

S-AZ Algebra 2 Session 6 6/27

1.) Determine whether each is a function.

a)

x	y
0	2
2	4
3	6
4	

function

b)

x	y
0	-3
1	-6
4	-18
	-24

not function

c)

(1, 4)	(2, 5)	(3, 8)	(2, -6)
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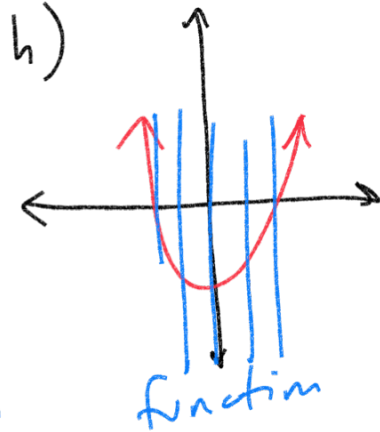
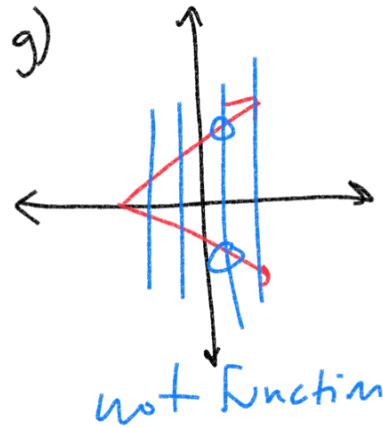
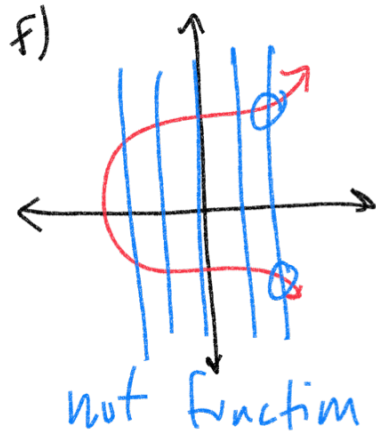
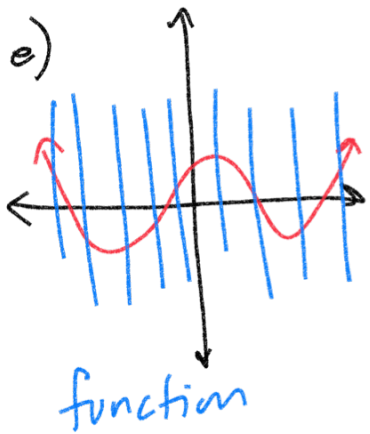
not function

d)

(-1, 3)	(0, 8)	(2, 18)	(-3, -7)
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function

Domain: $\{-1, 0, 2, -3\}$
 Range: $\{3, 8, 18, -7\}$



$$y = -2x^2 - 5x$$

$$h(x) = -2x^2 - 5x$$

$$h(-6) = -2(-6)^2 - 5(-6)$$

$$-2(36) - 5(-6)$$

$$-72 + 30 = -42$$

↑
input

output

$h(x)$ "h of x"
 "function with respect to x"
 x → variable

$(-6, -42)$
 (ordered pair)

$$f(x) = 3x - 4$$

$$f(-2) = 3(-2) - 4$$

$$-6 - 4 = -10$$

$$(-2, -10)$$

$$f(0) = 3(0) - 4$$

$$0 - 4 = -4$$

$$(0, -4)$$

$$f(3) = 3(3) - 4$$

$$9 - 4 = 5$$

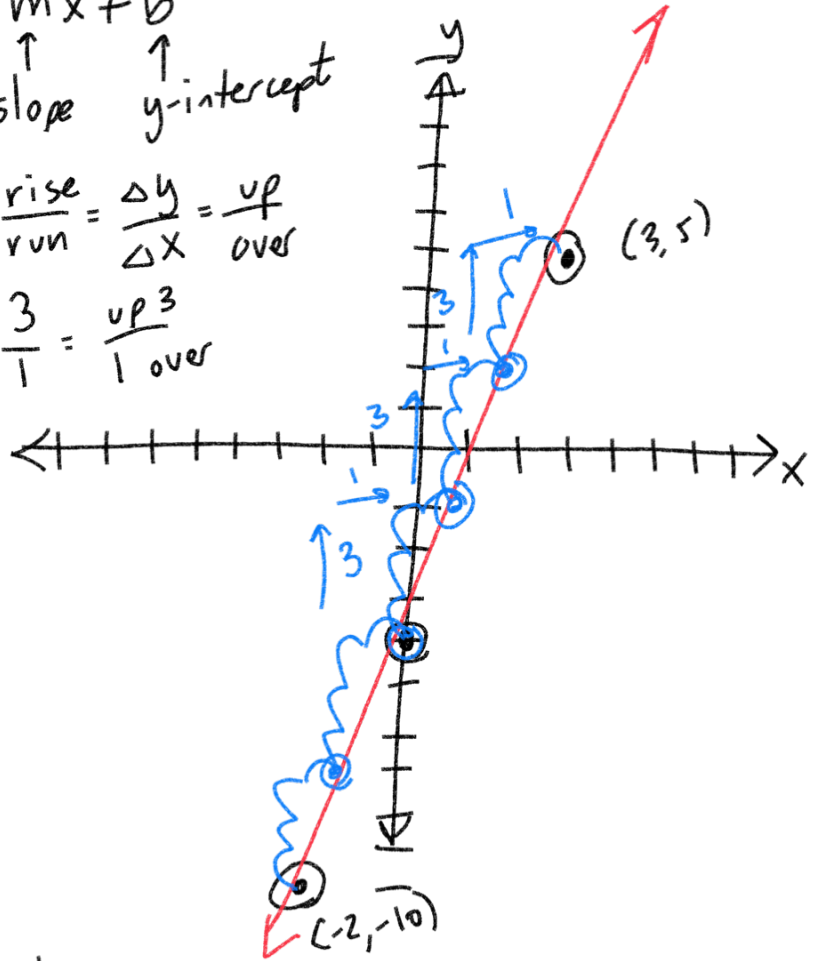
$$(3, 5)$$

$$y = mx + b$$

\uparrow slope \uparrow y-intercept

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

$$3 = \frac{3}{1} = \frac{\text{up } 3}{1 \text{ over}}$$



$$f(x) = 2x + 3$$

\uparrow slope \uparrow y-int

$$y = mx + b$$

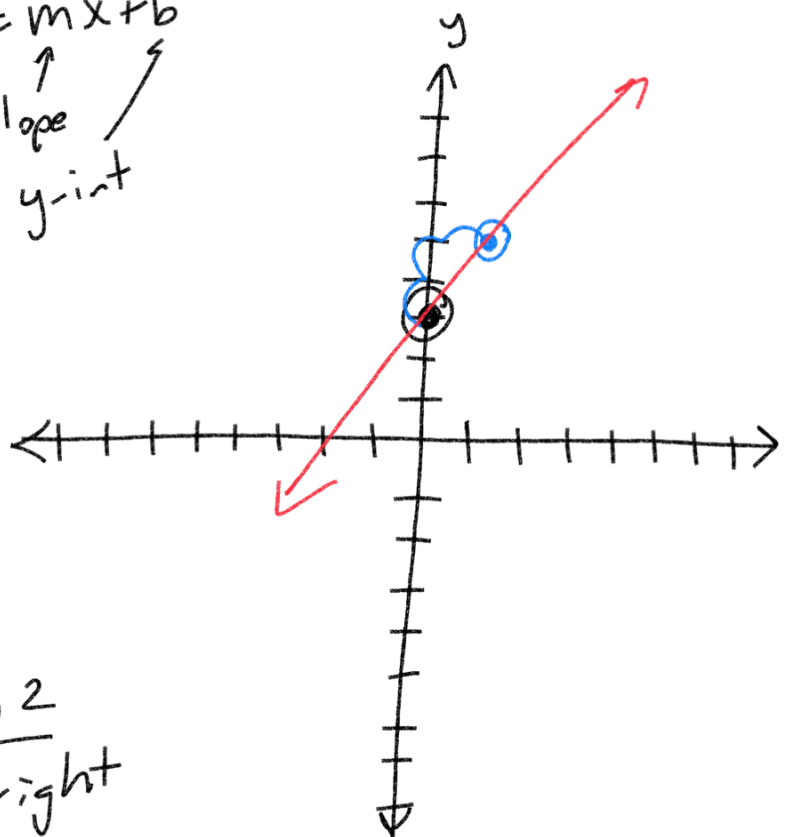
\uparrow slope \uparrow y-int

1.) Plot y-int

2.) Use slope to find a second point

$$\text{slope} = 2 = \frac{2}{1} = \frac{\text{up } 2}{1 \text{ right}}$$

\oplus up/down \ominus
 right

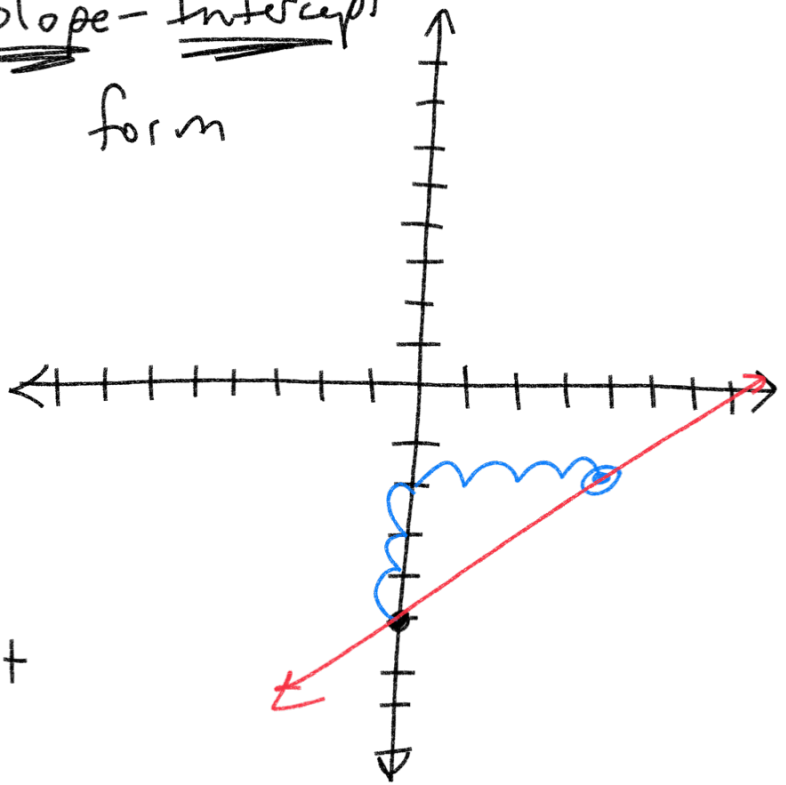


$$f(x) = \frac{3}{4}x - 5$$

Slope-Intercept
form

slope: $\frac{3}{4} = \frac{3 \text{ up}}{4 \text{ right}}$

- 1.) Plot y-intercept (-5)
- 2.) Use slope ($\frac{3}{4}$) to find second point



Standard form

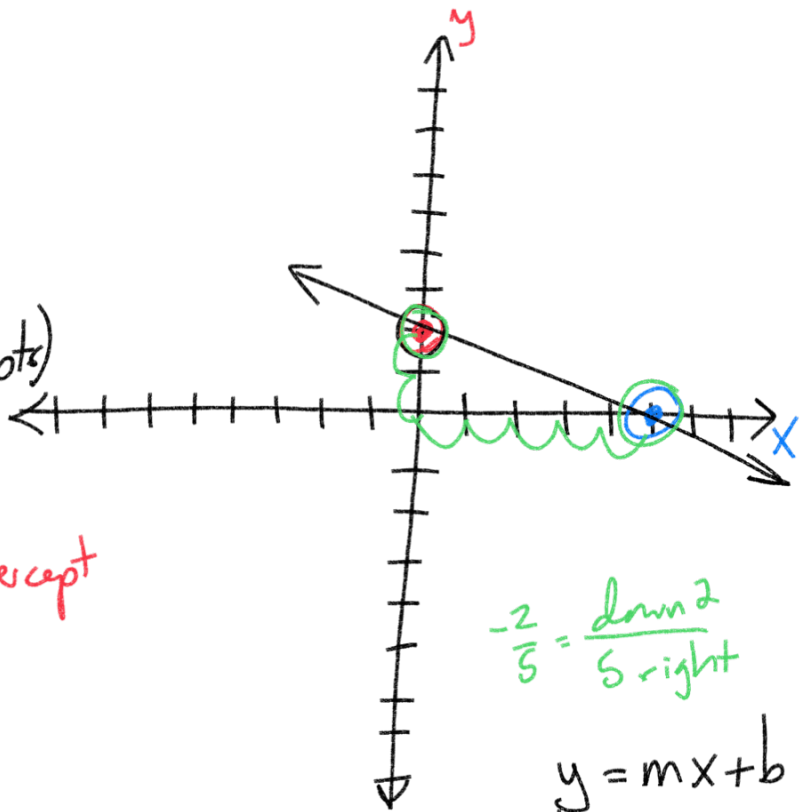
$$2x + 5y = 10$$

① Kill variables (graph intercepts)

$x=0$ ~~$2x$~~ $+ \frac{5y}{5} = \frac{10}{5}$

$(0, 2)$ $y = 2$ y-intercept

$y=0$ $\frac{2x}{2} + \cancel{5y} = \frac{10}{2}$
 $(5, 0)$ $x = 5$ x-intercept



$-\frac{2}{5} = \frac{\text{down } 2}{5 \text{ right}}$

$y = mx + b$

② Convert to slope-intercept

$$\begin{array}{r} 2x + 5y = 10 \\ -2x \quad -2x \end{array}$$

$y = -\frac{2}{5}x + 2$

$$\frac{5y}{5} = \frac{-2x + 10}{5}$$

$$6x - 4y = 24$$

$$-6x \quad -6x$$

x → independent
y → dependent

$$\frac{-4y}{-4} = \frac{-6x + 24}{-4}$$

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

$$y = \frac{3}{2}x - 6$$

slope

y-intercept

1.) Plot y-intercept

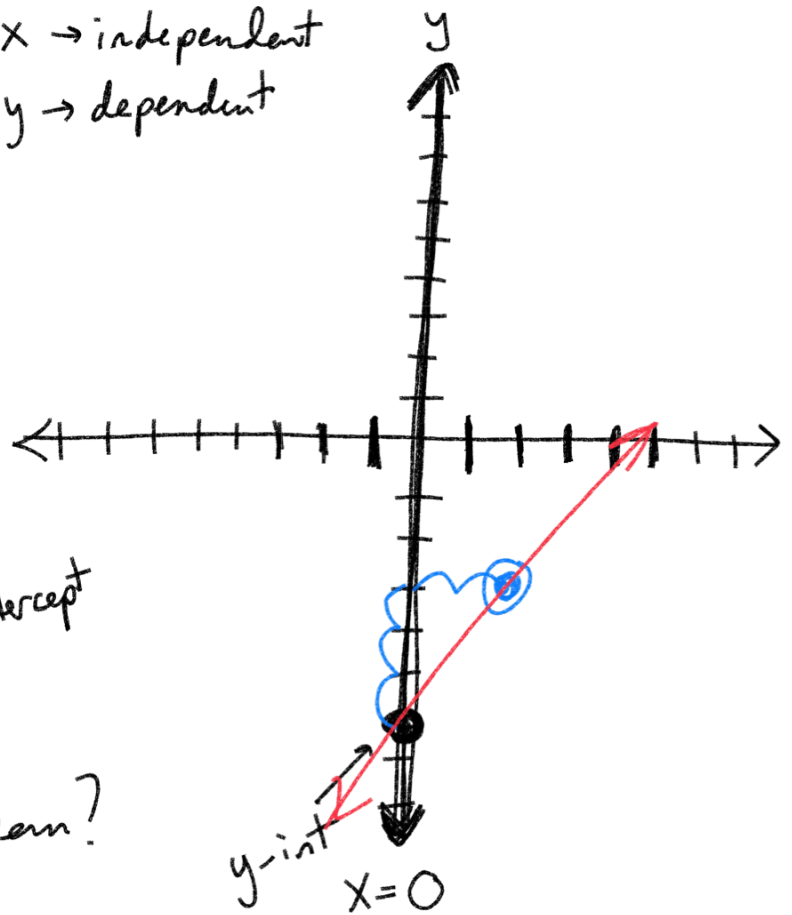
what does y-intercept mean?

$$y = \frac{3}{2}x - 6$$

$$y = \frac{3}{2}(0) - 6$$

$$y = -6$$

2.) Use slope to find second point



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

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

$$6x - 4y = 24$$

$$x = 0$$

find y-intercept

$$6(0) - 4y = 24$$

$$\frac{-4y}{-4} = \frac{24}{-4}$$

$$y = -6$$

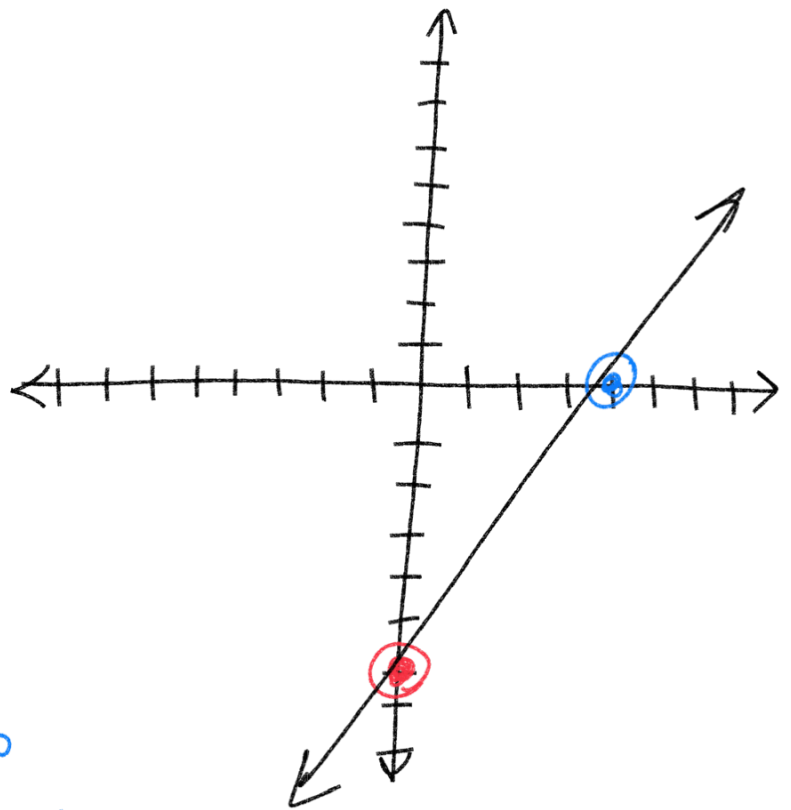
$$y = 0$$

find x-intercept

$$6x - 4(0) = 24$$

$$\frac{6x}{6} = \frac{24}{6}$$

$$x = 4$$



$$\text{slope} = \frac{\text{rise}}{\text{run}} = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1}$$

order matters

Find slope (x_1, y_1) and (x_2, y_2)
 $(4, 3)$ and $(6, 9)$

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{9 - 3}{6 - 4} = \frac{6}{2} = \boxed{3}$$

if opposite order

$$\frac{3 - 9}{4 - 6} = \frac{-6}{-2} = \boxed{3}$$

Find slope (1, 3) and (5, 11)

$$\text{slope} = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{11 - 3}{5 - 1} = \frac{8}{4} = 2$$

$$8 \div 4 = 2$$

$$\frac{8}{4} = \frac{4 \cdot 2}{4 \cdot 1} = \frac{2}{1} = 2$$

$$\text{slope} \\ (x_2 - x_1) m = \frac{y_2 - y_1}{x_2 - x_1} (\cancel{x_2 - x_1})$$

$y - y_1 = m(x - x_1)$ Point-Slope Form

Find the equation for a line with $m = 4$

that contains (3, 2)

$$x_1 = 3$$

$$y_1 = 2$$

Point-Slope Form

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

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

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

+2 +2

$$y = 4x - 10$$

Slope-Intercept Form

$$y = mx + b \quad m = 4 \quad x = 3$$

$y = 2$

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

$$2 = 12 + b$$

$$-12 - 12$$
$$-10 = b$$

$$y = mx + b$$
$$y = 4x - 10$$



