Foundations of Math

Chapter 6 Packet

Name:

Table of Contents

Name:_____ Notes #61

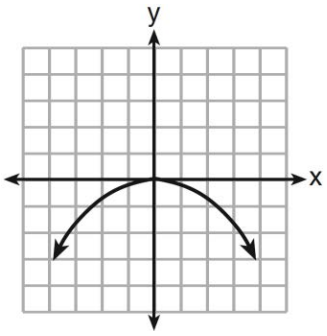
INTRO TO FUNCTIONS

Examples of Functions:

$\{(2,5),\ (5,2),\ (0,0)\}$

$\{(-8,-3),\ (-3,-8),\ (7,7)\}$

x	-2	0	1	2
y	0	-2	-3	-4

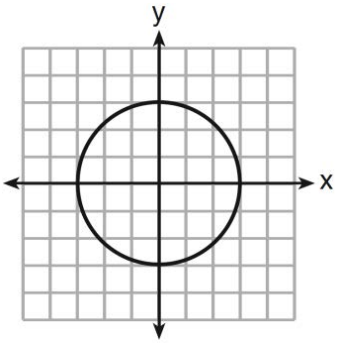


Examples that are NOT Functions:

$\{(2,5),(5,-9),(2,0)\}$

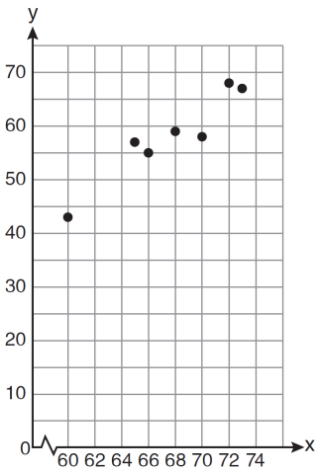
$\{-8,-3,-5,7\}$

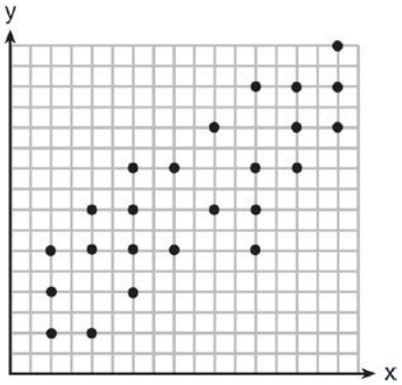
x	3	3	2	0
y	1	4	5	-3



Functions pass the _____ which is when a graph

does not _____ the vertical line more than _____.





In your own words, define “function”.

Domain:

Range:

Ex 1) Let $x = \{1, 2, 7, 4\}$ and $y = \{5, 6, 7, 8, 9\}$. f and g are defined below.

$f(x) = \{(1, 7), (2, 5), (7, 6), (4, 7)$ $\quad$ $g(x) = \{(1, 5), (2, 6), (1, 8), (2, 9), (7, 7)\}$

a) Is f a function? If yes, what is the domain and range? If no, explain why.

b) Is g a function? If yes, what is the domain and range? If no, explain why.

c) What is $f(2)$?

d) If $f(x) = 7$, then what is x?

Name:_____ Notes #62

EVALUATING FUNCTIONS-DAY 1

Review: Determine if the following are functions. If they are, find the domain and the range.

1.) $\{(2,3),(4,0),(-2,3),(5,1)\}$ 2.) $\{(3,-1),(4,6),(7,2),(3,6)\}$

Evaluating: Just _____ and _____!

1. Find the value of each function for the given input.

Let $f(x) = 6x - 3$, let $g(x) = 0.5(4)^x$, and let $h(x) = x^2 - 3x + 4$.

a. $\boldsymbol{f(0)}$ e. $\boldsymbol{g(0)}$ i. $\boldsymbol{h(2)}$

b. $\boldsymbol{f(-10)}$ f. $\boldsymbol{g(-1)}$ j. $\boldsymbol{h(-2)}$

c. $\boldsymbol{f(2)}$ g. $\boldsymbol{g(2)}$ k. $\boldsymbol{h(-4)}$

d. $\boldsymbol{f\left(-\frac{2}{3}\right)}$ h. $\boldsymbol{g\left(\frac{1}{2}\right)}$ l. $\boldsymbol{h\left(\frac{2}{3}\right)}$

Let $\boldsymbol{f(x) = 6x - 3}$ and let $\boldsymbol{h(x) = x^2 - 3x + 4}$.

m. $\boldsymbol{f(1) + f(2)}$

n. $\boldsymbol{h(2) + h(1)}$

2. Since a variable is a placeholder, we can substitute letters that stand for numbers in for x. Let $f(x) = 6x - 3$, and let $g(x) = 0.5(4)^x$, and suppose a, b, c, and h are real numbers. Evaluate each function for the given input.

   a. $f(a)$

   c. $g(b)$

   b. $f(2a)$

   d. $g(3b)$

Name:_____ Notes #63

Evaluating Functions Day 2

Review: Evaluate the following: $f(x) = -4x + 5$ and $g(x) = 2(16)^x$

1.) $f(-3)$ 2.) $g\left(\frac{1}{2}\right)$ 3.) $g(0)$

Since a variable is a placeholder, we can substitute letters that stand for numbers in for x. Let $f(x) = 6x - 3$, and let $g(x) = 0.5(4)^x$, and suppose a, b, c, and h are real numbers. Evaluate each function for the given input.

a. $\boldsymbol{f(a) + f(h)}$	b. $\boldsymbol{g(b - 3)}$
c. $\boldsymbol{f(a + h)}$	d. $\boldsymbol{g(b + c)}$

e. $\boldsymbol{f(a+1)-f(a)}$	f. $\boldsymbol{f(a+h)-f(a)}$
g. $\boldsymbol{f(2+h)-f(h)}$	h. $\boldsymbol{g(b+1)-g(\mathbf{b})}$

Let $\boldsymbol{m(x)=5x+10}$ and $\boldsymbol{k(x)=-4x}$. Evaluate.

i. $\boldsymbol{m(2)-k(12)}$

j. $\boldsymbol{m(-7)+k(-2)}$

Name:_____ Notes #64

Domain and Range

Review:

What is Domain:

What is Range:

Find the domain and range of the following: $\{(2,5),(4,2),(8,-3),(11,1)\}$

1) Provide a suitable domain and range to complete the definition of each function.

a. Let $f(x) = 2x + 3$.

b. Let $C(x) = 9x + 130$, where $C(x)$ is the number of calories in a sandwich containing x grams of fat.

c. Let $B(x) = 100(2)^x$, where $B(x)$ is the number of bacteria at time x hours over the course of one day.

2) Donovan purchased a bag of Flamin' Hot Cheetos. The nutrition on the box stated that a serving of 10 cheetos contains a total of 100 calories. A full bag of Flamin' Hot Cheetos contains 170 calories. What is the domain and the range for the bag?

3) A local DJ business charges $70 per hour plus a $1200 equipment fee. Find the domain and range over a 5 hour period.

4) A local DJ business charges charges $280 dollars per hour. Find the domain and range over a 5 hour period.

Name:_____ Notes #65

interval notation

Symbol	Meaning
((Parentheses)	● ● ● ●
[[Bracket}	● ● ● ●

$3 < x < 10$	As an inequality
	In Interval Notation

	As an inequality
$(3,10]$	In Interval Notation

	As an inequality
$[3,10)$	In Interval Notation

$3 \leq x \leq 10$	As an inequality
	In Interval Notation

1) Which interval notation represents the set of all numbers from 2 through 7, inclusive?

a. $(2,7]$ c. $[2,7)$

b. $(2,7)$ d. $[2,7]$

2) Which interval notation represents the set of all numbers greater than or equal to 5 and less than 12?

a. $[5,12)$ c. $(5,12)$

b. $(5,12]$ d. $[5,12]$

infinity:

Infinity is not a _____, it is an _____.

It represents something with _____.

We use the symbol:

$x \leq 3$ _____

$x > 17$ _____

3) In interval notation, the set of all real numbers greater than -4 and less than or equal to 11 is represented by:

4) Give the interval notation that represents the set of all real numbers greater than 2 and less than or equal to 20?

5) The inequality $-2 \leq x < 4$ can be written as:

6) Which interval notation represents $-3 \leq x \leq 3$

7) Which set of integers is included in $(-1, 3]$?

8) Which set of integers is included in $[-5, 0]$?

9) Which set of integers is included in $(1, 7)$?

10) Which set of integers is included in $[14, 25)$?

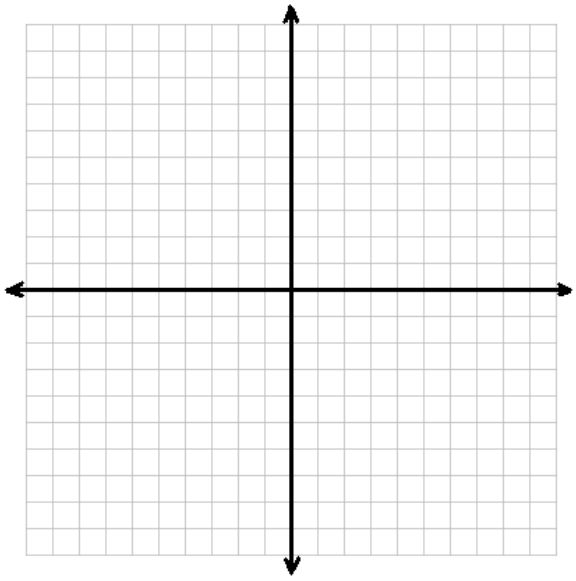
11) Give the interval notation that represents the set of all numbers from -4 through 8, exclusive.

Name:_____ Notes #66

Graphing Linear Functions on an Interval

Sketch the graph of the following equation:

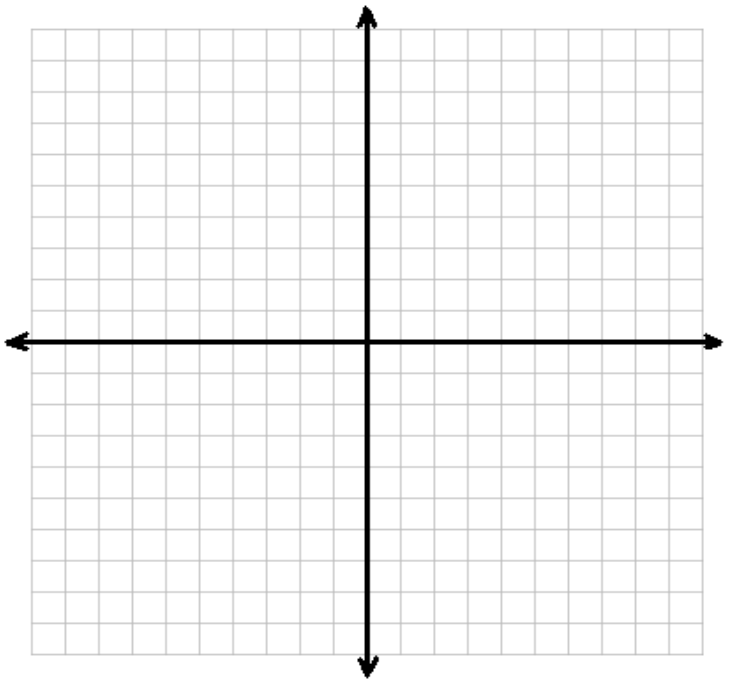
$f(x) = 2x - 3$



What if we use interval notation?

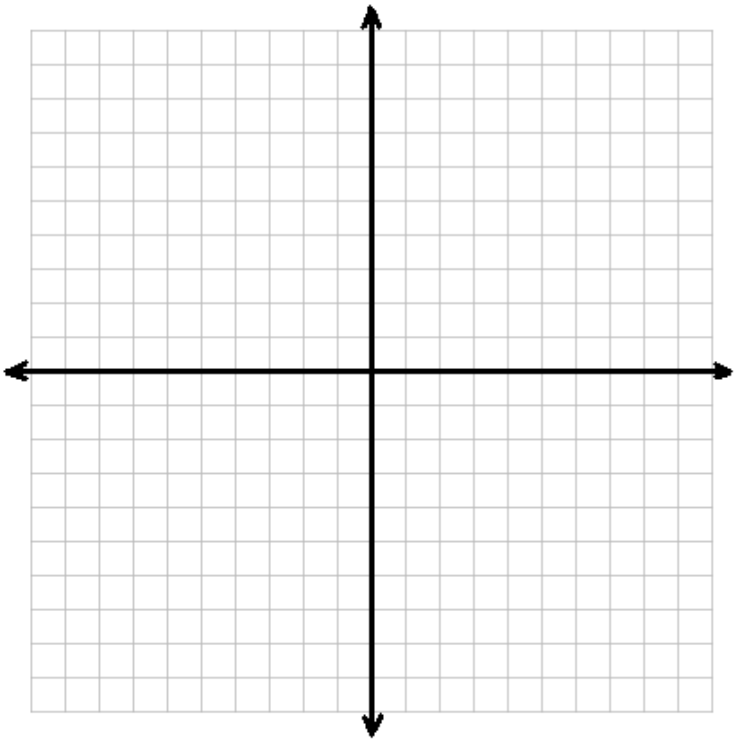
1) $f(x) = 2x - 3; [-1, 4]$

x		$f(x)$



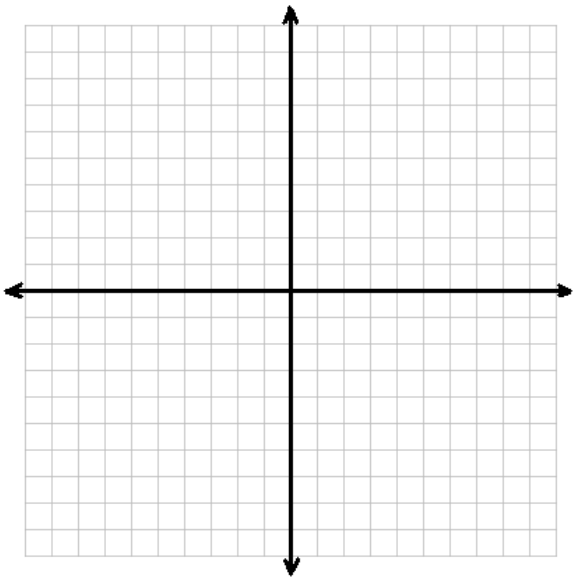
2) $f(x) = \frac{1}{2}x - 2\ ;\ (-3, 3)$

x		$f(x)$



3) $f(x) = -3x + 5\ ;\ (-1, 5]$

x	$f(x)$



Getting Coordinates with a Calculator

Step 1: Press Y=

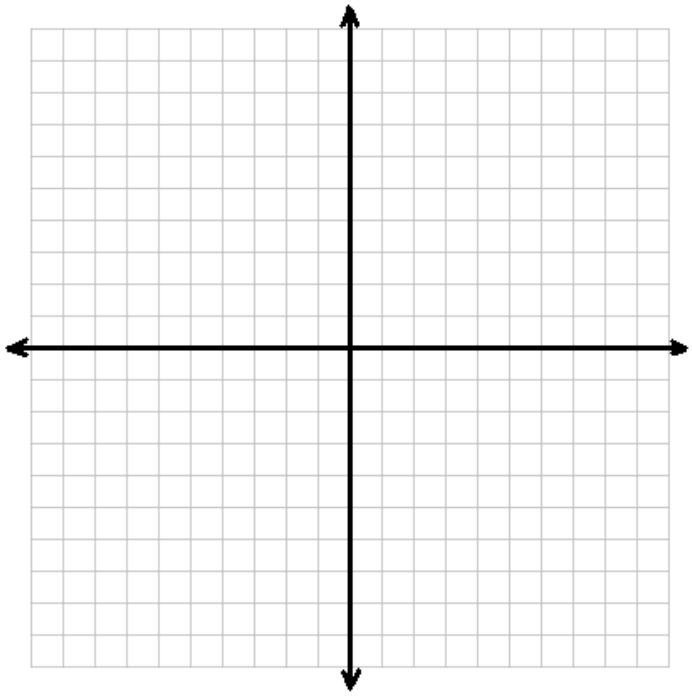
Step 2: Type in function

Step 3: Press 2nd, press Graph

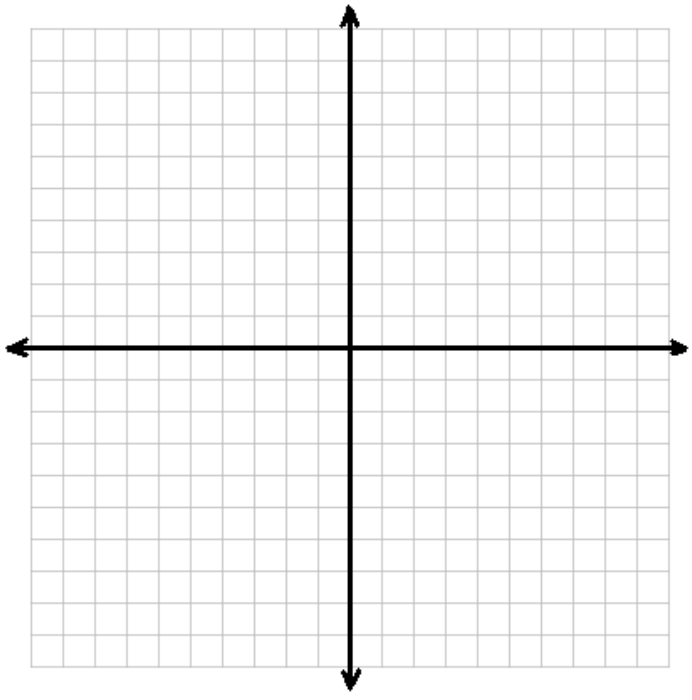
Step 4: Use the arrows to find your x values.

Step 5: Write them in a table on your paper

4) $f(x) = 3x - 2; [-2,4]$



5) $f(x) = -\frac{1}{2}x + 2; [-3,1)$



Name:_____ Notes #67

Graphing Exponential Functions on an Interval

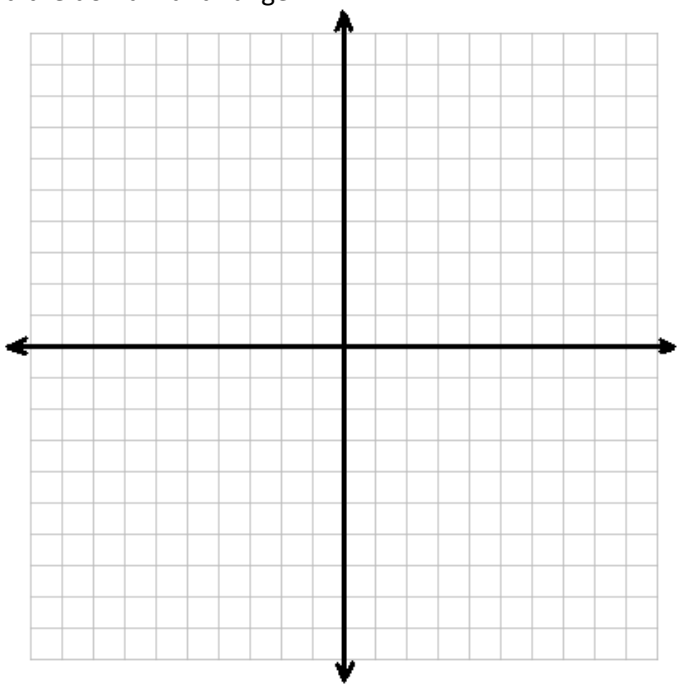
Yesterday we graphed _____ functions.

We can graph different types of functions in a given interval too.

Exponential functions have the _____ in the _____.

1) Sketch the graph of the following equation and find the domain and range:

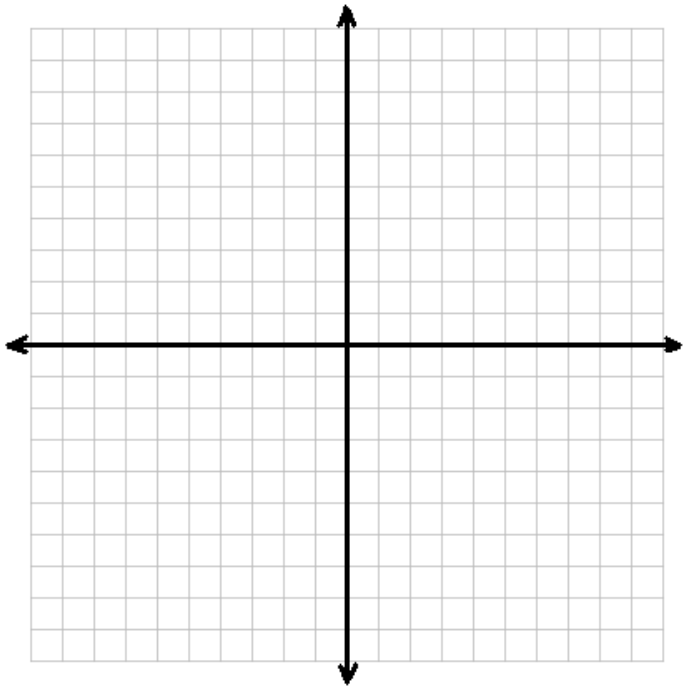
$f(x) = 2^x$; $[-1, 3]$



Domain: _____

Range: _____

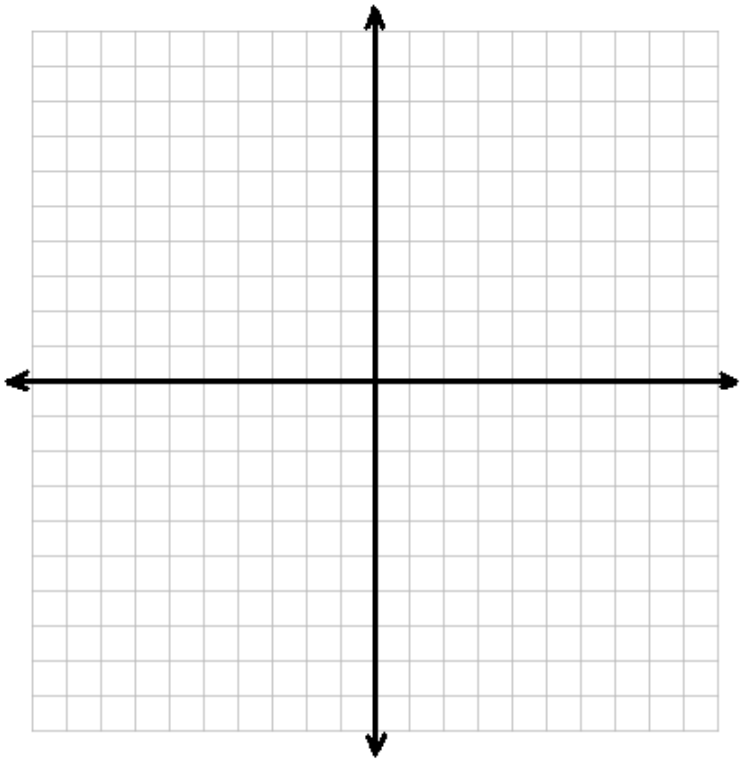
2) $f(x) = \left(\frac{1}{2}\right)^x$; $(-2, 2)$



Domain: _____

Range: _____

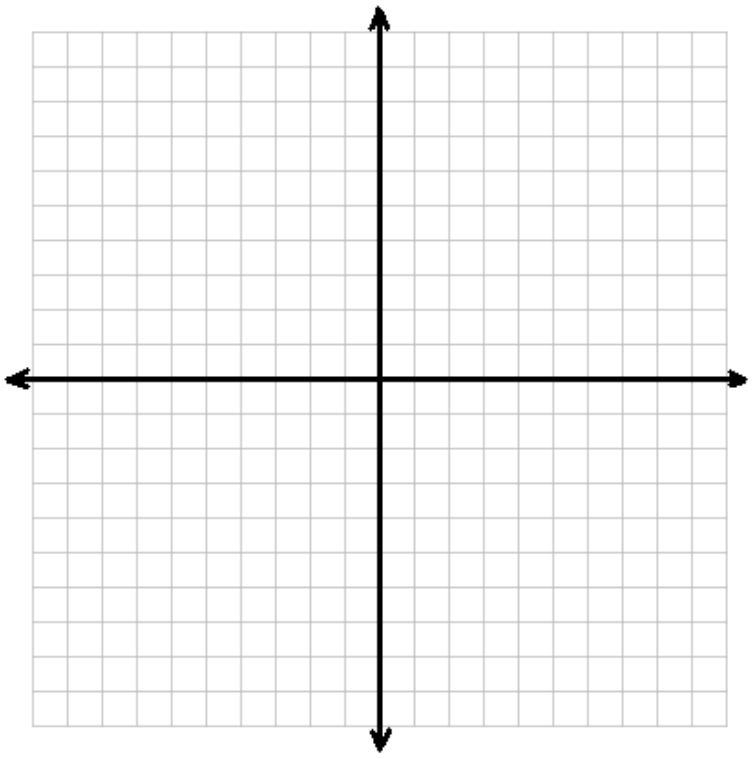
3) $f(x) = \left(\frac{1}{3}\right)^x \; ; \; [-2, 1)$



Domain: _____

Range: _____

4) $f(x) = 2.5(2)^x \; ; \; (-1, 2]$



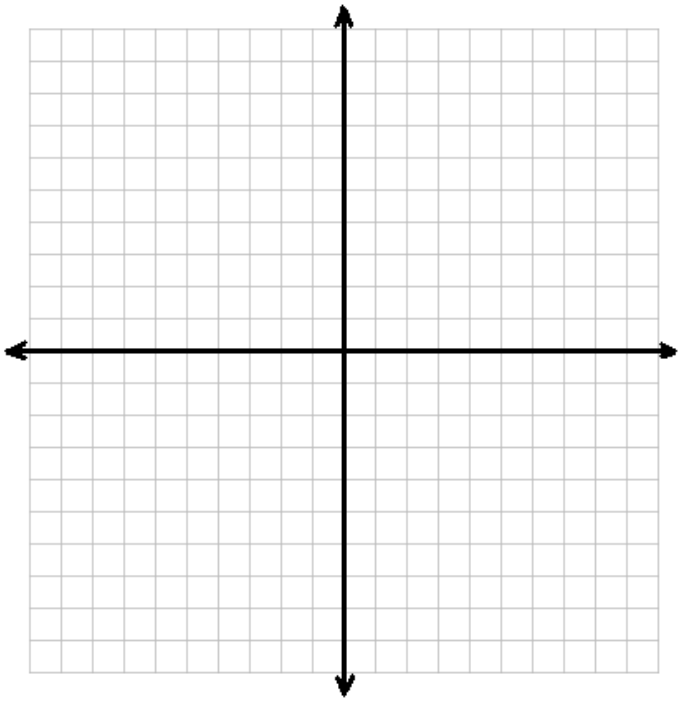
Domain: _____

Range: _____

Name:_____ Foundations Homework 67

Sketch the graph of the following equation and find the domain and range:

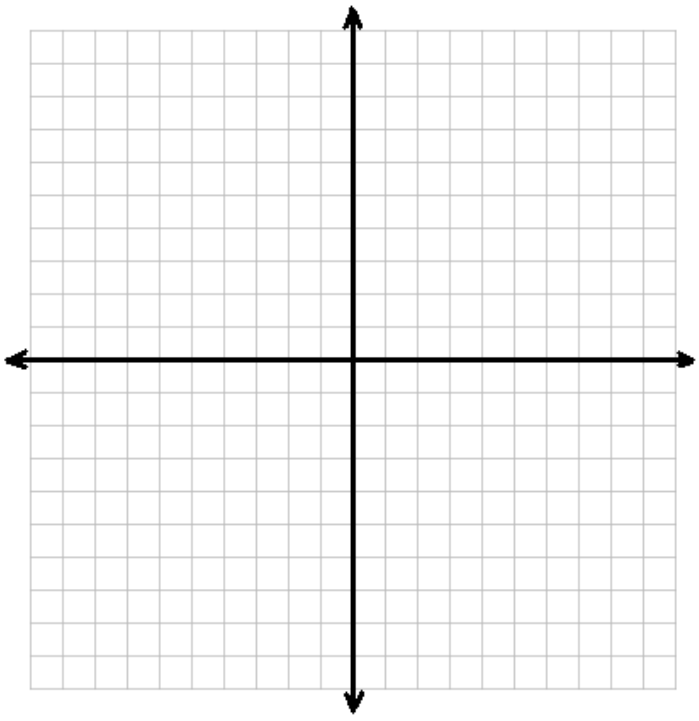
1.) $f(x) = 2(2)^x$; $[-1, 2]$



Domain: _____

Range: _____

2.) $f(x) = 3^x$; $(-1,2]$



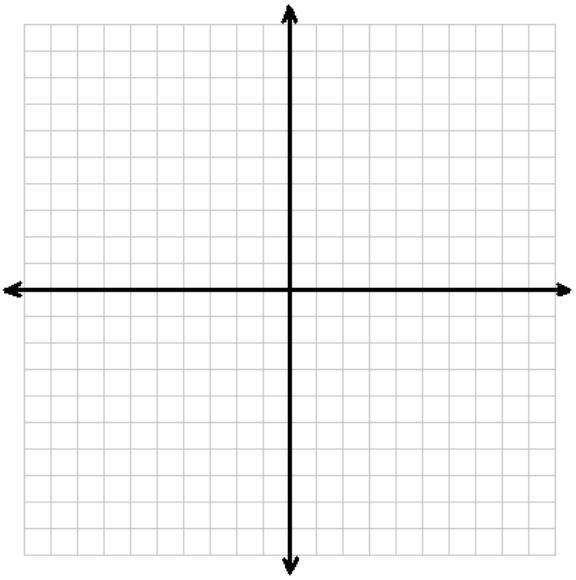
Domain: _____

Range: _____

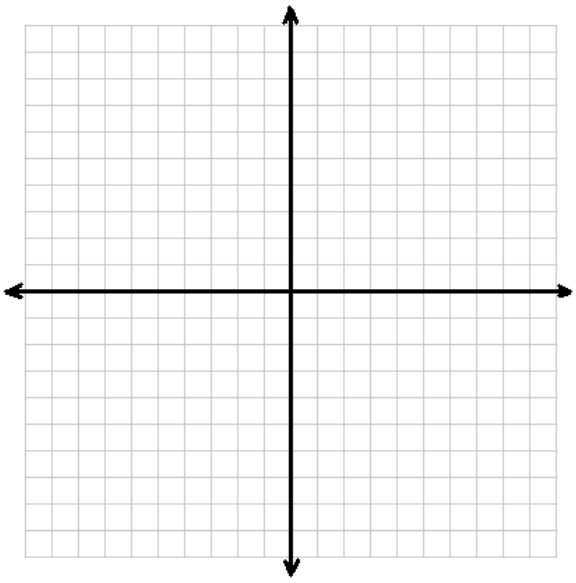
Name:_____ Foundations Homework 66

Graph the following equations.

1) $f(x) = 3x - 2$; $[-2, 3]$



2) $f(x) = -3x + 5$; $(-1, 4]$



Name:_____ Foundations HW #65

Write each inequality in interval notation.

1. $-3 < x < 4$

2. $1 \leq x < 17$

3. $6 \leq x \leq 7$

4. $x > 2$

Write each interval as an inequality.

5. $[5,8]$

6. $(6, 18]$

Write the set of integers represented by the inequality/interval.

7. $(2,7]$

8. $5 \leq x < 10$

Name:_____ Foundations Homework 64

Find the domain and range for the following:

1.) $y = -2x - 7$ **(See 1A on notes for assistance)**

2.) Let, $C(x) = 3x + 14$, where *C(x)* stands for the number of calories burned while running *x* hours.
(See 1B on notes for assistance)

3.) Let $M(x) = 50(4)^x$, where *M(x)* stands for the population of mold that grows over *x* days.
(See 1C on notes for assistance)

4.) A parking garage charges $1.25 for every hour a car is parked in their lot. The company always charges for the full hour. Find the domain and range over a 6 hour period.
(See 4 on notes for assistance)

Hours	Money Charged

Name:_____ Homework 63

Evaluate the following: $f(x) = -2x - 7$, $h(x) = x^2 - 2x + 1$

1) $\boldsymbol{f(a-2)}$

2) $\boldsymbol{h(-2)}$

3) $\boldsymbol{f(a+h) - f(a)}$

4) $\boldsymbol{h(a) - h(2)}$

Name:_____ Foundations Homework 62

1. Which set of ordered pairs does *not* represent a function?

a) $\{(3,-2),(-2,3),(4,-1),(-1,4)\}$
b) $\{(3,-2),(3,-4),(4,-1),(4,-3)\}$
c) $\{(3,-2),(4,-3),(5,-4),(6,-5)\}$
d) $\{(3,-2),(5,-2),(4,-2),(-1,-2)\}$

2. Which relation is a function?

a) $\left\{\left(\frac{3}{4},0\right),(0,1),\left(\frac{3}{4},2\right)\right\}$
b) $\left\{(-2,2),\left(-\frac{1}{2},1\right),(-2,4)\right\}$
c) $\{(-1,4),(0,5),(0,4)\}$
d) $:(2,1),(4,3),(6,5)\}$

3. Given: $\{(2,1),(3,6),(4,-3),(6,-11)\}$, find the domain and range.

Evaluate the following functions for the given values. You must have work.

4. If $f(x)=3x-4$, find $f(-2)$.

6. If $f(x)=x^2+3x-5$, find the value of $f(3)$.

5. If $f(x)=-3x+11$, find $f(2)+f(7)$

Name:_____ Foundations Homework 61

1) Which set of ordered pairs represents a function?

a. $\{(0,4),(2,4),(2,5)\}$

b. $\{(6,0),(5,0),(4,0)\}$

c. $\{(4,1),(6,2),(6,3),(5,0)\}$

d. $\{(0,4),(1,4),(0,5),(1,5)\}$

2) Which relation is *not* a function?

a. $\{(1,5),(2,6),(3,6),(4,7)\}$

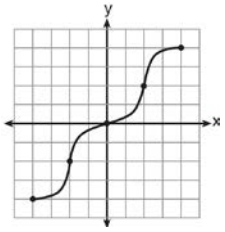
b. $\{(4,7),(2,1),(-3,6),(3,4)\}$

c. $\{(-1,6),(1,3),(2,5),(1,7)\}$

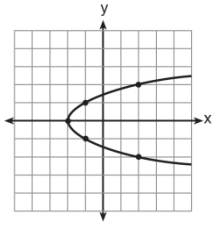
d. $\{(-1,2),(0,5),(5,0),(2,-1)\}$

3) Which graph represents a function?

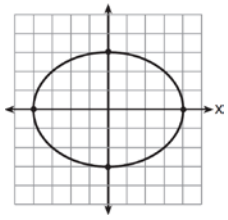
a.



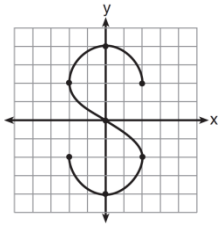
c.



b.

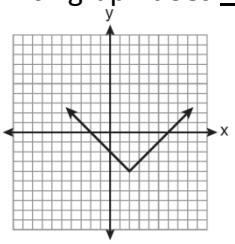


d.

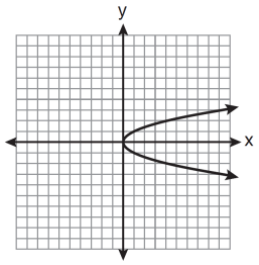


4) Which graph does ***not*** represent a function?

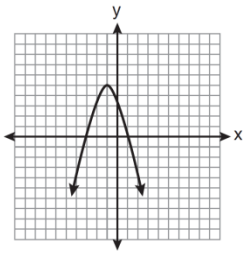
a.



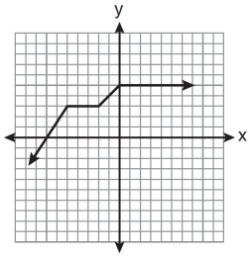
b.



c.



d.



5) Given $\{(2,5),(3,0),(6,2),(4,1)\}$
Evaluate $f(3)$

6) Given $\{(2,5),(3,0),(6,2),(4,1)\}$
What is x if $f(x) = 2$?