TH-A1 Algebra 1 Week 31 5/11

slope-intercept form

$$y = mx + b$$

m: slope

b: y-intercept

slope $\rightarrow \frac{\text{rise}}{\text{run}}$

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

Point-slope form

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

m = slope

(x_1, y_1)

Standard form

$$Ax + By = C$$

Graph using intercepts

$3x - 4y = 12$

y-intercept

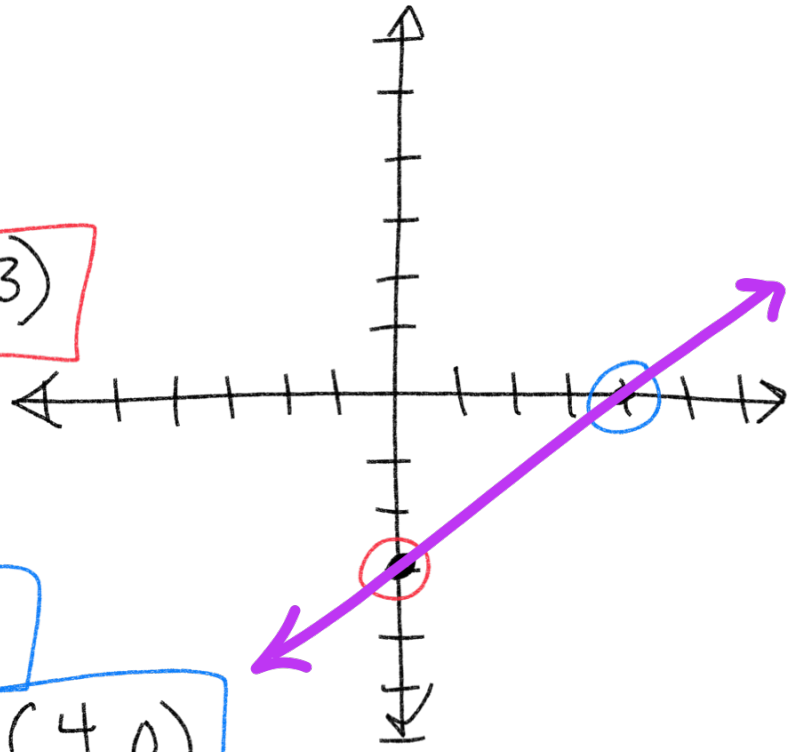
$x = 0$

$3x - 4y = 12$ (0)

$-4 \quad -4$

$y = -3$

$(0, -3)$



x-intercept

$y = 0$

$3x - 4y = 12$ (0)

$3x = 12$

$\frac{3x}{3} = \frac{12}{3}$

$x = 4$

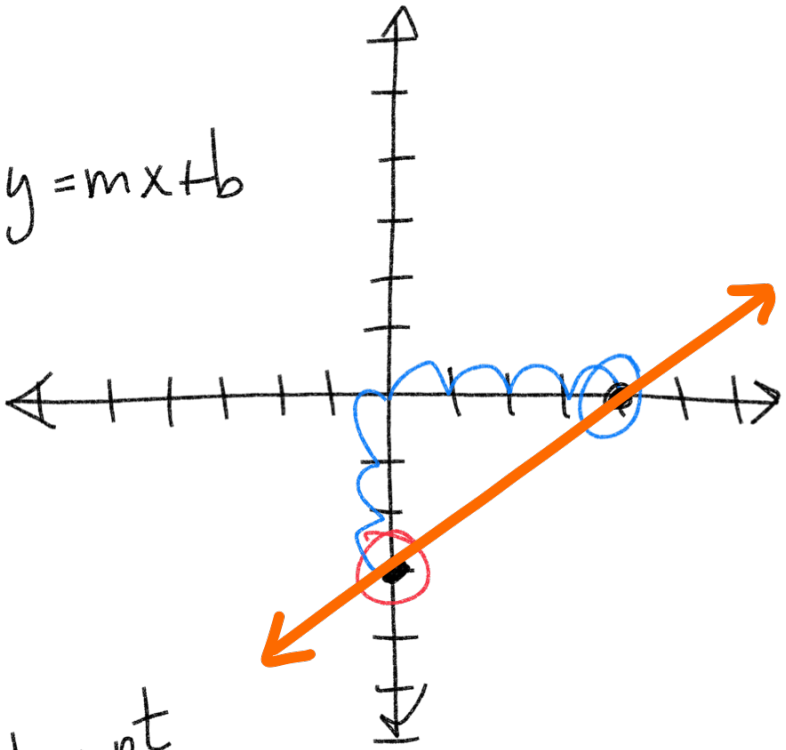
$(4, 0)$

$3x - 4y = 12$

$-3x \quad -3x$

$\frac{-4y}{-4} = \frac{-3x}{-4} + \frac{12}{-4}$

$y = mx + b$



$y = \frac{3}{4}x - 3$ ← y-intercept

Use slope $m = \frac{3}{4} = \frac{up\ 3}{right\ 4}$

$2x + 5y = -10$

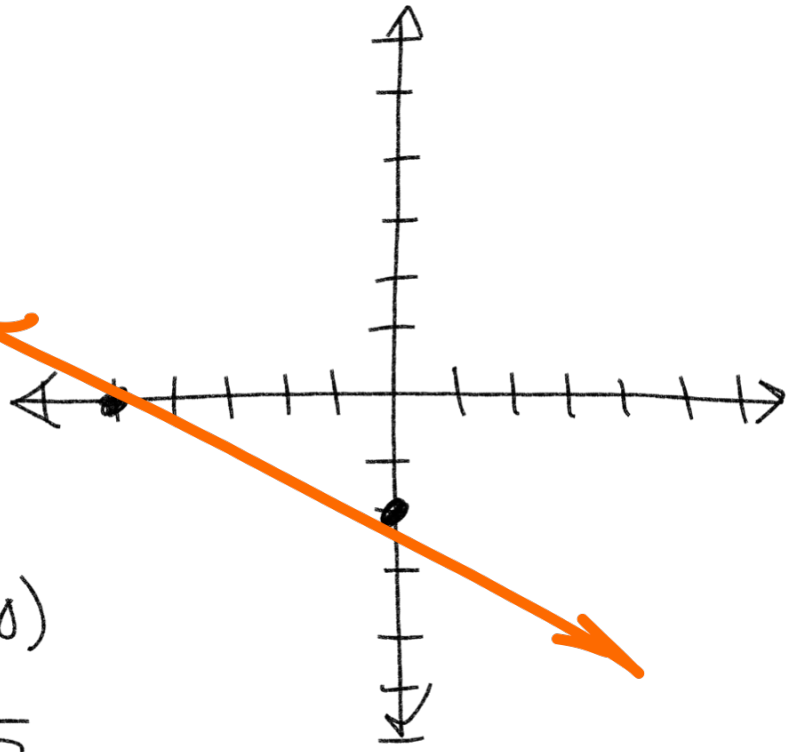
~~$2x$~~ $+ 5y = -10$

$\frac{5y}{5} = \frac{-10}{5}$

$y = -2$ $(0, -2)$

$2x + ~~5y~~ = -10$ $(-5, 0)$

$\frac{2x}{2} = \frac{-10}{2}$ $x = -5$



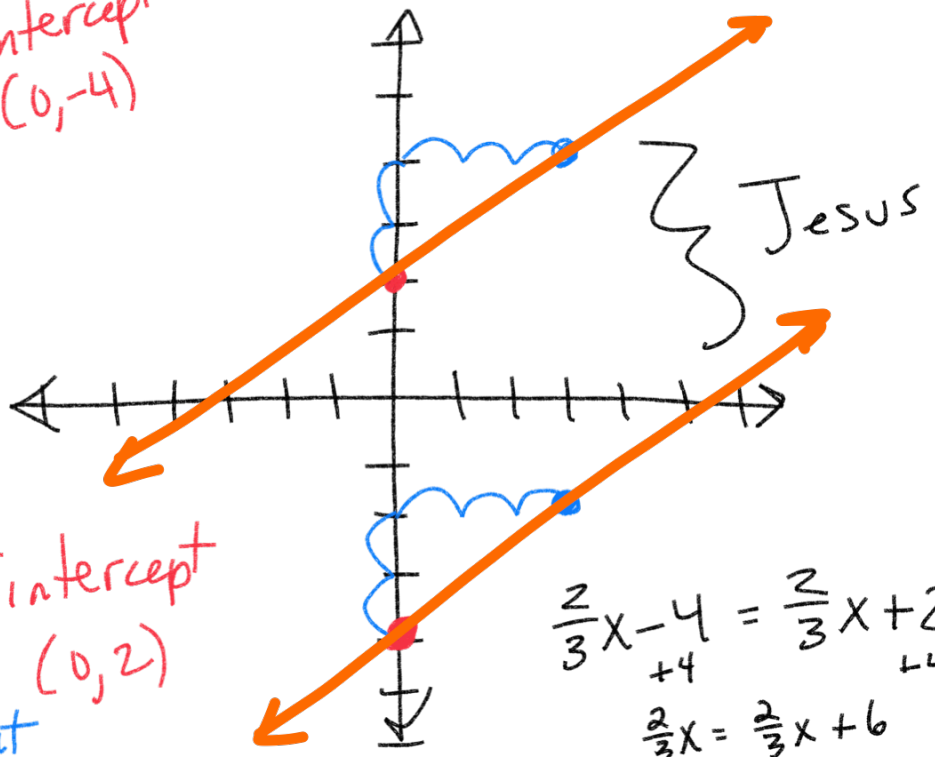
Lines with the slope are parallel

$y = \frac{2}{3}x - 4$ — y-intercept $(0, -4)$

slope $\frac{\text{up } 2}{3 \text{ right}}$

$y = \frac{2}{3}x + 2$ — y-intercept $(0, 2)$

slope $\frac{\text{up } 2}{3 \text{ right}}$



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

$+4 \quad +4$

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

$-\frac{2}{3}x \quad -\frac{2}{3}x$

$0 \neq 6$ no solution

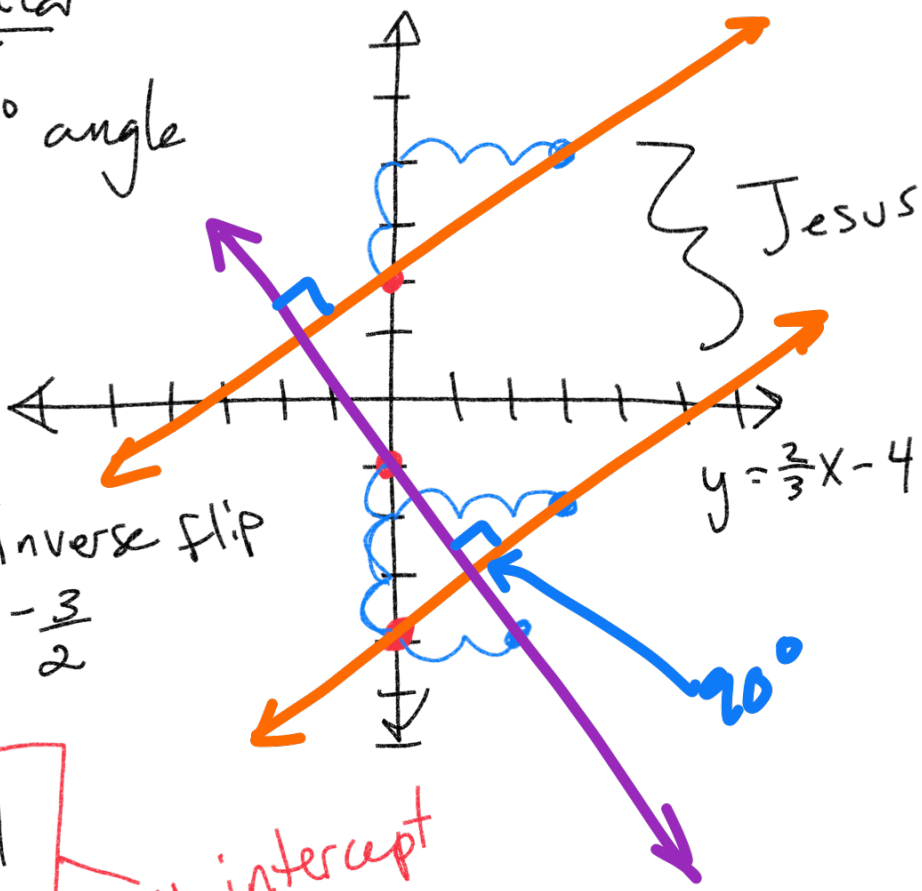
Lines with opposite inverse slopes are perpendicular

intersect at 90° angle

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

slope $\frac{2}{3}$ change sign. opposite inverse flip

$\frac{2}{3} \rightarrow \frac{-2}{3} \rightarrow \frac{-3}{2}$



$y = \frac{-3}{2}x - 1$ — -1: y-intercept

slope $= \frac{-3}{2} \rightarrow \frac{\text{down } 3}{2 \text{ right}}$