Algebra 2/Trig1 Name _____

Unit 4 – Introduction to Functions Block ___ Date _____

I. Introduction:

Relation - _____

Set Notation - _____

Domain - _____ **Range -** _____

Function - _____

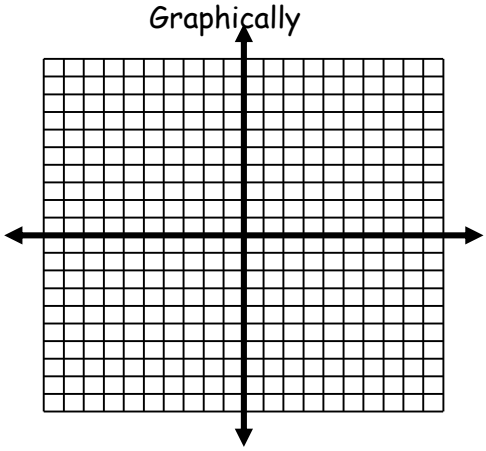
Is It A Function?

Example:

Table

Input (x)	Output (y)

Graphically



II. Function Notation: Replace y with an f(x) or g(x)…etc.

Example: y = 6x – 12 is the same as _____ Example: y = $x^2 - 7$ is the same as_____ .

*** f is the name of the function, whereas f(x) is the value of the function at y ***

III. Combinations of Functions:

1. Sum: $(f+g)(x) = f(x) + g(x)$
2. Difference: $(f-g)(x) = f(x) - g(x)$
3. Product: $(fg)(x) = f(x) \bullet g(x)$
4. Quotient: $\left(\frac{f}{g}\right)(x) = \frac{f(x)}{g(x)}$

Examples: Evaluate the indicated function for $f(x) = x^2 + 1$ and $g(x) = x - 4$.

1. $(f + g)(x)$ 2. $(f - g)(x)$ 3. $(fg)(x)$ 4. $\left(\frac{f}{g}\right)(x)$

IV. Function Composition:

The **composition** of a function *f* with the function *g* is $(f \circ g)(x) = f(g(x))$. The domain of $(f \circ g)$ is the set of all x in the domain of g such that g(x) is in the domain of f.

Examples:

Given $f(x) = x + 2$ and $g(x) = 4 - x^2$, find the following.

1. $(f \circ g)(x)$ 2. $(g \circ f)(x)$

V. Evaluating a Function: Substitute x and solve.

Example: Let $h(x) = 10 - 3x^2$ and $g(x) = 5x - 3$

A. Find h(2)

B. Find g(-4)

C. Find h(2x)

D. Find (g o h)(2)

VI. Finding the Domain and Range:

Interval Notation:

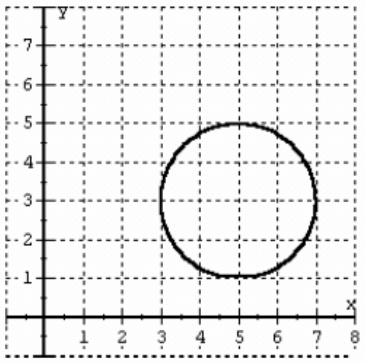
1.

2.

3.

4.

From A Graph: Determine if the relation is a function, if so, find the domain and range.

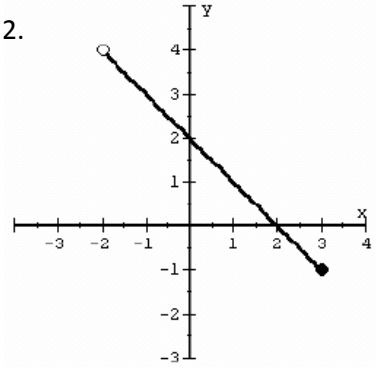
1. 

$(x-5)^2+(y-3)^2=4$

Function?

Domain:

Range:

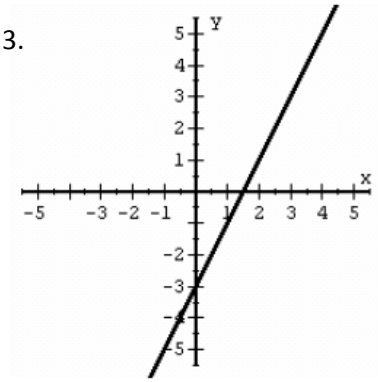
2. 

Line Segment

Function?

Domain:

Range:

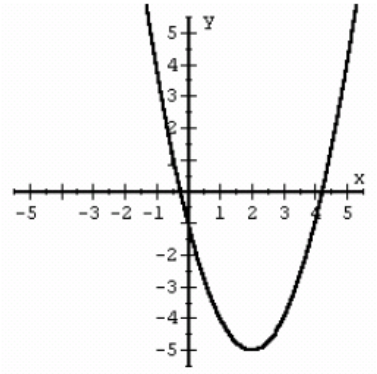
3. 

$y=2x-3$

Function?

Domain:

Range:

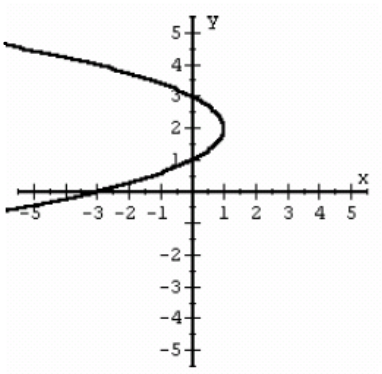
4. 

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

Function?

Domain:

Range:

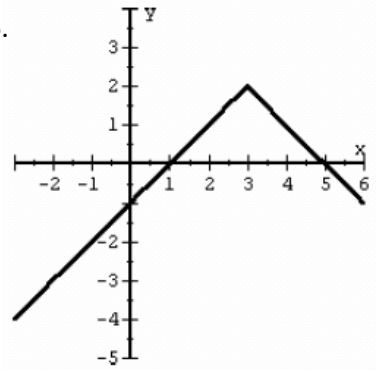
5. 

$x=-(y-2)^2+1$

Function?

Domain:

Range:

6. 

$y=-|x-3|+2$

Function?

Domain:

Range:

Algebra 2/Trig1 Name _____

Unit 4 – Intro to Functions Block ___ Date _____

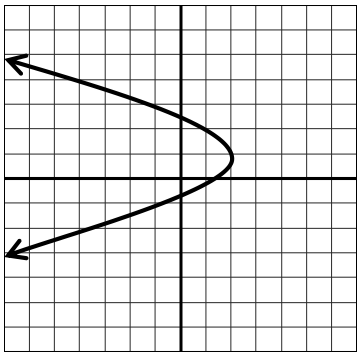
I. Use the following functions to answer questions 1-8.

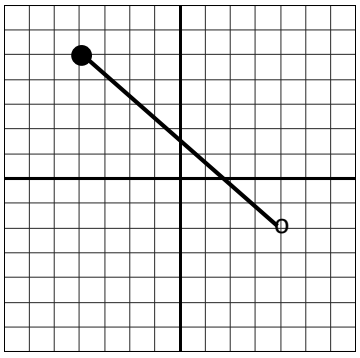
$f(x) = x^2 - 2x - 24$ $g(x) = x + 4$ $h(x) = \dfrac{x}{x+12}$

1. $f(3) =$ 2. $g(-2)$ 3. $h(10)$ 4. $(f+g)(2)$

5. $\left(\dfrac{g}{h}\right)(5)$ 6. $h(g(x))$ 7. $(f \circ g)(x)$ 8. $g(f(2))$

II. Determine if the graph is a function, then find the domain and range.

9. 

10. 

11.