

<http://www.virtualnerd.com/algebra-1/relations-functions/functions/function-notation/f-of-x-definition>



Copy this Down BLUE Material

In the previous lesson, you learned how to identify a function by analyzing the domain and range and using the vertical line test.

Now we are going to take a look at **function notation** and how it is used in Algebra

The typical notation for a function is $f(x)$. This is read as "f of x" This does NOT mean f times x. This is a special notation used only for functions.

You may see $g(x)$, or $h(x)$, or even $b(a)$. You can use any letters,

Table of Values

$$y = 2x + 3$$

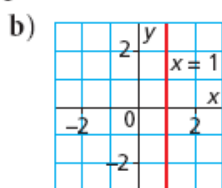
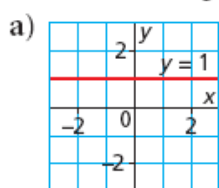
x	y
0	3
1	5
2	7
3	9

since y is a function of x
then we can write

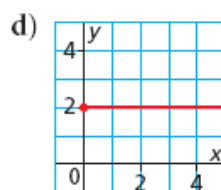
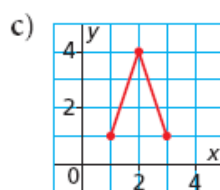
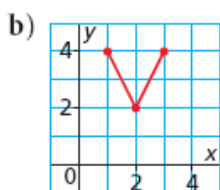
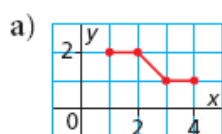
$$f(x) = 2x + 3$$

Any HW Questions

6. Which of these graphs represents a function? Justify your answer.



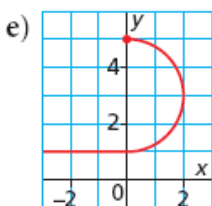
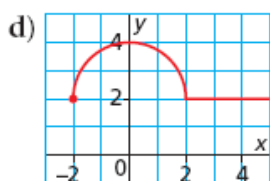
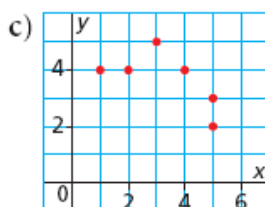
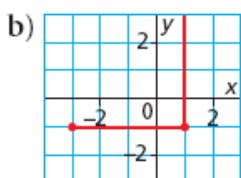
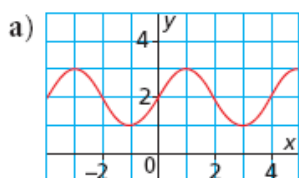
7. Match the graph of each function to its domain and range listed below.



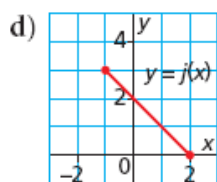
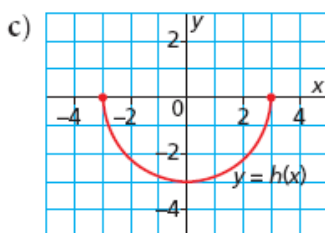
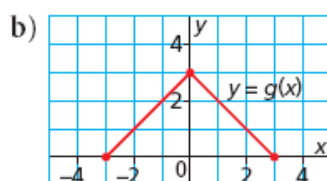
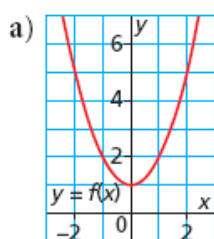
- i) domain: $1 \leq x \leq 3$; range: $2 \leq y \leq 4$
- ii) domain: $1 \leq x \leq 3$; range: $1 \leq y \leq 4$
- iii) domain: $x \geq 0$; range: $y = 2$
- iv) domain: $1 \leq x \leq 4$; range: $1 \leq y \leq 2$



8. Which of these graphs represents a function? Justify your answer. Write the domain and range for each graph.



9. Determine the domain and range of the graph of each function.



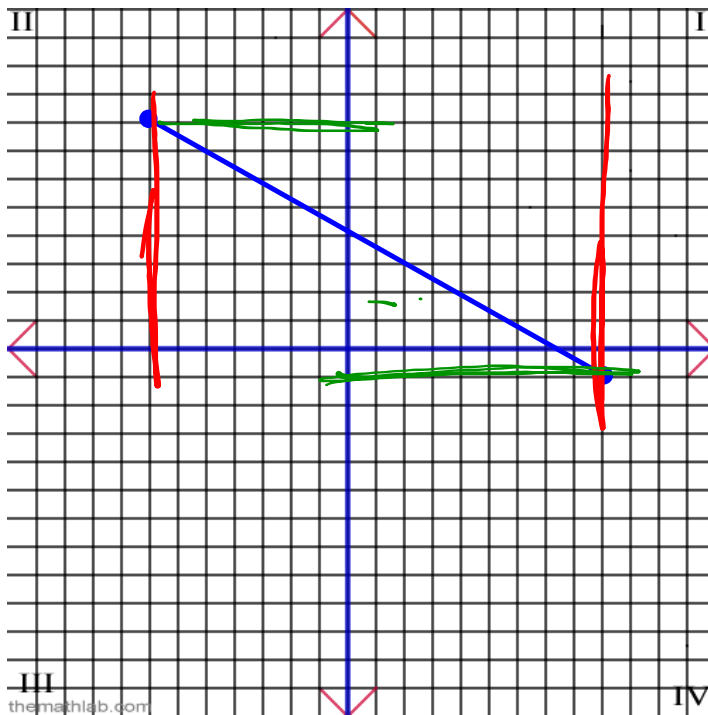
10. Suppose a student drew a graph of each function described below. For which graphs should the student connect the points? Justify your answers.

- a) The cost of a custom-made T-shirt is a function of the number of letters on the T-shirt.
- b) The altitude of a plane is a function of the time it is in the air.
- c) The mass of a baby is a function of her age.
- d) The cube root of a real number is a function of the number.



EXAMPLES!

1.

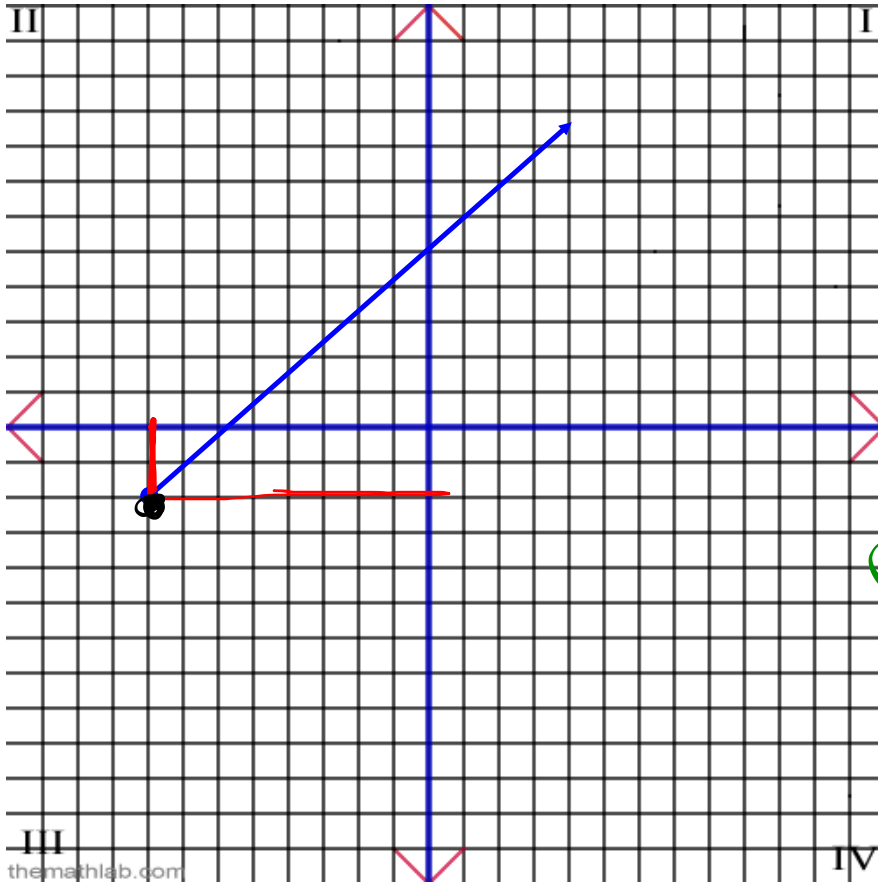


Discrete/ Continuous:

Function/ Non-Functions

↔ Domain: $\{x \mid -7 \leq x \leq 9, x \in \mathbb{R}\}$

↓ Range: $\{y \mid -1 \leq y \leq 9, y \in \mathbb{R}\}$



Discrete/Continuous:

Function/ Non-Functions

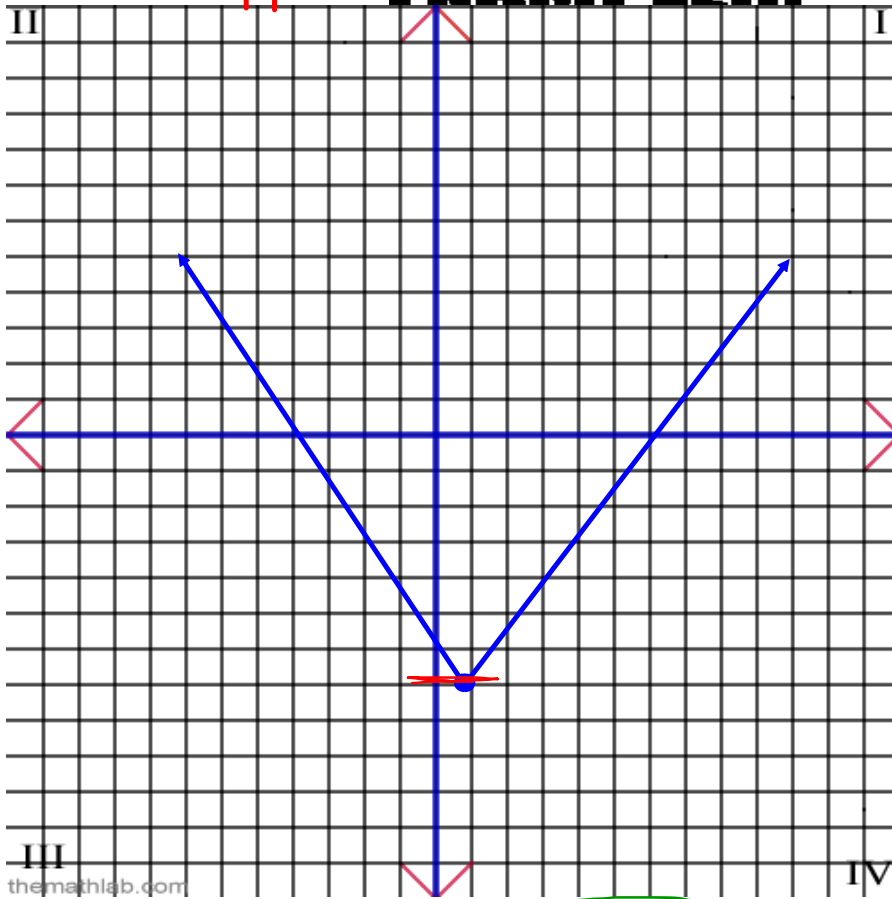
Domain:

Range:

$$\{x \mid -8 \leq x, x \in \mathbb{R}\}$$

$$\{y \mid -2 \leq y, y \in \mathbb{R}\}$$

EXAMPLES!



Discrete/ Continuous:

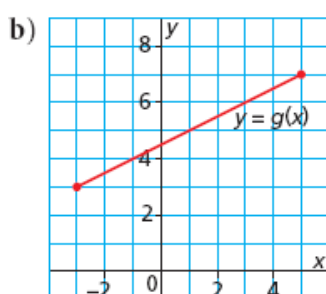
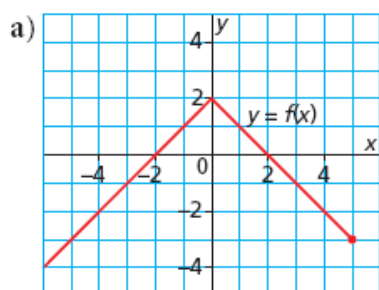
Function/ Non-Functions

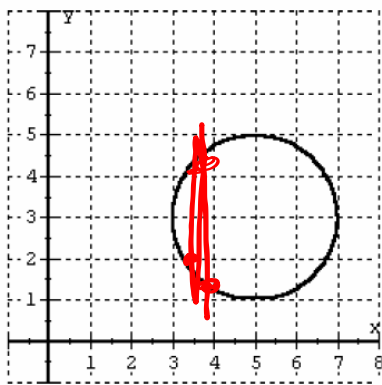
Domain: $\{x \mid x \in \mathbb{R}\}$

Range: $\{y \mid -7 \leq y\}$, $y \in \mathbb{R}$

CHECK YOUR UNDERSTANDING

2. Determine the domain and range of the graph of each function.



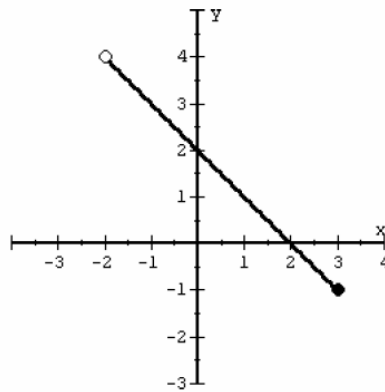


$$(x - 5)^2 + (y - 3)^2 = 4$$

Function? **No**

Domain: $\{x \mid 3 \leq x \leq 7, x \in \mathbb{R}\}$

Range: $\{y \mid 1 \leq y \leq 5, y \in \mathbb{R}\}$

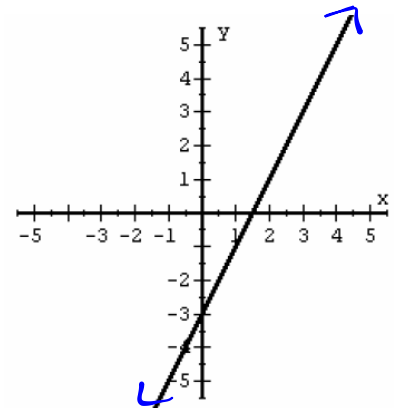


Line Segment

Function? **Yes**

Domain: $\{x \mid -2 \leq x \leq \frac{3}{4}, x \in \mathbb{R}\}$

Range: $\{y \mid -1 \leq y \leq \frac{1}{4}, y \in \mathbb{R}\}$



$$y = 2x - 3$$

Function? **Yes**

Domain: $\{x \mid x \in \mathbb{R}\}$

Range: $\{y \mid y \in \mathbb{R}\}$

