



• Slope
 $m = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1}$

parallel lines have the same slope
 perpendicular lines have opposite reciprocal slopes

Two Points
 $(-4, 3)$ and $(1, 5)$
 $m = \frac{y_2 - y_1}{x_2 - x_1}$

Equation
 $3y + x = 6$
 (solve for y)
 $y = mx + b$

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

• Intercepts

$(0, 3)$ y-intercept has an x-coordinate of zero
 $(-4, 0)$ x-intercept has a y-coordinate of zero

ex $4y + 2x^2 = 16$

X-int
 • plug in zero for y
 • solve for x
 $4\cancel{0} + \frac{2x^2}{2} = \frac{16}{2}$
 $\sqrt{x^2} = \sqrt{8}$
 $x = \pm\sqrt{8}$
 $\pm\sqrt{4} \sqrt{2}$
 $x = \pm 2\sqrt{2}$
 OR
 $(2\sqrt{2}, 0)$ and $(-2\sqrt{2}, 0)$

y-int
 • plug in zero for x
 • solve for y
 $4y + 2\cancel{(0)} = 16$
 $\frac{4y}{4} = \frac{16}{4}$
 $y = 4$
 OR
 $(0, 4)$

• Slope-Intercept Equations ($y = mx + b$)

To write the equation of a line...
 slope \uparrow m
 y-intercept \uparrow b

To write the equation of a line... slope y-intercept

① Find slope

- formula
- $\frac{\text{rise}}{\text{run}}$
- identify m

$m = \frac{1}{2}$ → $y = \frac{1}{2}x + b$

$(4, -1)$

$-1 = \frac{1}{2} \cdot 4 + b$

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

② Find y-intercept

- ~~plug in zero for x and solve for b~~
- plug in a point for x and y to solve for b

$-3 = b$