

Writing Equations of Lines

Slope-Intercept Form: Given the slope "m" and the y-intercept "b", use this equation:

$$y = mx + b$$

Point-Slope Form: Given the slope "m" and a point (x_1, y_1) , use this equation:

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

** Simplify back to $y = mx + b$*

Two Points: Given two points (x_1, y_1) and (x_2, y_2) , use the formula:

1st = $m = \frac{y_2 - y_1}{x_2 - x_1}$

2nd = ~~$\frac{y_2 - y_1}{x_2 - x_1}$~~

to find the slope "m". Then use the point-slope form with this slope and either of the given points to write an equation of the line.

Write an equation of the line shown.

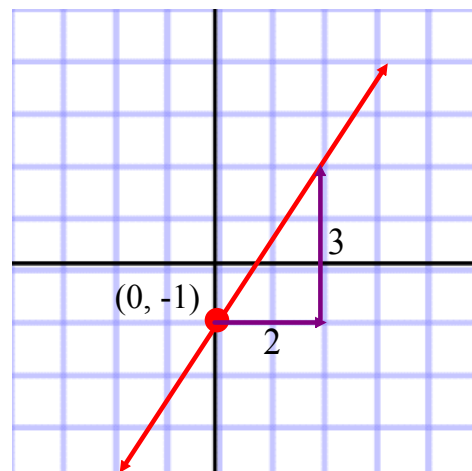
pt: $(0, -1)$

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

y-int = -1

$$y = mx + b$$

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



Write an equation of the line that passes through (2, 3) and has a slope of $-\frac{1}{2}$.

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

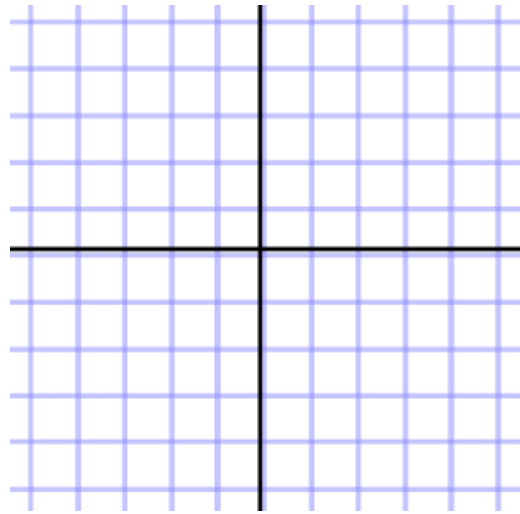
$$\text{pt } (2, 3)$$

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

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

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

$$y = -\frac{1}{2}x + 4$$



Write an equation of the line that passes through (3, 2) and is (a) perpendicular and (b) parallel to the line $y = -3x + 2$.

$$\text{a) pt } (3, 2)$$

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

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

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

$$\text{b) } (3, 2)$$

$$m = -3$$

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

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

$$y - 2 = -3x + 9$$

$$y = -3x + 11$$

Write an equation of the line that passes through $(-2, -1)$ and $(3, 4)$.

1st: find slope "m"

$$\frac{4 - (-1)}{3 - (-2)} = \frac{5}{5} = 1$$

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

$$y - 4 = 1(x - 3)$$

$$y - 4 = x - 3$$

$$y = x + 1$$

Assignment

p. 95

#20-40 even