

## Families of Functions Test Review

1. List at least three other names for each of the following...

x-values  
 domain  
 independent  
 input

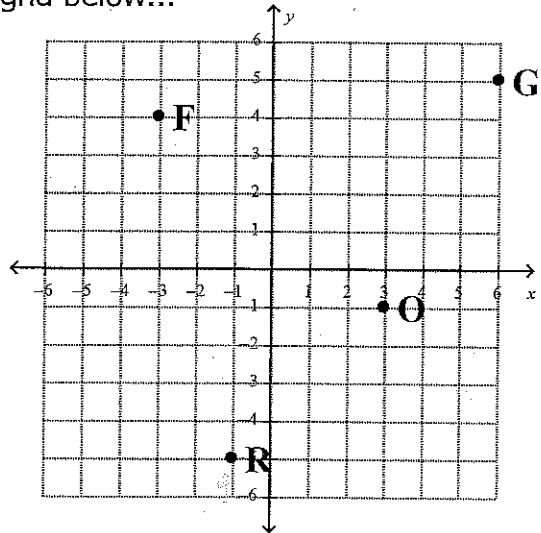
y-values  
 range  
 dependent  
 output

2. Explain how to plot the point  $(3, -5)$  on the coordinate grid system.

Start at the origin. Go right 3 and down 5.

3. Give the coordinates for the points graphed on the grid below...

F(-3, 4)  
 R(-1, -5)  
 O(3, -1)  
 G(6, 5)



4. Mr. Cravotta is a busy man! He started out with a list of 3 students he needed to meet with today. Each hour that passes by, two students were added to his list. Use this situation to answer the following questions...

a. What is the independent variable?

# of hours

b. What is the dependent variable?

# of students  
on the list

c. Complete the table.

x	0	1	2	3	4	5	6
y	3	5	7	9	11	13	15

d. Is this a function? Why or why not?

Yes because there is only one y-value for each x-value.

5. Nicole went to the mall with \$57. Every time she goes into the store, she spends \$9. Use this situation to answer the following questions.

a. What is the independent variable?

# of stores

b. What is the dependent variable?

amount of money she has

c. Complete the table.

x	0	1	2	3	4	5	6
y	57	48	39	30	21	12	3

d. Is this a function? Why or why not?

Yes because there is only one y-value for each x-value.

6. For each rule, complete the tables below. Show the calculations in the "work" box.

a.  $y = 3x - 12$

x	-2	-1	0	1	2
Work	$3(-2) - 12$ $-6 - 12$ $-18$	$3(-1) - 12$ $-3 - 12$ $-15$	$3(0) - 12$ $0 - 12$	$3(1) - 12$ $3 - 12$	$3(2) - 12$ $6 - 12$
y	-18	-15	-12	-9	-6

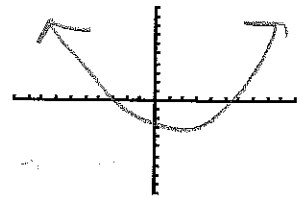
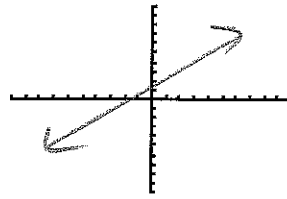
b.  $y = x^2 - 2x$

x	-2	-1	0	1	2
Work	$(-2)^2 - 2(-2)$ $4 + 4$	$(-1)^2 - 2(-1)$ $1 + 2$	$(0)^2 - 2(0)$ $0 - 0$	$1^2 - 2(1)$ $1 - 2$	$2^2 - 2(2)$ $4 - 4$
y	8	3	0	-1	0

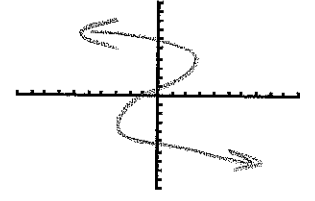
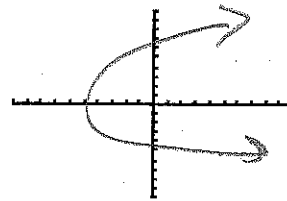
c.  $y = 3^x$

x	-2	-1	0	1	2
Work	$3^{-2}$ $\frac{1}{3^2} = \frac{1}{9}$	$3^{-1}$ $\frac{1}{3^1} = \frac{1}{3}$	$3^0$	$3^1$	$3^2$
y	$\frac{1}{9}$	$\frac{1}{3}$	1	3	9

7. Draw two graphs that are functions.



8. Draw two graphs that are NOT functions.

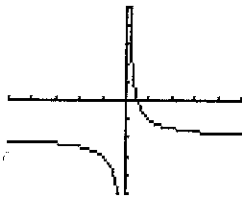


9. Explain how to use the vertical line test to determine whether or not a graph is a function.

Pass a vertical line over the graph. If the vertical line hits more than one point on the graph at a time, it's NOT a function.

10. For each of the graphs below, decide if they are a function or not. Justify your answer. If they are a function tell which of the families of functions it belongs to.

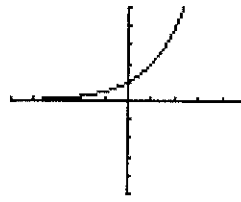
a.  
c.



Function: Yes or No

Why It passes the VLT.

Family: Rational / Inverse

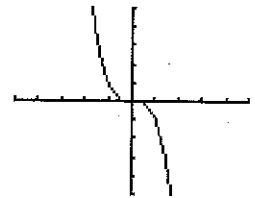


Function: Yes or No

Why It passes the VLT.

Family: Exponential

b.

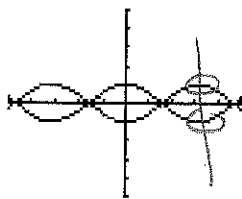


Function: Yes or No

Why It passes the VLT.

Family: Cubic

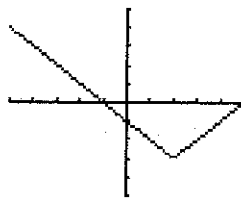
d.



Function: Yes or No

Why It does not pass the VLT.

Family: —

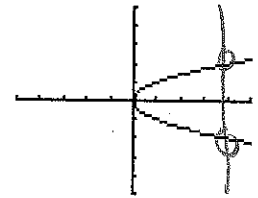


Function: Yes or No

Why It passes the VLT.

Family: Absolute Value

e.



Function: Yes or No








Why It does not pass the VLT.

Family: —

11. Is it possible to walk the letter "S" with the CBR's. Why or why not?

No, it is not a function. It does not pass the vertical line test.

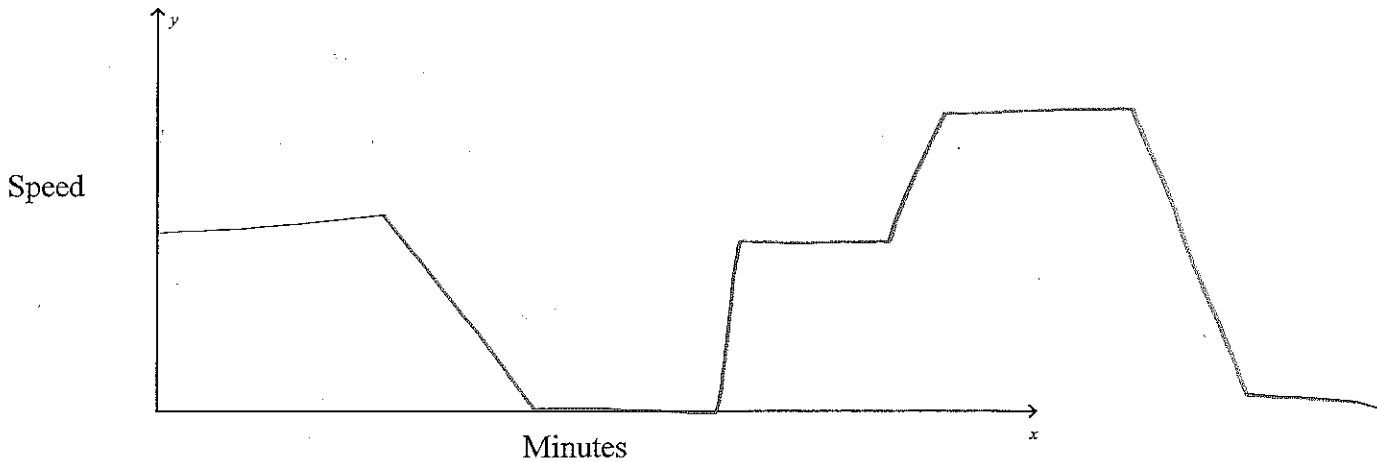
12. Fill in the table below.

Family Name	Shape of the Graph (sketch)	Properties of the Equation	Example Equations
Linear		$y = mx + b$ form	$y = 2x + 3$
Quadratic		has $x^2$	$y = 3x^2$
Cubic		has $x^3$	$y = x^3 + 2x + 1$
Rational		has a # divided by $x$ .	$y = \frac{b}{x}$
Exponential		has $x$ as an exponent	$y = 3^x$
Absolute Value		has a $x$ inside abs. value bars	$y =  3x $
Roots		has an $x$ inside the radical symbol	$y = \sqrt{2x}$

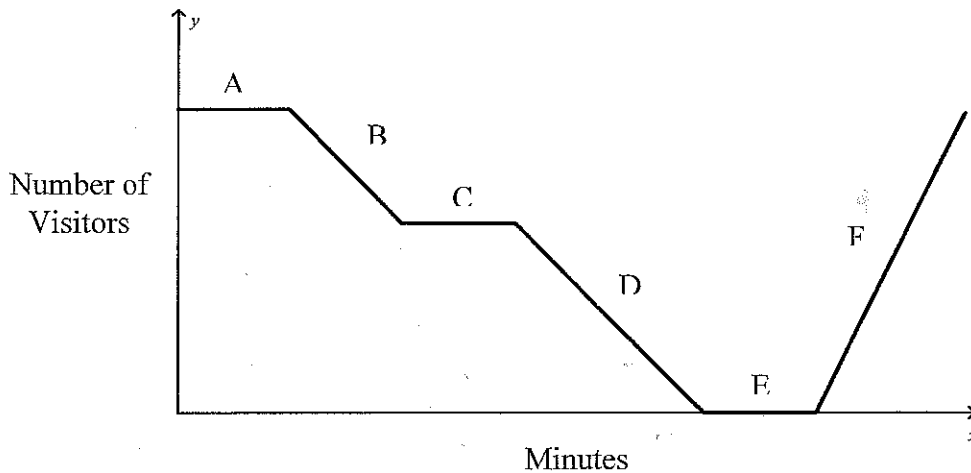
13. Consider the situation described below...

*A bus is driving at a steady pace down the road. The bus then slows down and comes to a stop while the first student climbs aboard. The bus then speeds up and then continues driving at a steady pace. The bus then speeds up again as the speed limit for the road increases and then continues driving at this faster speed. The bus then slows down and comes to a stop while the next student climbs aboard.*

Sketch a graph showing the speed of the bus as it drives down the road.



14. Consider the graph below. It illustrates the attendance at a museum over a period of days.



Describe what is happening during each part of the graph.

- A a lot of visitors are attending the museum
- B the # of visitors decreases
- C the # of visitors stay at a constant rate
- D the # of visitors decreases
- E no one visits the museum
- F the # of visitors increases