Write your questions and
thoughts here!

2.1 Function Intro
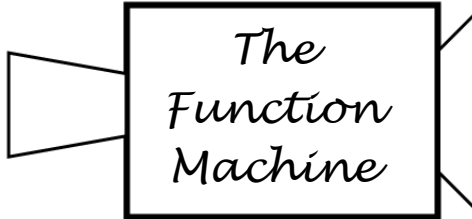
Name:_____

= pause the video and try the problem on your own.

= a graphing calculator is required (or recommended) to complete this problem.

The Function Machine

Input	Output
-2	
-1	
1	
-2	

Input	Output
-56	
$\frac{1}{2}$	
0	
1	

Input	Output
13	
0	
-38	
13	

Other Names for Input and Output:

INPUT:			
OUTPUT:			

Function Notation:

$$f(x) = \text{an expression in terms of } x.$$

name of the function(_____) = _____

Example: $f(x) = x^2 - x + 1$

a) $f(2) =$ b) $f(2x - 1) =$ c) $f(\text{☺}) =$

Calculator trick:

$f(x) = 3x^2 - 0.2x + 37$

TRACE

Table Ask

Function Notation

$f(2) =$
$f(-3.4) =$
$f(107) =$

2.1 Function Intro

Organizing input/output values:

Table of Values (T – Chart)		Ordered Pairs	Function Notation
3	-5	(,)	$f(\quad) =$
$-\dfrac{7}{3}$	16	(,)	$f(\quad) =$
0.8	0	(,)	$f(\quad) =$

Identifying a function from a scenario:

"…_____…" is equivalent to saying "…_____…"

The number of gray hairs on Mr. Brust's head **is a function of** the number of students in his Algebra 1 class. This is the same as saying the number of gray hairs on Mr. Brust's head **depends on** the number of students in his Algebra 1 class.

Take the function G, where s is the number of students in Mr. Brust's Algebra 1 class and $G(s)$ is the number of gray hairs on Mr. Brust's head. What does the following mean?

$$G(14) = 513 \qquad\qquad G(27) = 2{,}088$$

Vertical Line Test:

A graph is a function if any _____ _____ drawn through the graph intersects the graph no more than _____.

In the space below each graph, write whether the graph defines a function or is not a function.

1.	2.	3.	4.	5.	6.

_____

_____
_____
_____
_____

2.1 Practice – Function Intro

Pre-Calculus

Name: _____

For 1-4, identify if the relationship represents a function. If it does not, clearly explain why not.			

1)

Independent	Dependent
-2	5
0	5
1	5
2	5
6	5

2)

Domain	Range
3	-1
2	-5
5	-5
4	-6
3	-3

3) The ordered pairs:
$(-17,0)$, $(1,-4)$, $(-2,5)$, $(3,4)$, and $(1,6)$.

4) $f(-5) = 0$, $f(-1) = 4$, $f(0) = -5$, $f(4) = 2$, and $f(-1) = 4$.

For 5-8, identify the independent (input) variable and the dependent (output) variable.

5) While Trick-or-Treating, the amount of candy collected depends on the number of doors knocked.

6) The amount of candy eaten determines the number of cavities the following year.

7) The ability to draw quality art is a function of the hours spent drawing.

8) The month of the year helps determine the average high temperature.

For 9-11, write a sentence explaining the meaning of the specific numbers given for each scenario.

9) The input of a function C is time of day since midnight. The output is the number of cars in the parking lot. What does $C(9) = 115$ mean?

10) The input of a function W is height (in centimeters). The output is weight (in pounds). What does $W(183) = 212$ mean?

11) The input of a function I is the number of lame jokes Mr. Kelly tells in a day. The output is the irritability level of his students (measured in Kellygrams). What does $I(8) = 78$ mean?

For 12-14, use a graphing calculator to complete the table. Use the method indicated.

12) $f(x) = 0.7x^2 - 4.9x + 501$
Use Table Ask

x	$f(x)$
1.8	
32.5	
-32.5	

13) $g(x) = \frac{x^2+x}{x-4}$
Use Trace

x	$g(x)$
-5	
5.1	
21	

14) $h(x) = 5034x^5 + 35.2x - 8005$
Use Function Notation

x	$h(x)$
-0.8	
1.5	
0.4	

For 15-18, use the graph given for each problem to determine the values. If the value is between two integers, approximate to one decimal place.
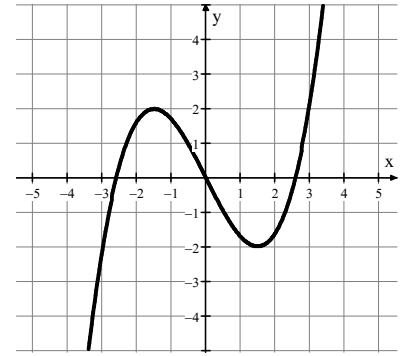
15)

a. $f(2) =$

b. $f(-2) =$

c. If $f(x) = -4$, then $x =$
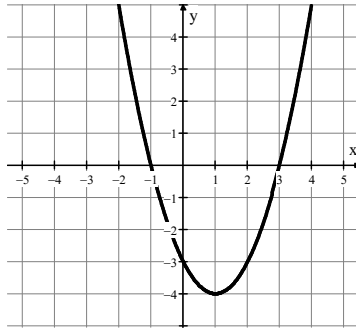
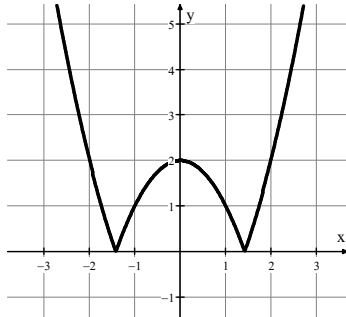d. If $f(x) = 0$, then the possible value(s) of x are:

16)

a. $f(-3) =$

b. $f(1.5) =$

c. If $f(x) = 3$, then $x =$

d. If $f(x) = 0$, then the possible value(s) of x are:
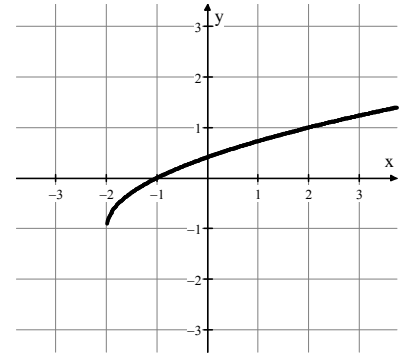
17)

a. $f(0) =$

b. $f(-1) =$

c. If $f(x) = 4$, then $x =$

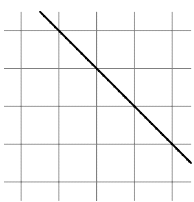d. If $f(x) = 0$, then the possible value(s) of x are:

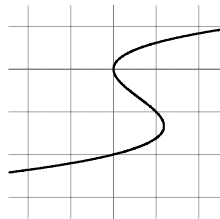18)

a. $f(2) =$

b. $f(3) =$

c. If $f(x) = -1$, then $x =$

d. If $f(x) = 0$, then the possible value(s) of x are:

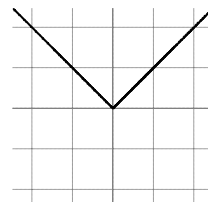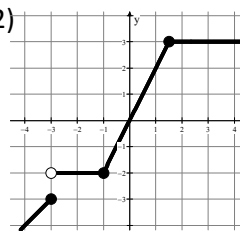**For 19-23, state whether or not each graph represents a function.**
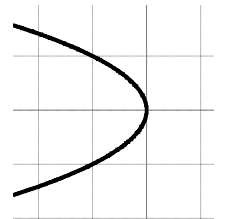
19)	20)	21)	22)	23)

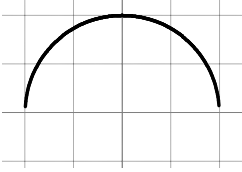24) Find the output for $w(x) = 3x^2 - x + 2$

a. $w(\Delta) =$

b. $w(x + 3) =$

c. $w(x + h) =$

2.1 Application and Extension
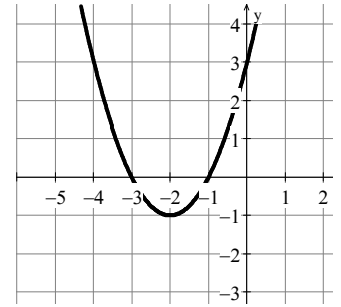
1) Does this graph represent a function?	2) Use the graph to approximate the following values.
	a. $f(-4) =$ b. $f(0) =$ c. If $f(x) = -1$, then $x =$ d. If $f(x) = 0$, then the possible value(s) of x are:

For 3-4, determine whether each of the situations describes a function. Give a reason for your answer.

3) The letter grade in this course is a function of your numerical grade.	4) The numerical grade in this course is a function of the letter grade.

For 5-7, fill in the table to the right. Let x represent the elevation in feet and $s(x)$ represent the daily average amount of snowfall (in inches) during the month of February.

5) Determine $s(4000)$. What does it mean?

6) Determine $s(5200)$. What does it mean?
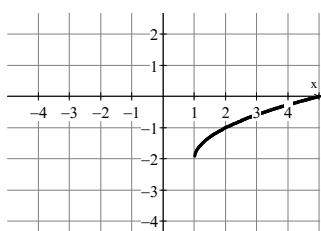
7) Determine $s(14,000)$. What is wrong with this value?

$$s(x) = 1.28(1.0005)^x$$

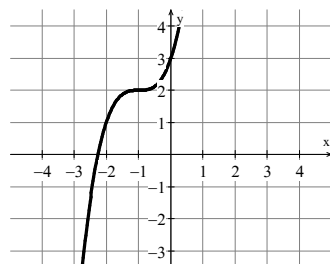| ELEVATION (in feet)	SNOWFALL (in inches)
2000	
3000	
4000	
5000	

8) If you were reading the equation $g(3) = 50$ out loud, what would you say? (Write exactly word-for-word how you would say it.)

Skillz Review: Write the function of each graph using $f(x) = \sqrt{x}, f(x) = x^3, f(x) = |x|$, or $f(x) = x^2$.
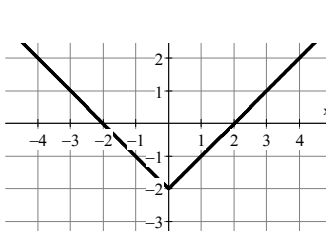
1) $f(x) =$	2) $f(x) =$	3) $f(x) =$	4) $f(x) =$