W-A1 Algebra 1 5/11

m b

slope-intercept form

$y = mx + b$

m: slope; b: y-intercept

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

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

Point-Slope form

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

Standard form

$Ax + By = C$

Graph through intercepts

$3x - 4y = 12$

y-intercept

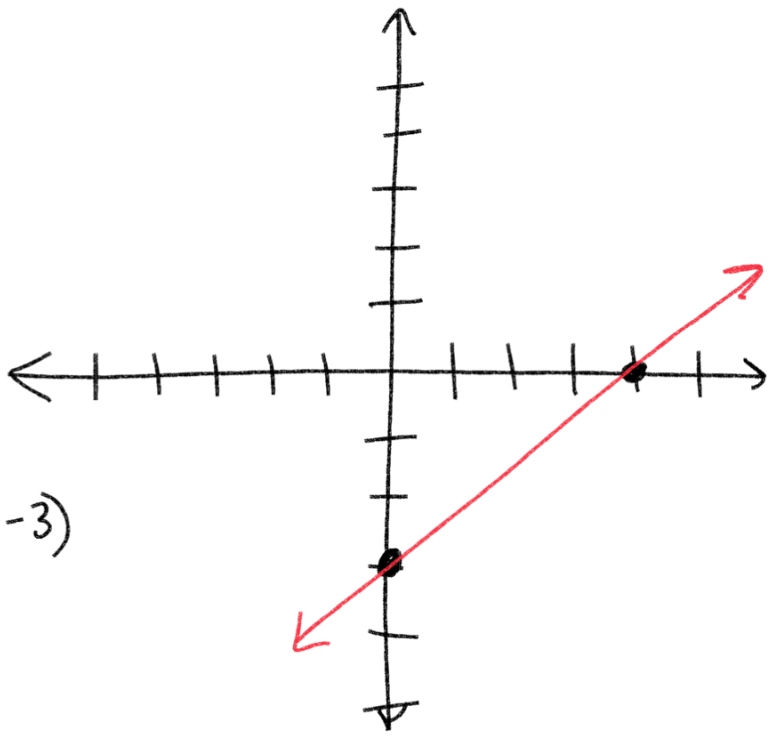
$x = 0$

$\cancel{3x}^{0} - 4y = 12$

$\frac{-4y}{-4} = \frac{12}{-4}$

$y = -3$

$(0, -3)$



x-intercept

$y = 0$

$3x - \cancel{4y}^{0} = 12$

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

$x = 4$

$(4, 0)$

$3x - 4y = 12$

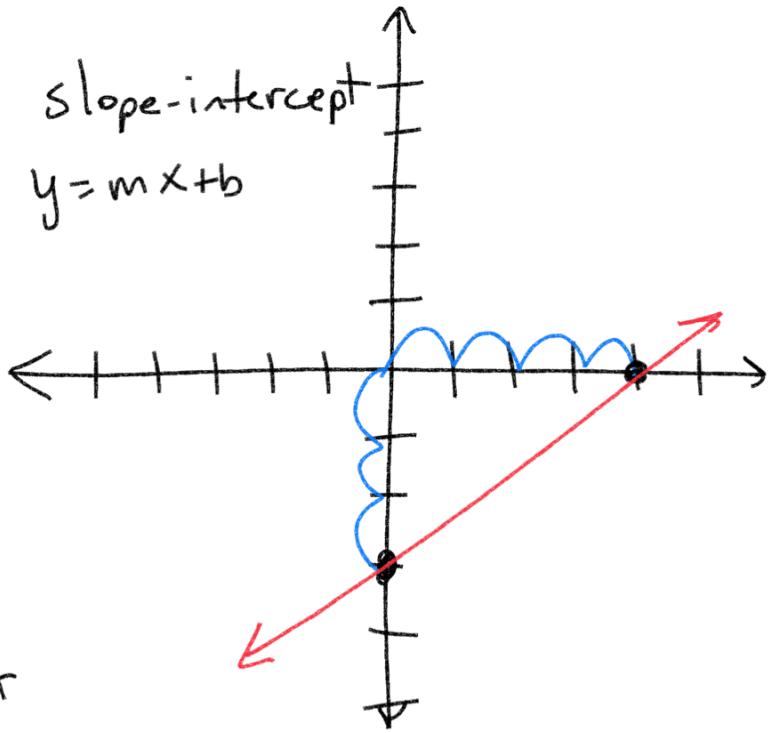
$-3x \qquad -3x$

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

$y = \frac{3}{4}x - 3$ ← y-int

slope-intercept

$y = mx + b$



$2x + 5y = -10$

y-int

$x = 0$

$2x + 5y = -10$

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

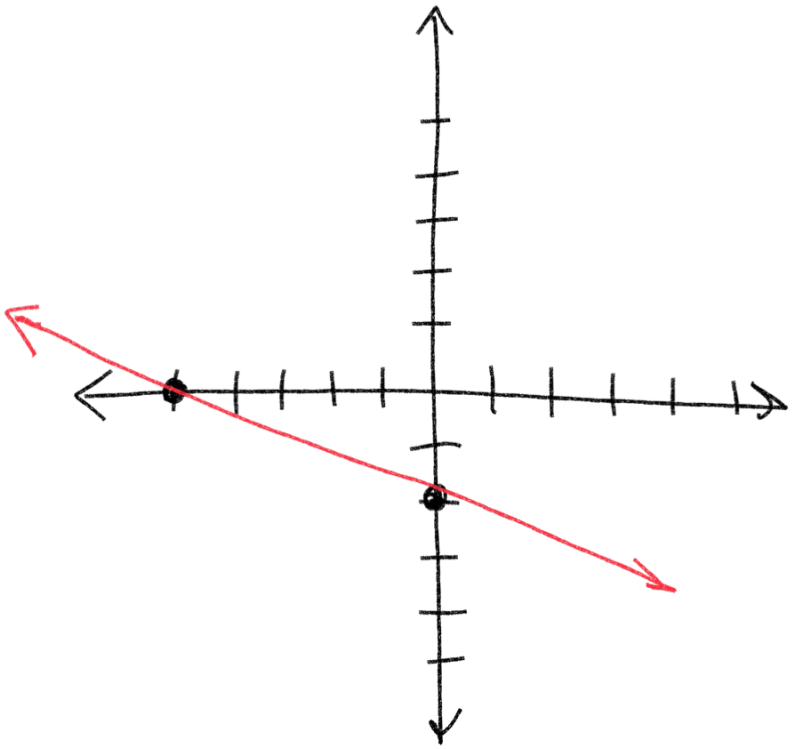
$y = -2$

$2x + 5y = 10$

$y = 0$

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

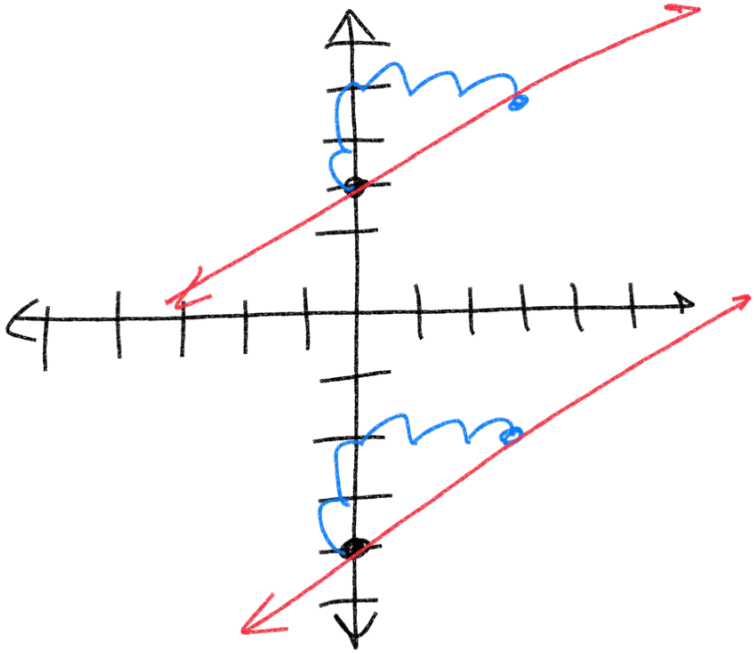
$x = -5$



Lines with the same slope are parallel

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

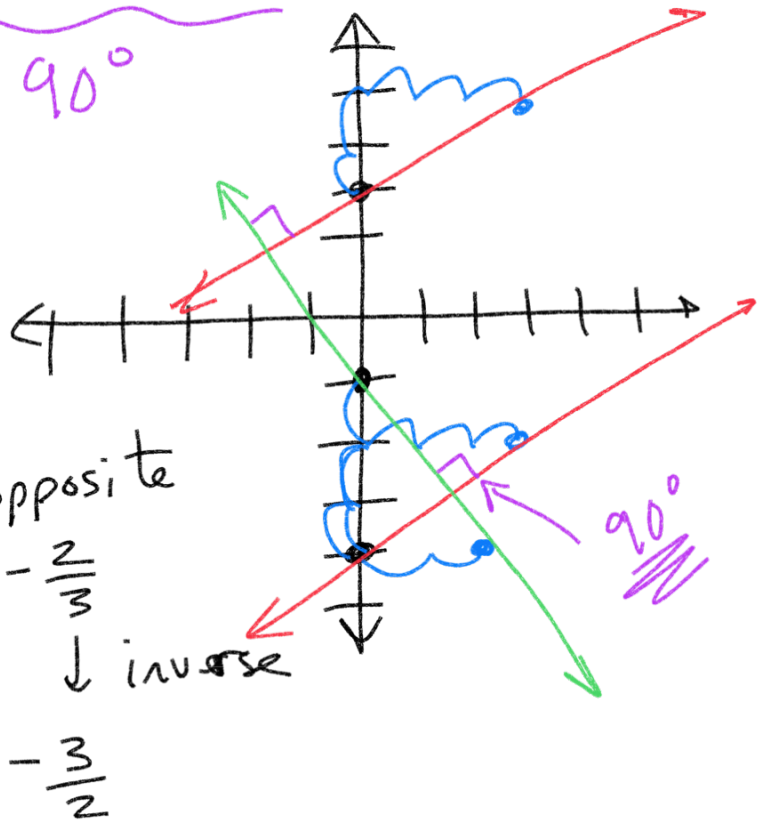
$y = \frac{2}{3}x + 2$



Lines with opposite inverse slopes are perpendicular

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

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

slope $\frac{2}{3}$ → opposite $-\frac{2}{3}$ ↓ inverse $-\frac{3}{2}$

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