TH-A1 Algebra 1 Week 30 5/2

Slope. $\text{slope} = \frac{\text{rise}}{\text{run}} = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1}$

$(3, 2)$, $(-5, 12)$

x_1 y_1 x_2 y_2

$\text{slope} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{12 - 2}{-5 - 3} = \frac{10 \div 2}{-8 \div 2} =$

$\boxed{-\frac{5}{4}}$

$\frac{-5}{4} \rightarrow \frac{5 \text{ down}}{4 \text{ right}}$

$(-4, 3)$, $(2, -9)$ Find slope.

$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-9 - 3}{2 - (-4)} = \frac{-12}{2 + 4} = \frac{-12}{6} = \boxed{-2}$

Slope - Intercept Form

$y = mx + b$

m = slope, b = y-intercept

$m = \text{slope} = \frac{3}{2}$

$y\text{-int} = b = 6$

$y = mx + b$

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

$m = -\frac{8}{9}$

$y\text{-int} = -3$

$\boxed{y = -\frac{8}{9}x - 3}$

$(-1,7)$ $(3,-5)$ Find an equation for the line through these points.

1.) Find the slope.

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-5-7}{3-(-1)} = \frac{-12}{3+1} = \frac{-12}{4} = -3$$

$\boxed{m = -3}$

2.) Use slope-intercept

Use $(-1,7)$

$y = mx + b$

$7 = (-3)(-1) + b$

$7 = 3 + b$

$-3 \quad -3$

$\boxed{4 = b}$

$y = \boxed{-3}x \boxed{+4}$

point-slope

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

$(-1,7)$

$y - 7 = -3(x - (-1))$

$y - 7 = -3(x + 1)$

$y - 7 = -3x - 3$

$+7 \qquad +7$

$\boxed{y = -3x + 4}$

(-2, 9) (6, 5) Find the equation.

1.) Find slope.

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{5-9}{6-(-2)} = \frac{-4}{6+2} = \frac{-4 \div 4}{8 \div 4} = -\frac{1}{2}$$

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

2.) $y = mx + b$

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

x y
(6, 5)

$y = mx + b$

$5 = (-\frac{1}{2})(6) + b$

$5 = -3 + b$

$+3 \quad +3$

$8 = b$

$y = mx + b$

$y = -\frac{1}{2}x + 8$

(-2, 9)

$y = mx + b$

$9 = (-\frac{1}{2})(-2) + b$

$9 = 1 + b$

$-1 \quad -1$

$8 = b$

$y = mx + b$

$y = -\frac{1}{2}x + 8$

Standard Form

$$Ax + By = C$$

$2x + 3y = 6$

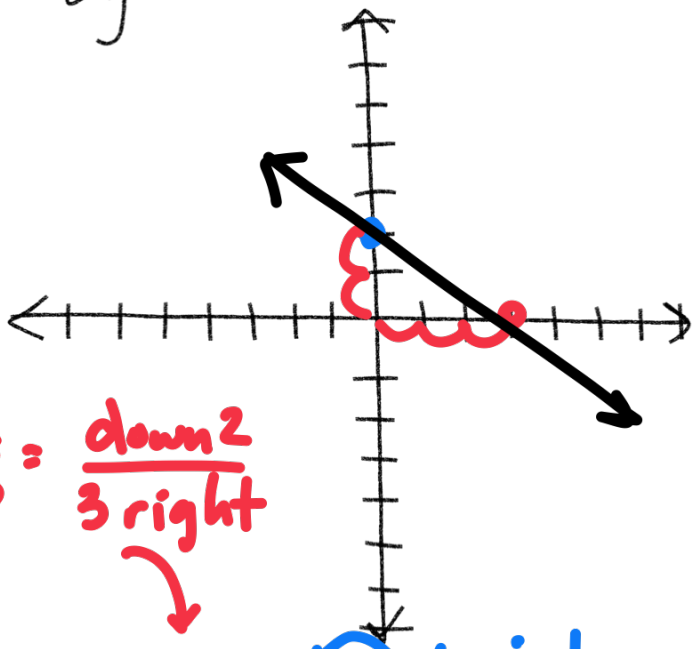
Option #1

"I hate you, Nate.
I'm using slope-intercept.

$2x + 3y = 6$
$-2x \quad -2x$

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

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



Graphing the Intercepts

$2x + 3y = 6$

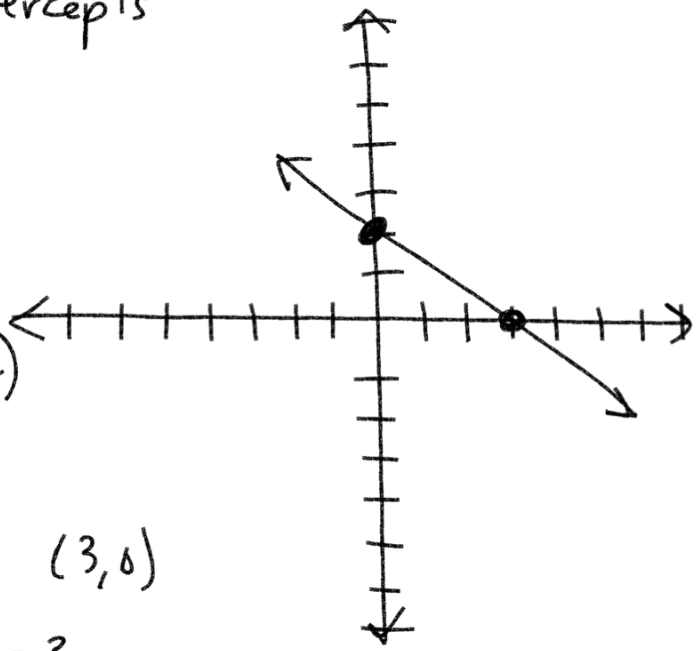
y-int Kill x $x = 0$

$\frac{3y}{3} = \frac{6}{3}$ (0, 2)

$y = 2$

x-int kill y $y = 0$ (3, 0)

$\frac{2x}{2} = \frac{6}{2}$ $x = 3$



$4x - 8y = 16$

$4x - 8y = 16$ (0 over the $4x$)

$\frac{-8}{-8} \quad \frac{16}{-8}$

$x = 0$

$(0, -2)$

$y = -2$

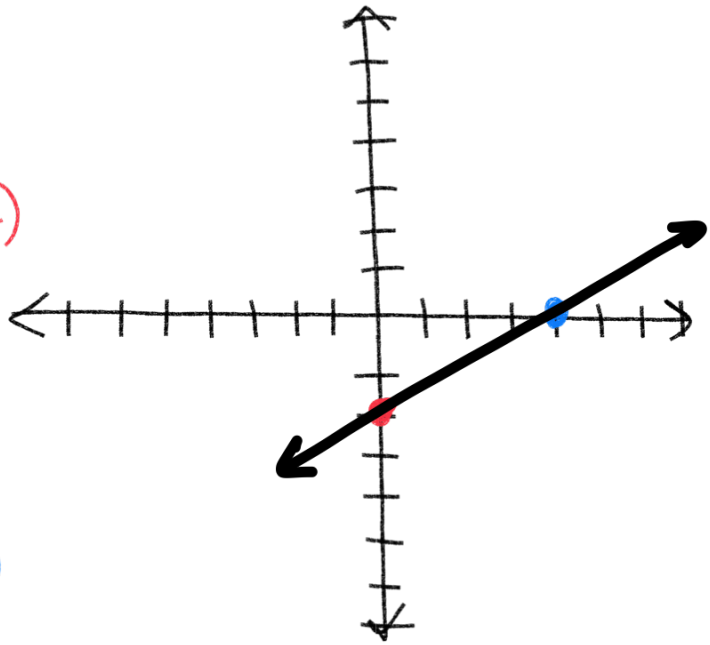
$4x - 8y = 16$ (0 over the $-8y$)

$\frac{4x}{4} \quad \frac{16}{4}$

$y = 0$

$x = 4$

$(4, 0)$



$-8x + 6y = 24$

$\frac{-8x}{6} + \frac{6y}{6} = \frac{24}{6}$

$x = 0$

$y = 4$

$(0, 4)$

$\frac{-8x}{-8} + \frac{6y}{-8} = \frac{24}{-8}$

$y = 0$

$x = -3$

$(-3, 0)$