

$a =$

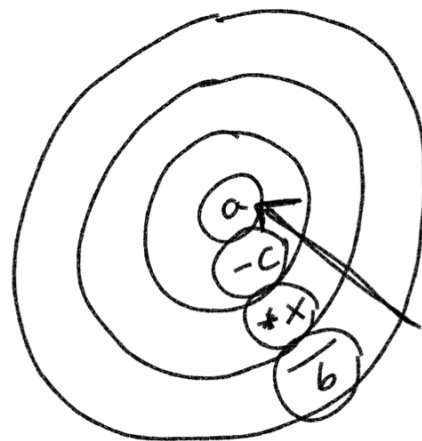
$$\cancel{b} \left( \frac{x(a-c)}{\cancel{b}} \right) = (4) b$$

$$\frac{x(a-c)}{x} = \frac{4b}{x}$$

$$a-c = \frac{4b}{x}$$

+c                    +c

$$a = \frac{4b}{x} + c$$



$$b \left( \frac{ax - cx}{b} \right) = 4b$$

$$ax - cx = 4b$$

$$\frac{x(a-c)}{x} = \frac{4b}{x}$$

$$a-c = \frac{4b}{x}$$

# 2-1 Relations and Functions

Function  $\leftrightarrow$  Predictable

input  $\longrightarrow$  output  
has one,  
and only one

# sam'iches	\$
1	5
2	10
3	15
	87

Diagram: Arrows point from 1 to 5, 10, and 15. Arrows point from 2 to 10 and 15. Arrows point from 3 to 15 and 87. The input '1' is circled.

not a function

plates	\$
0	
1	2
2	2
3	2
148	

Diagram: Arrows point from 1, 2, and 3 to 2. An arrow points from 148 to 2.

function

mult inputs can  
yield same output

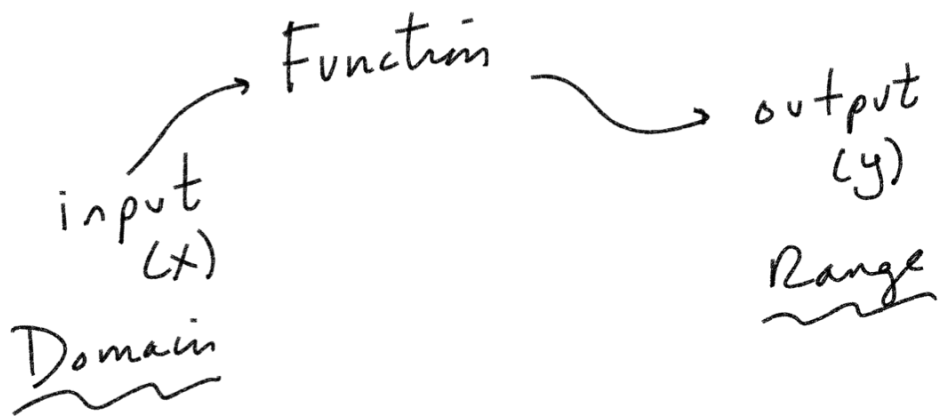
function

input	output
x	y
1	8
2	14
3	9
4	16

input	output
x	y
1	7
2	7
-2	12
1	8

not  
function

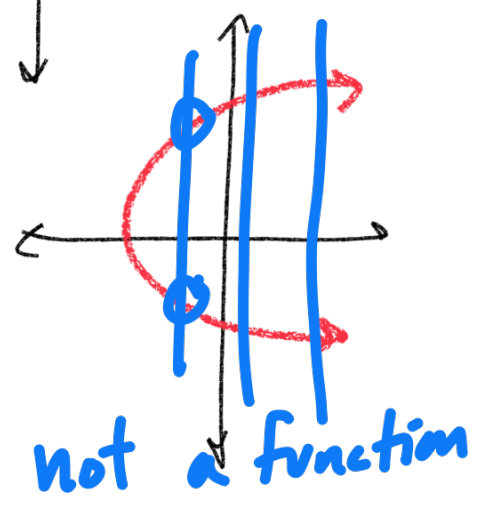
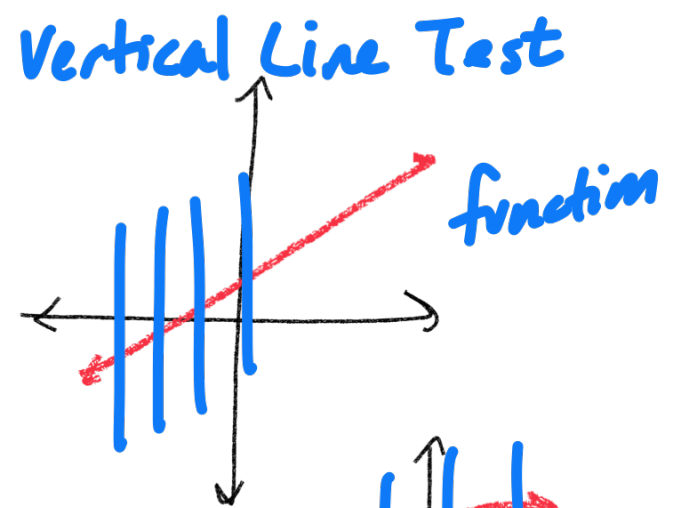
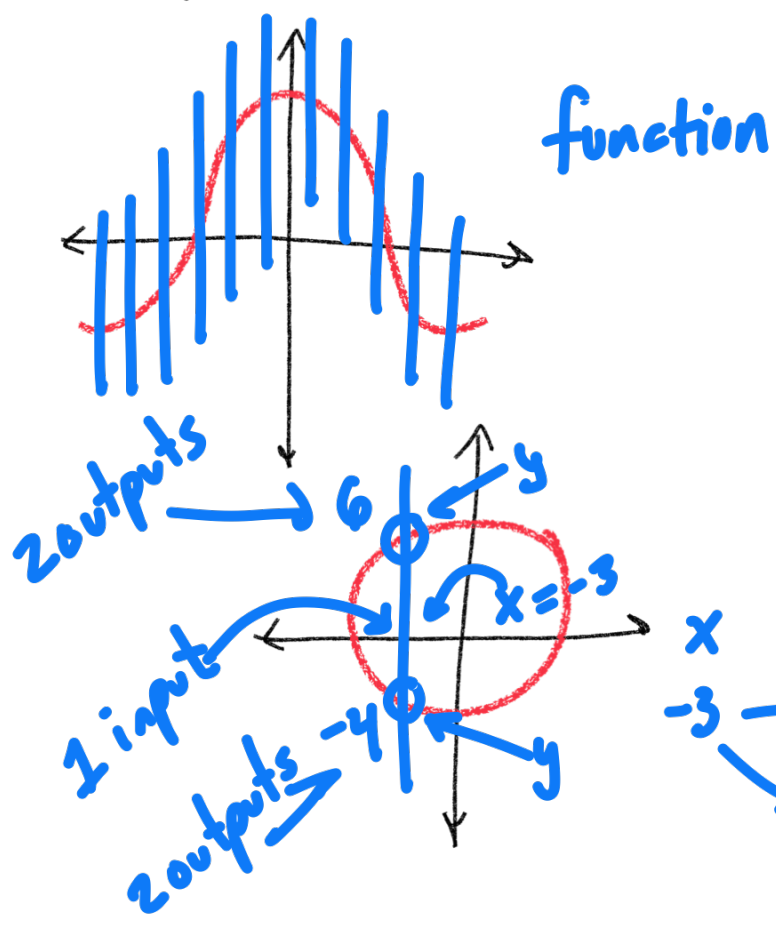
each input has  
one, and only  
one, output



- (1, 2) (2, 3) (3, 8) (4, 12)      function

Domain (all  $x$  values)  $\{1, 2, 3, 4\}$

Range (all  $y$  values)  $\{2, 3, 8, 12\}$



$$f(x) = 5x + 2$$

$$y = 5x + 2$$

$f(x)$  → "function with respect to  $x$ "

$$x = -2$$

$$f(-2) = 5x + 2$$

$$f(-2) = -8$$

ordered pair  
 $(-2, -8)$

$$f(-2) = 5(-2) + 2 = -10 + 2 = -8$$

input → output

$$f(x) = \sqrt{x}$$
$$f(4) = \sqrt{4} = 2 \text{ and } -2$$

$2 * 2 = 4$   
 $-2 * -2 = 4$



$$f(x) = 5x + 2$$

$$f(3) = 5(3) + 2 = 15 + 2 = 17 \quad (3, 17)$$

$$f(-4) = 5(-4) + 2 = -20 + 2 = -18$$

$$f(7) = 5x + 2 = 5(7) + 2 = 35 + 2 = 37$$

input → output

# 2-2 Linear Equations

"Δ" change

## Slope-Intercept Form

$$\text{slope} = \frac{\text{rise}}{\text{run}} = \frac{\Delta y}{\Delta x}$$

$$y = mx + b$$

↑ slope      ↖ y-intercept

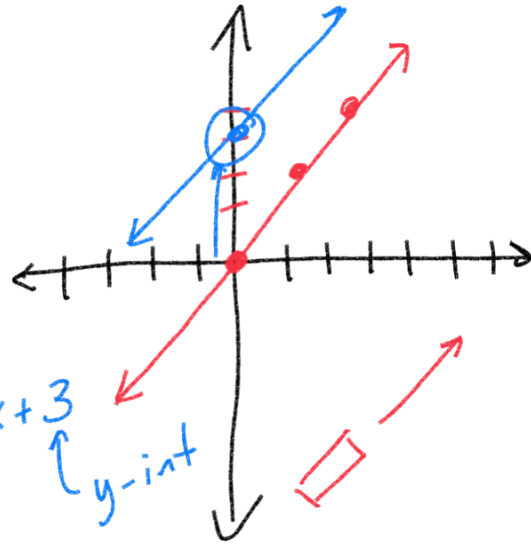
$$\frac{y_2 - y_1}{x_2 - x_1}$$

output ↓

$$y = 2x + \boxed{\phantom{00}}$$

↑ input

up 2  
1 right



$$y = 2x + 3$$

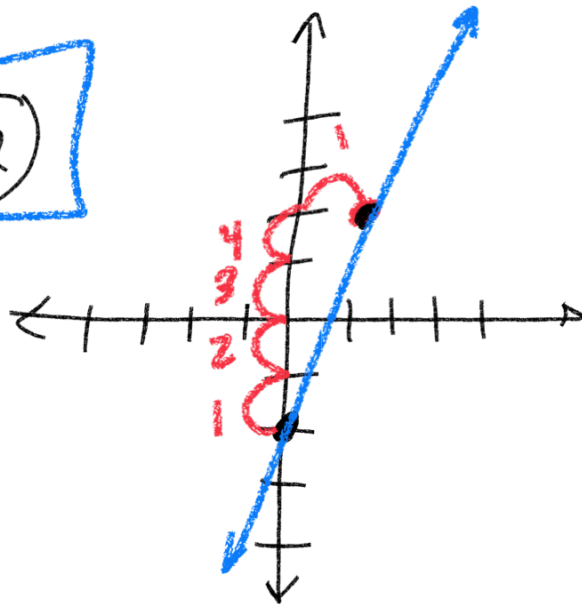
↑ y-int

$$y = (4)x(-2)$$

slope

y-int

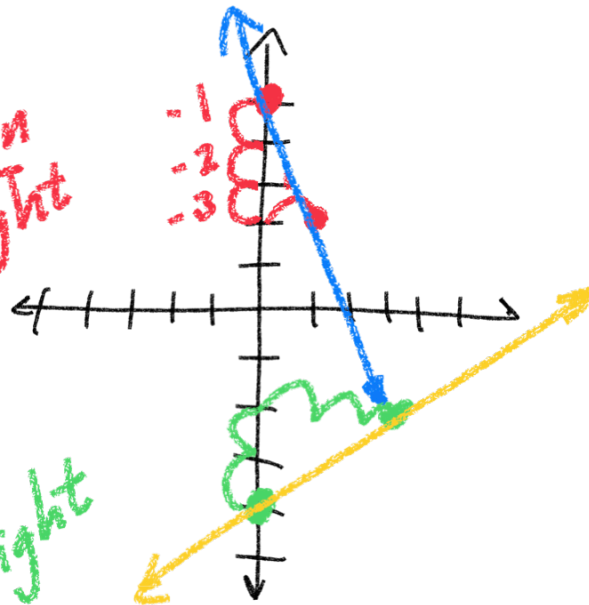
start point



$$\text{slope} = 4$$
$$\frac{\text{up } 4}{1 \text{ right}}$$

$$y = -3x + 5$$

slope = -3 =  $\frac{3 \text{ down}}{1 \text{ right}}$



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

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

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

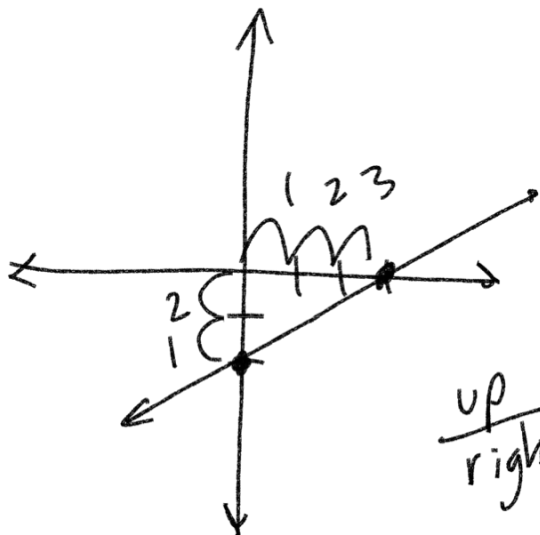
slope =  $\frac{3}{4}$   
y-int: -6

slope-intercept form

$$y = (m)x + b$$

$$y = \frac{3}{4}x + (-6)$$

$$y = \frac{3}{4}x - 6$$



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

y-int: -2       $y = mx + b$

slope:  $\frac{2}{3}$

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

1.) slope (m) = 4  
contains

(3) (2)  
↑ ↑  
x y

Slope-Intercept Form

$$y = mx + b$$

$$2 = (4)(3) + b$$

$$2 = 12 + b$$

$$-12 \quad -12$$

$$-10 = b$$

2 ways to do this!

$$y = mx + b$$

$$y = 4x - 10$$

Point-Slope Form

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

$$m = 4$$
$$x_1 = 3$$
$$y_1 = 2$$

$$y - 2 = 4(x - 3)$$

$$y - 2 = 4x - 12$$

$$+2 \quad +2$$

$$y = 4x - 10$$

Quiz 6  
due tonight

Ch 1 Test

HW

2-1 evens  
2-2 evens

Supplemental WS

Online HW 8 (Fri)

Quiz 8 (Fri)  
due November 11<sup>th</sup>

