M-A1 Algebra 1 Week 31 5/15-

Slope-Intercept form

$$y = mx + b$$

m: slope; b: y-intercept

$$\text{slope} = \frac{\text{rise}}{\text{run}} \qquad m = \frac{y_2 - y_1}{x_2 - x_1}$$

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

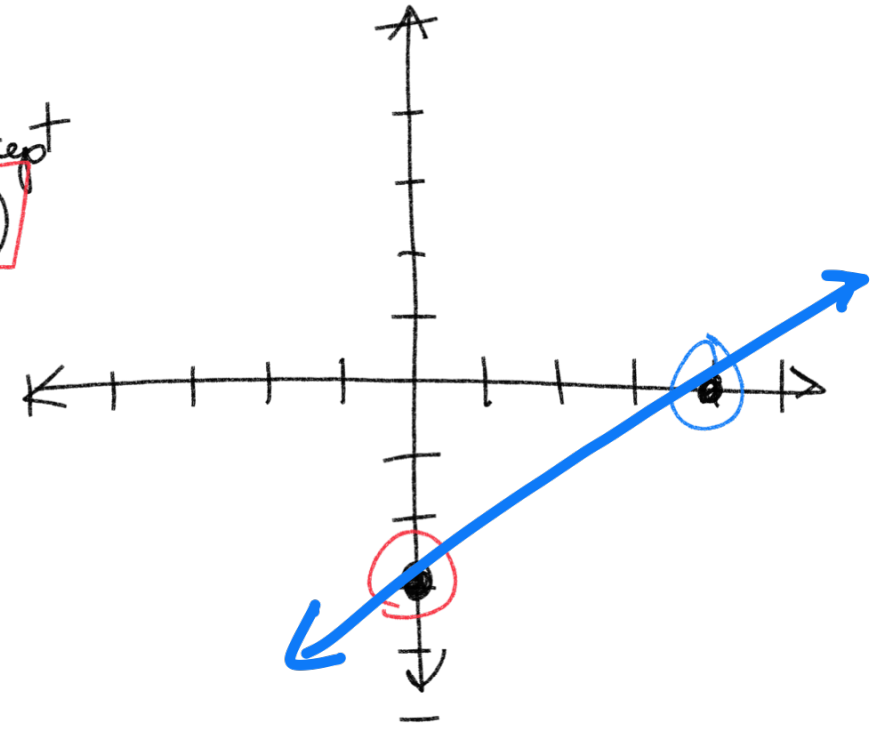
$(0, -3)$

$x = 0$

$3x - 4y = 12$

$-4 \quad -4$

$y = -3$



$3x - 4y = 12$

$(4, 0)$

$y = 0$

$\frac{3x}{3} = \frac{12}{3} \quad x = 4$

$y = mx + b$

$3x - 4y = 12$

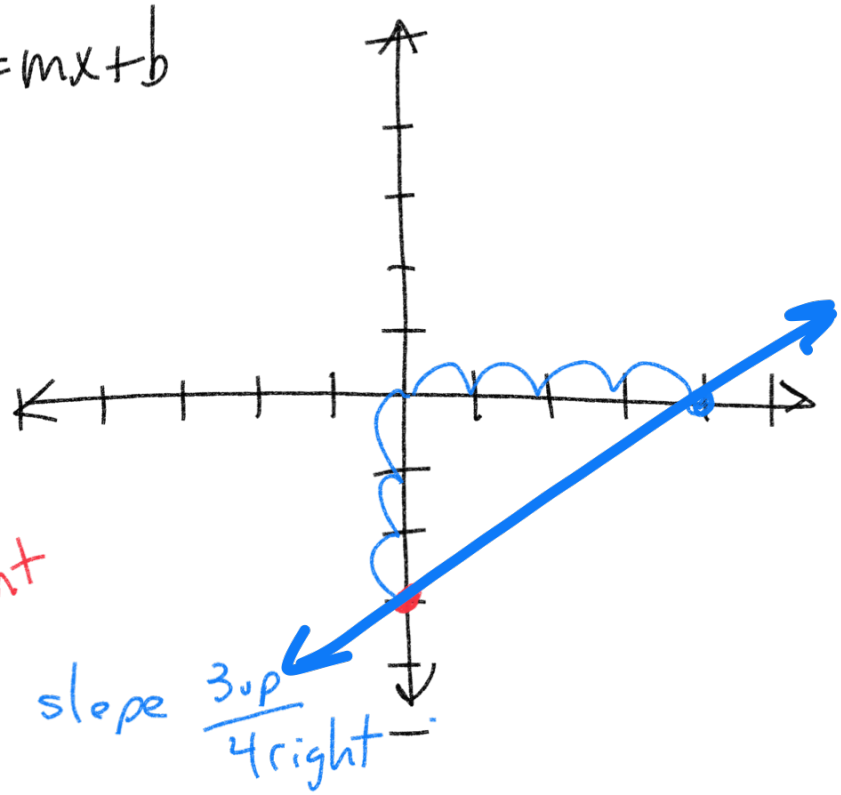
$-3x \quad -3x$

$-4y = -3x + 12$

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

$y = \frac{3}{4}x - 3$ ← y-int

Use slope $\frac{3 \text{ up}}{4 \text{ right}}$



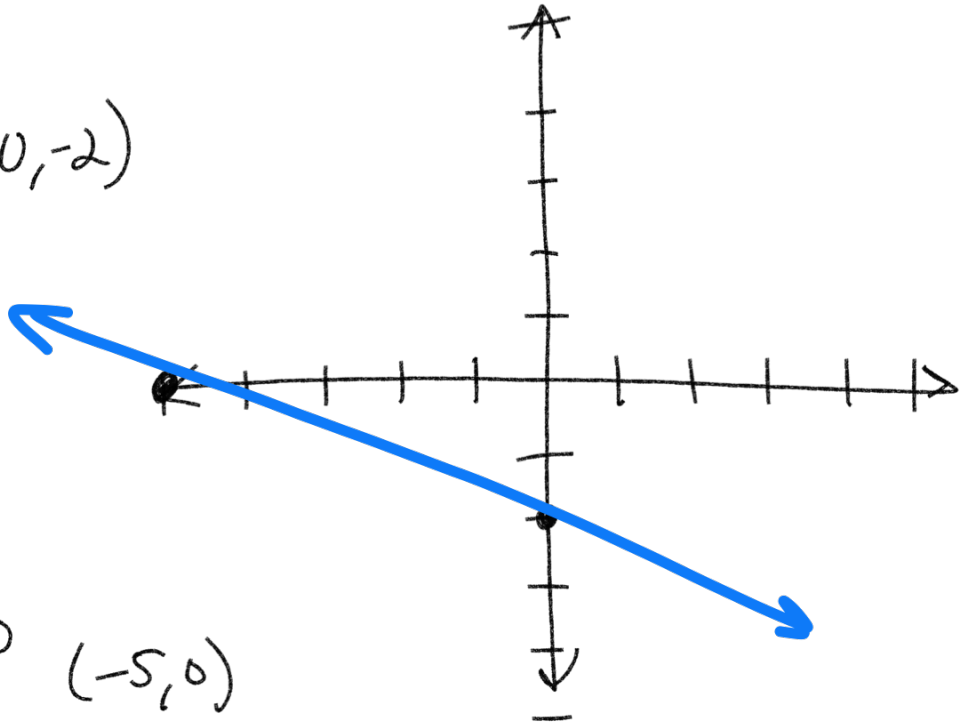
$2x + 5y = -10$

$(0,-2)$

$\cancel{2x} + \frac{5y}{5} = \frac{-10}{5}$

$x = 0$

$y = -2$



$\cancel{2x} + \cancel{5y} = -10$ $(-5,0)$

$y = 0$ $\frac{2x}{2} = \frac{-10}{2}$ $x = -5$

Lines with the same slope are parallel

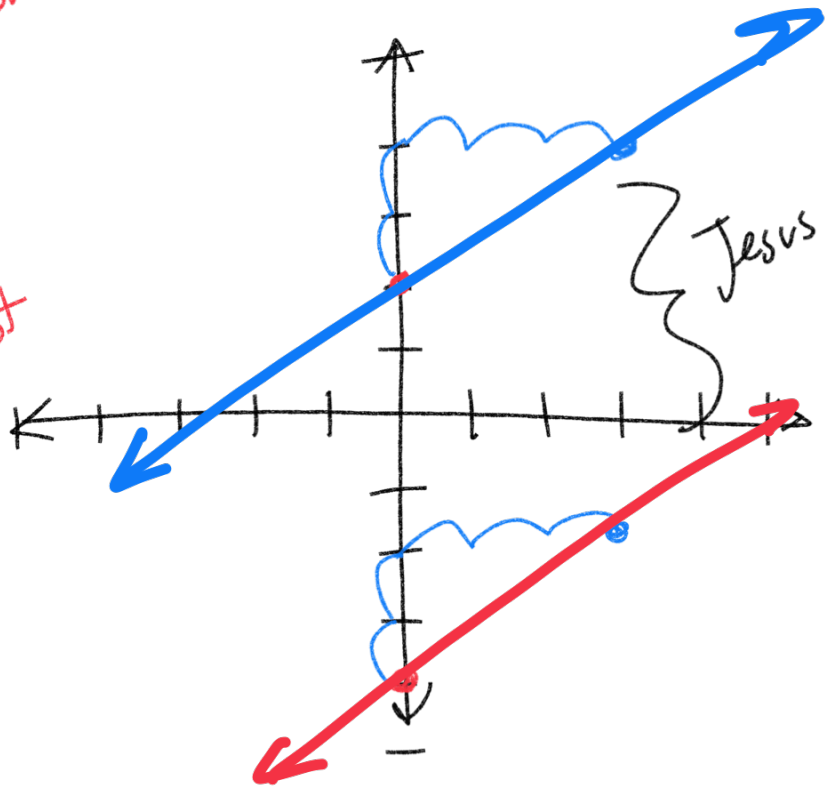
$y = \frac{2}{3}x - 4$ ← y-intercept $(0,-4)$

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

Same slope ↓

$y = \frac{2}{3}x + 2$ ← y-intercept

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



Lines with opposite inverse slopes

are perpendicular.

intersect at 90° angle

$y = \frac{2}{3}x - 4$ ← intercept

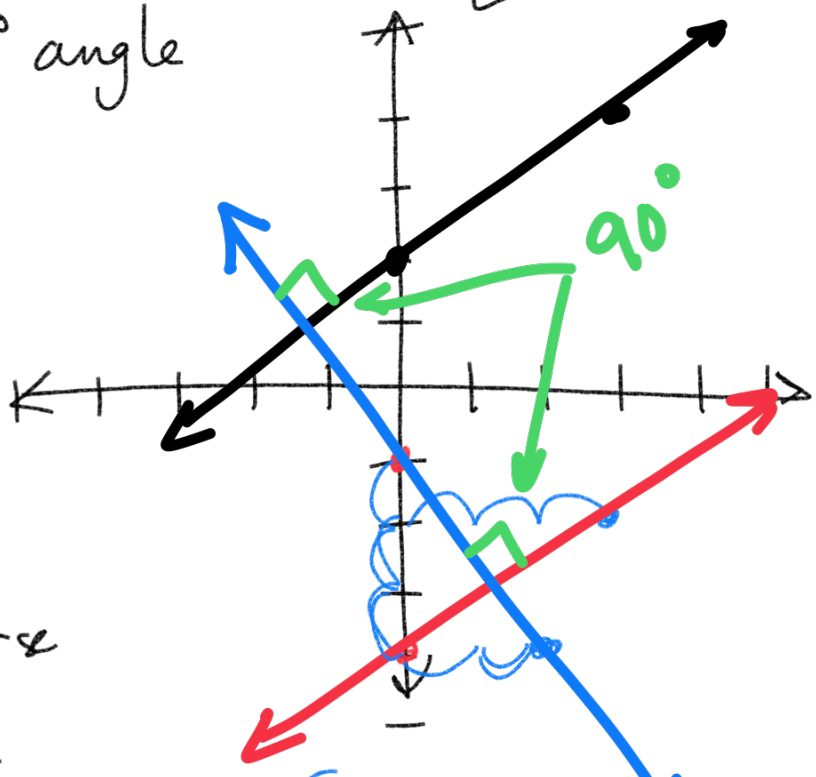
slope = $\frac{2 \text{ up}}{3 \text{ right}}$

slope $\frac{2}{3}$

opposite inverse

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

change sign flip



$y = \frac{-3}{2}x - 1$ ← y-int

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