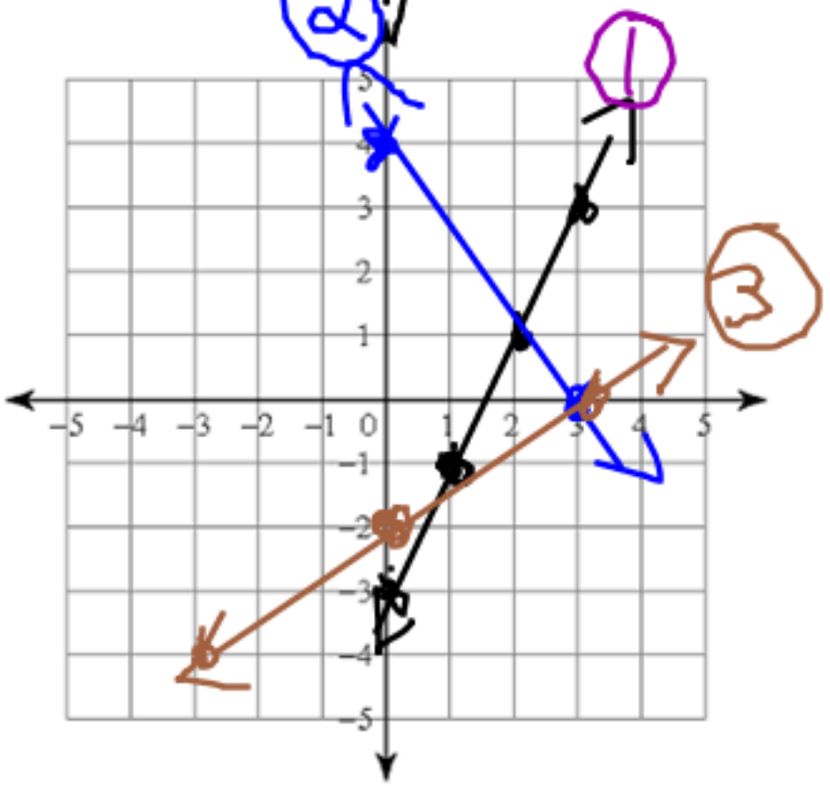
$-2x \quad -2x$

$\frac{-3y}{-3} = \frac{-2x}{-3} + \frac{6}{-3}$

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

$m = 2/3$

$b = -2$



① ~~x~~ $x - 3y = -3^{-x}$

$$-3y = -x - 3$$

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

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

$m = \frac{1}{3}$ $b = 1$