

Howdy!!!!

Mr. Watson

Algebra

What you need:

Pencil

Calculator,

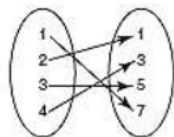
Algebra 1

Unit 2: Linear Functions

Notes

Determine if the following are functions. Then state the domain and range:

a.



Function or Not a Function

b. $\{(3, 4), (9, 8), (3, 7), (4, 20)\}$

Function or Not a Function

c. $\{(15, -10), (10, -5), (5, 2), (10, 5), (15, 10)\}$

Function or Not a Function

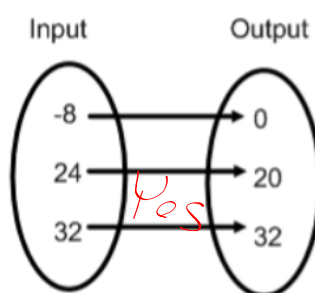
d.

Input	Output
-10	20
-5	10
0	0
5	10
10	20

Yes

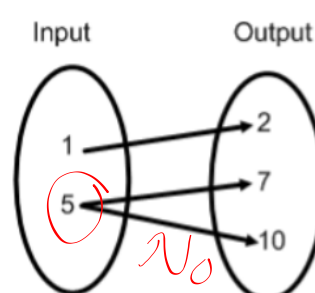
Function or Not a Function

e.



Function or Not a Function

f.



Function or Not a Function

g. (telephone number, person)

Function or Not a Function

home phone

h. (person, car)

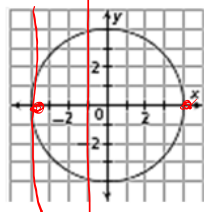
Function or Not a Function

i. (shirt color, student)

Function or Not a Function

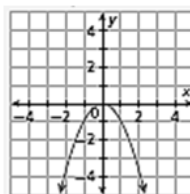
Use the Vertical Line Test to determine if the graphs of the relations are functions.

A.



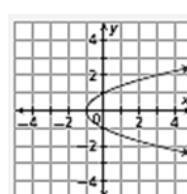
No

B.



Yes

C.



No

Algebra 1

Unit 2: Linear Functions

Notes

When you want to know the output of a function, you can use your input values by substituting them into your function for the independent variable.

Evaluating Functions

$$F(x) = x + 1$$

$$F(2) = 2 + 1$$

Ex. Evaluate $f(x) = 3x$ when $x = 2$ and $x = -8$

$$f(2) = 3(2) \quad | \quad f(-8) = 3(-8)$$

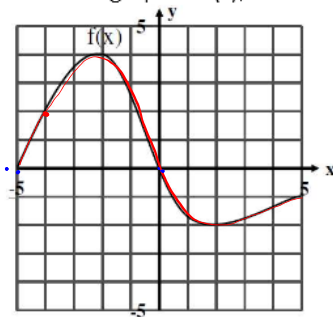
$$f(2) = 6 \quad | \quad f(-8) = -24$$

Ex. Evaluate $g(x) = \frac{1}{2}x - 3$ when $x = -4$ and $x = 8$

$$g(-4) = \frac{1}{2}(-4) - 3 \quad | \quad g(8) = \frac{1}{2}(8) - 3$$

$$g(-4) = -5 \quad | \quad g(8) = 1$$

Given this graph of $f(x)$, evaluate the following:



a. $f(-4) = 2$

b. $f(0) = 0$

c. $f(-5) = 0$

d. $f(-2) = 4$

e. $f(0) = 0$

f. $f(-2) = 4$

Highest Pt: $(-2, 4) \rightarrow f(-2) = 4$

E. A hot air balloon cruising at 1000 feet begins to ascend. It ascends at a rate of 200 feet per minute. Create a function f to represent the height of the balloon for m minutes. How many minutes does it take to reach 1400 feet?

$$\begin{array}{r} 1000 + 200m = 1400 \\ -1000 -1000 \\ \hline 200m = 400 \\ \frac{200m}{200} = \frac{400}{200} \end{array}$$

$$m = 2$$

$$f(2) = 1400$$

F. A fish tank filled with 12 gallons of water is drained. The water drains at a rate of 1.5 gallons per minute. Create a function f to represent the number of gallons remaining after m minutes. How long does it take for the tank to have 3 gallons remaining?

$$\begin{array}{r} 12 - 1.5m = 3 \\ -12 -12 \\ \hline -1.5m = -9 \end{array}$$

$$\frac{-1.5m}{-1.5} = \frac{-9}{-1.5}$$

$$m = 6$$

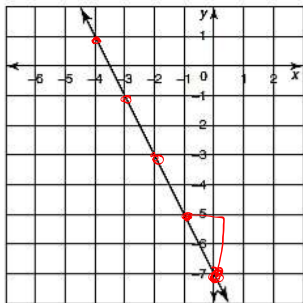
$$f(6) = 3$$

Algebra 1

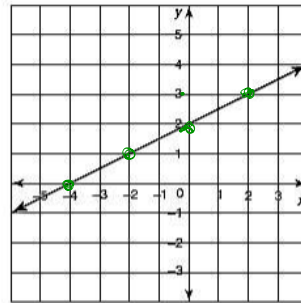
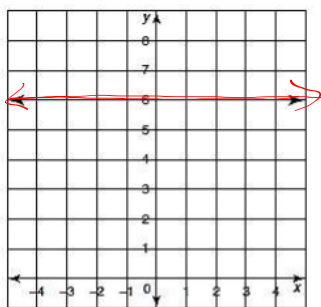
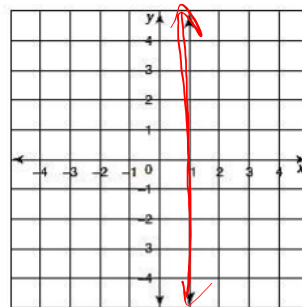
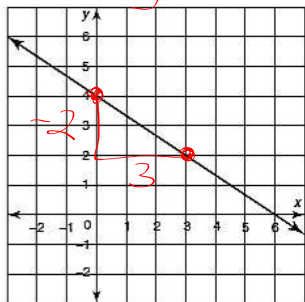
Unit 2: Linear Functions

Notes

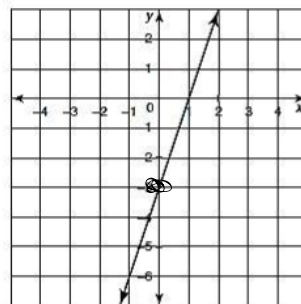
Ex. Calculate the slope of each of the graphs.

A. Slope: -2 y-intercept: -7 

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

Equation: $y = -2x - 7$ B. Slope: $\frac{1}{2}$ y-intercept: 2 Equation: $y = \frac{1}{2}x + 2$ C. Slope: 0 y-intercept: 6 Equation: $y = 6$ D. Slope: und y-intercept: n/A Equation: $x = 1$ E. Slope: $-\frac{2}{3}$ y-intercept: 4 Equation: $y = -\frac{2}{3}x + 4$

Rise
Run

F. Slope: 3 y-intercept: -3 Equation: $y = 3x - 3$

Graphing Linear Functions

When you graph equations, you have to be able to identify the slope and y-intercept from the equation.

Step 1: Solve for y (if necessary)

Step 2: Plot the y-intercept.

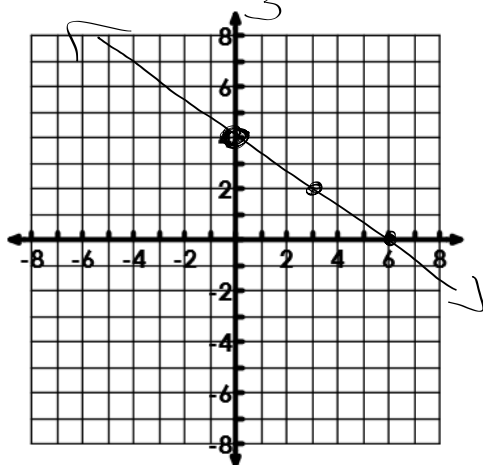
Step 3: From the y-intercept, use the slope to calculate another point on the graph.

Step 4: Connect the points with a ruler or straightedge.

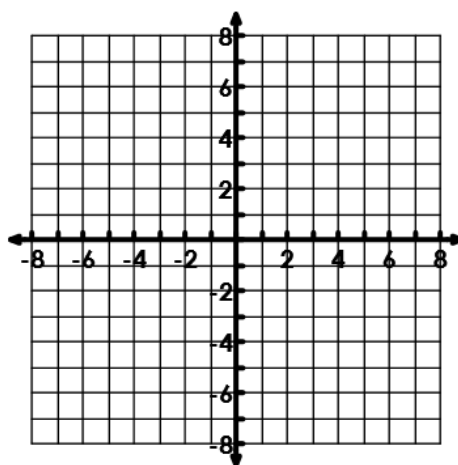
$$\text{Slope} = \frac{\text{change in } y}{\text{change in } x} = \frac{+\uparrow \quad -\downarrow}{+\rightarrow \quad -\leftarrow}$$

Ex. Graph the following lines:

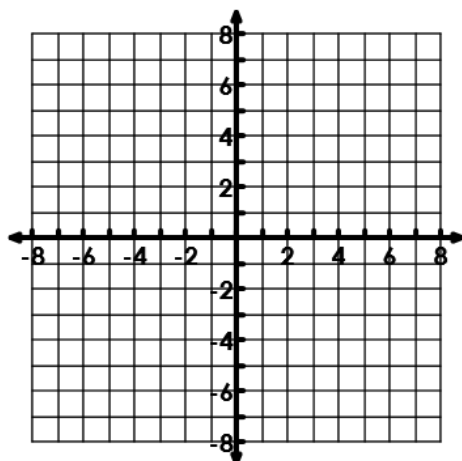
A. $y = -\frac{2}{3}x + 4$ $m = -\frac{2}{3}$ $b = 4$



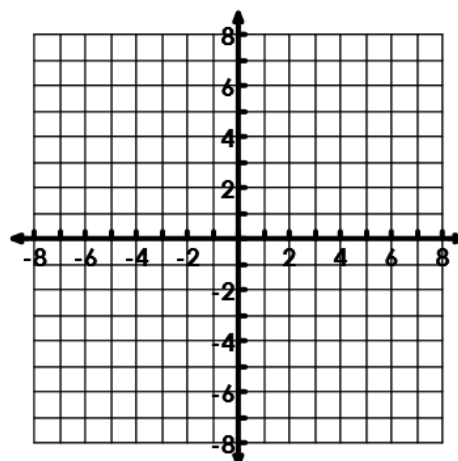
$y = 3x + 2$ $m = \underline{\hspace{1cm}}$ $b = \underline{\hspace{1cm}}$



C. $y = -4x - 1$ $m = \underline{\hspace{1cm}}$ $b = \underline{\hspace{1cm}}$



D. $y = \frac{5}{3}x - 3$ $m = \underline{\hspace{1cm}}$ $b = \underline{\hspace{1cm}}$



Graphing Horizontal and Vertical Lines

H *horizontal*

○ - slope $(\frac{0}{4})$

Y =

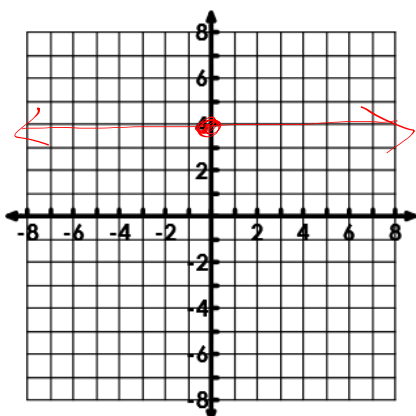
V *vertical*

U *undefined* $(\frac{4}{0})$

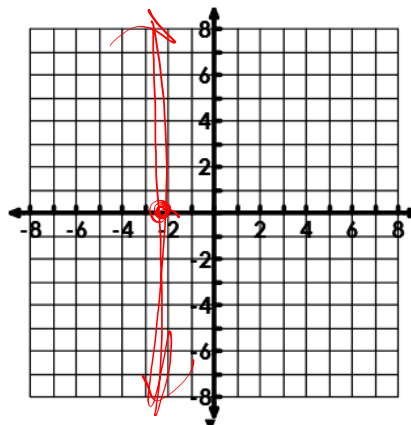
X =

When graphing horizontal and vertical lines, you will have one variable set equal to a constant. Whatever constant the variable is set equal to represents that value in a coordinate point. For example, if you have $y = 2$, all coordinate points must have a value of 2 and x can be whatever you want. Pick 3 points to graph the lines below.

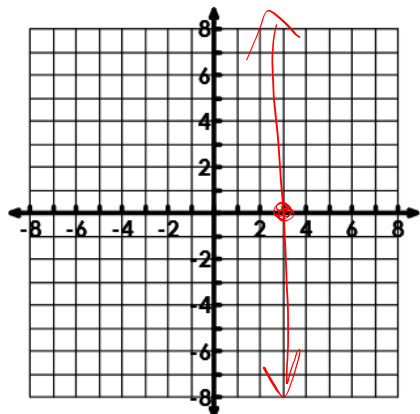
Ex. $y = 4$



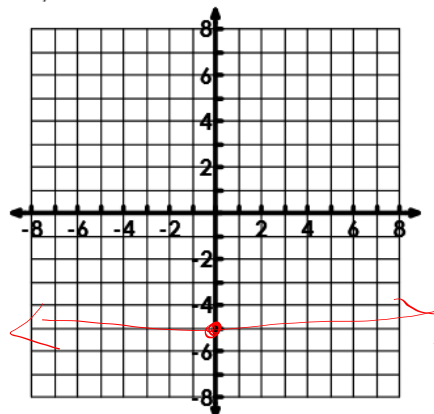
Ex. $x = -2$



Ex. $x = 3$



Ex. $y = -5$



Algebra 1

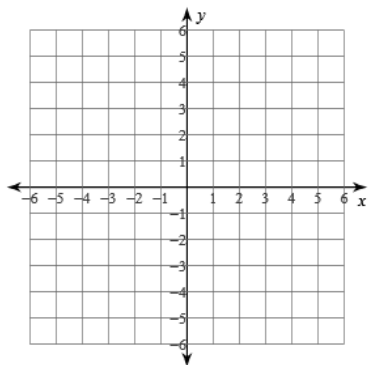
Name _____ ID: 1

Graphing Extra Practice Day 2

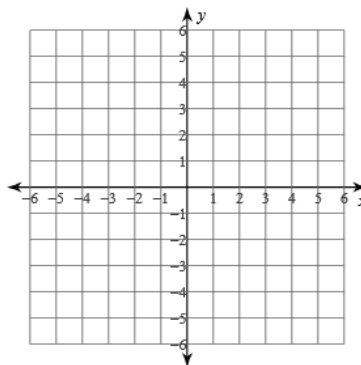
Date _____ Period _____

Sketch the graph of each line.

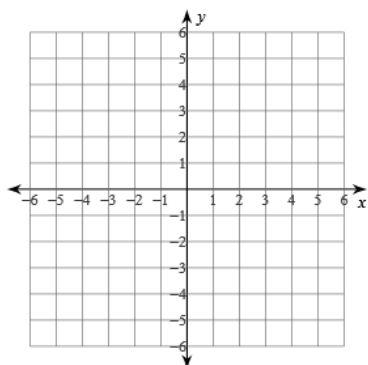
1) $2x - y = -4$



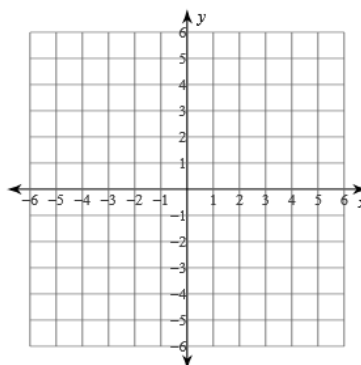
2) $y = 3$



3) $3x + 2y = -10$

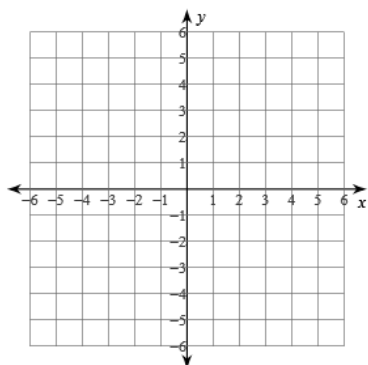


4) $x - y = -1$



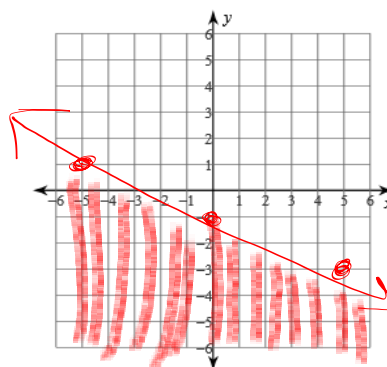
Sketch the graph of each linear inequality.

5) $y > x + 3$



6) $y \leq -\frac{2}{5}x - 1$

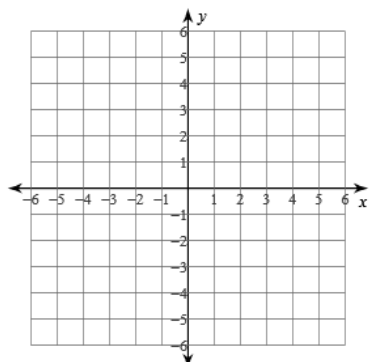
$$m = \frac{-2}{5} \rightarrow$$



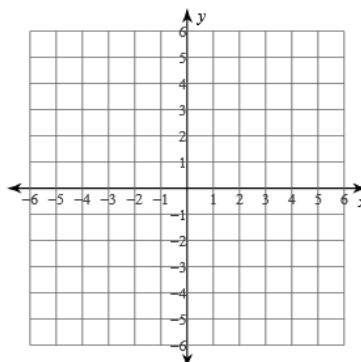
① solid

② below
≤

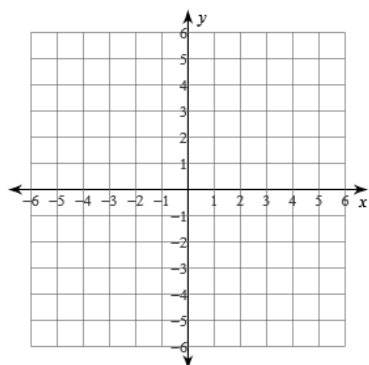
7) $y \leq 4x + 5$



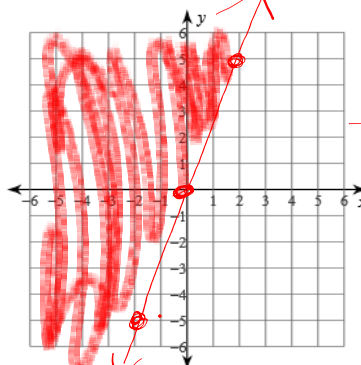
8) $3x - 4y < 8$



9) $x - 3y > -12$



10) $5x - 2y \leq 0$



Solve for y

$$5x - 2y \leq 0$$

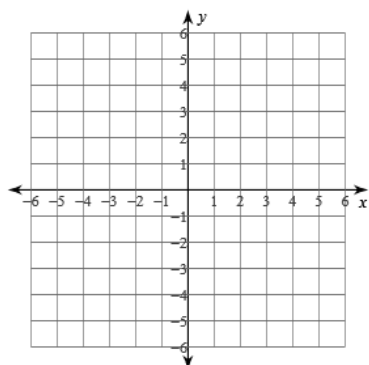
$$-5x \quad -5x$$

$$\frac{-2y}{-2} \leq \frac{-5x + 0}{-2}$$

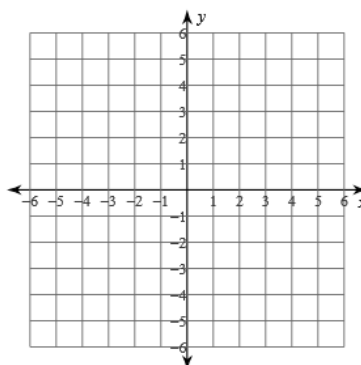
$$y \geq \frac{5}{2}x + 0$$

① solid
② above

11) $x + y \geq -5$



12) $5x - y > -3$



Attachments

Syllabus - Math I A.doc