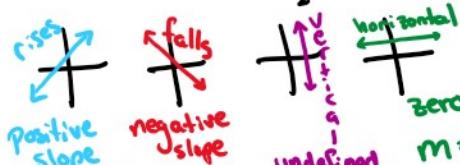
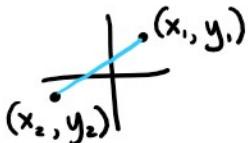


Slope

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



Zero slope: $m = \frac{\text{zero}}{\text{run}} = 0$
 Horizontal line: $y = \#$ (y-intercept)
 $x = \#$ (x-intercept)

parallel lines have the same slope $y = b$

perpendicular lines have opposite reciprocal slopes

Two Points

$$(-4, 3) \text{ and } (1, 5)$$

$$x_1, y_1 \quad x_2, y_2$$

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

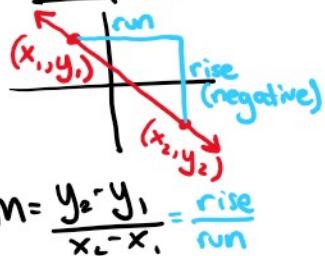
Equation

$$3y + x = 6$$

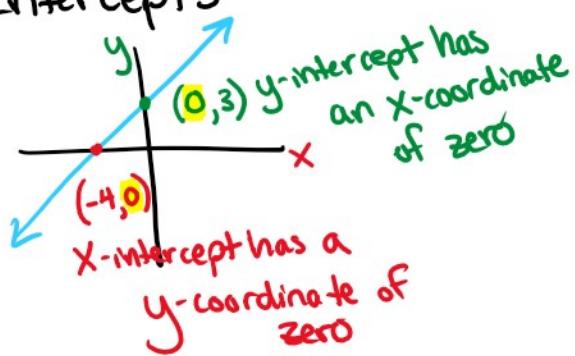
(solve for y)

$$y = mx + b$$

Graph



• Intercepts



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

X-int

- plug in zero for y
- solve for x

~~$$4(0) + 2x^2 = \frac{16}{2}$$~~

~~$$\sqrt{x^2} = \sqrt{8}$$~~

~~$$x = \pm \sqrt{8}$$~~

~~$$\pm \sqrt{4} \sqrt{2}$$~~

~~$$x = \pm 2\sqrt{2}$$~~

OR

$$(2\sqrt{2}, 0) \text{ and } (-2\sqrt{2}, 0)$$

- y-int
- plug in zero for x
 - solve for y
- ~~$$4y + 2(0) = 16$$~~

~~$$\frac{4y}{4} = \frac{16}{4}$$~~

$$y = 4$$

OR

$$(0, 4)$$

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

To ... into the equation of a line... slope \uparrow y-intercept \uparrow

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

① Find slope

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

(4, -1)

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

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

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

$$-3 = b$$

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

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~~