6A Function Rules: Discrete vs. Continuous   Name: _____ Per:_____

SHOW YOUR WORK FOR FULL CREDIT. NO WORK, NO CREDIT. NO WORK IN PEN.

1. A function is a rule that assigns to each input exactly one _____.

2. Mrs. Packer asked her students how many pets they have. Some responses are shown in the table below.

| Student number (x)	1	2	3	5	8	13	21
Number of Pets (y)	3	1	0	3	2	3	7

a. Is the above relation a function? _____ Explain _____

_____

b. Is the data discrete or continuous? _____ Why _____

_____

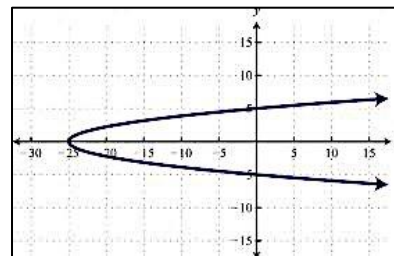3. Mrs. Burton asked her students how tall they were and organized the data by age.

Student Age (x)	15	12	13	14	12	11	16
Height (y)	5'5"	5'1"	5'9"	6'1"	4'11"	4'10"	5'10"

a. Is the above relation a function? _____ Explain _____

_____

Use the vertical line test to determine if the following graphs are functions.
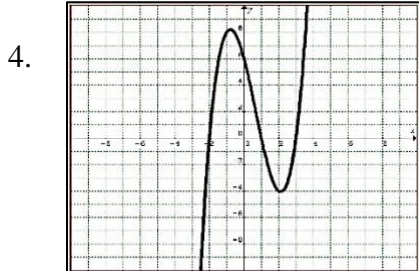
4.

5.

a. Is the relation a function? _____   a. Is the relation a function? _____

b. Is it continuous or discrete?   b. Is it continuous or discrete?

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

a. Is the above relation a function? _____

b. Explain: _____

c. Is it continuous or discrete? _____

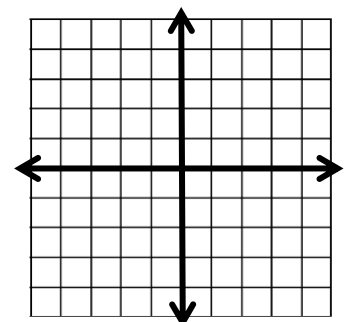7. $\{(0, 1), (3, -3), (1, 2), (-4, 8), (2.5, 7)\}$

a. Is the above relation a function? _____

b. Explain: _____

c. Is it continuous or discrete? _____

8. Express the relation of the ordered pairs as a table and graph.

$\{(4, 5), (-3, -2)(2, 5)(0, -4)\}$

a. Is it continuous or discrete? _____

b. Should you connect the points on your graph?___

c. Why or why not_____

d. Is it a function? _____ Why or why not?_____

e. What is $f(4) =$ _____ what is x if $f(x) = -4$ _____   E.C. What is $f(3)$?_____

x	f(x)

Evaluate the functions at the given numbers:

9. $y = 3x - 8$
   a. if $x = 2$, $y =$
   b. if $x = -3$,
   c. if $y = 5$, $x =$
   d. if $y = 1$, $x =$

10. $f(x) = 2 - 4x$
   a. $f(-5) =$
   b. $f(0) =$
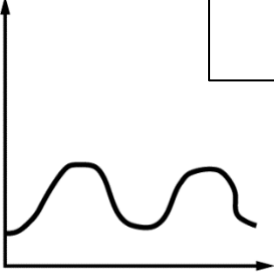   c. $f(x) = -6$
   d. $f(x) = -10$

11. $g(x) = -9 - 5x$
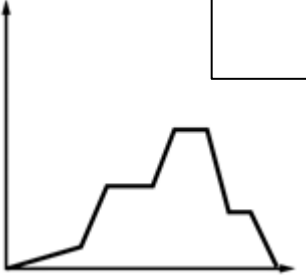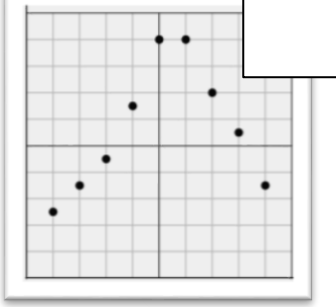   a. $g(-3) =$
   b. $g(-2) =$
   c. $g(x) = 36$
   d. $g(x) = 6$

12. $h(x) = x^2 + 1$
   a. $h(-2) =$
   b. $h(0) =$
   c. $h(x) = 46$
   d. $h(x) = 37$

13. **Match** each story with its graphical representation. Determine whether it's **discrete or continuous.**
   I. The number of ice cream cones sold on a hot summer day tracked each hour.
   II. The amount of money in a non-interest bearing bank account where money is frequently deposited and occasionally withdrawn.
   III. The amount of air in a person's lungs.
   IV. The elevation of a hiker as he hikes a mountain.

_____ Discrete/Continuous   _____ Discrete/Continuous   _____ Discrete/Continuous   _____ Discrete/Continuous

14. Give the following information based on the graph below. (Note the labels on your axes.)
   a. What do the flat parts of the graph represent? _____

   b. Describe the ride from 3 pm to 4 pm. _____

   c. What time are you farthest from home?_____ Explain:_____

   EC. When are you going the fastest? _____
       Explain: _____

   d. Circle the parts of the graph where the distance is increasing.

15. Write a story that is represented by the graph. Make sure to include features like intervals of increase/decrease using complete sentences.

Your Bicycle Ride

Distance from Home

12 pm   2 pm   4 pm   6 pm

Time