

Identify the input and output values of the functions below:

1) $\{(-3, 2), (4, 1), (-1, 5), (1, 6), (2, 3)\}$

Input/Domain $\{-3, -1, 1, 2, 4\}$

Output/Range $\{1, 2, 3, 5, 6\}$

2)

x	y
1	4
2	2
3	-6
4	1

Input/Domain

$\{1, 2, 3, 4\}$

Output/Range

$\{-6, 1, 2, 4\}$

Determine if each relation is a function.

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

Is this a function?

(circle one)

Yes No

If you circled no, explain why it is not a function:

more than 1 y for each x.

4)

x	y
1	4
2	2
3	-6
4	1

Is this a function?

(circle one)

Yes No

If you circled no, explain why it is not a function:

Exactly 1 y for each x.

5)

x	y
-1	5
5	2
-2	-3
-1	2

Is this a function?

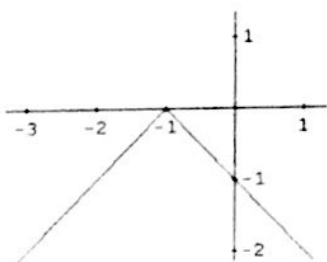
(circle one)

Yes No

If you circled no, explain why it is not a function:

more than 1 y for each x.

6)



Is this a function?

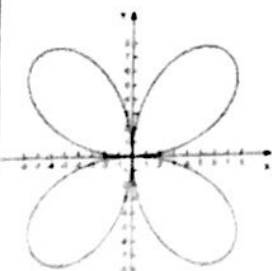
(circle one)

Yes No

If you circled no, explain why it is not a function:

Exactly 1 y for each x.

7)



Is this a function?

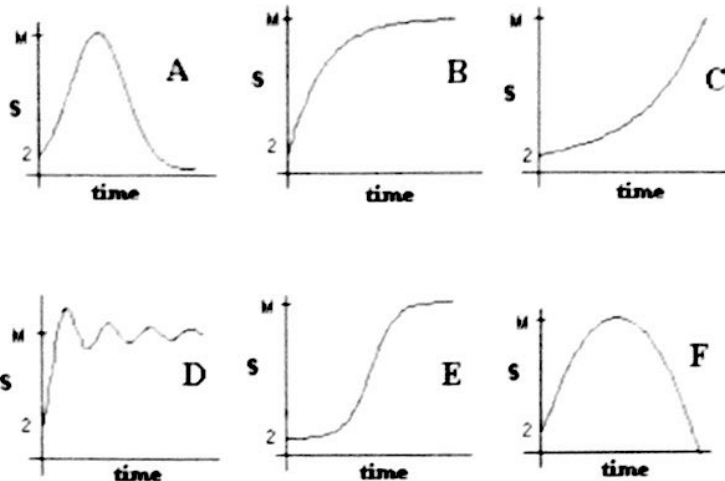
(circle one)

Yes No

If you circled no, explain why it is not a function:

more than 1 y for each x.

8) Are all of the graphs below functions? Explain.



* All graphs pass the vertical line test & have exactly 1 y for each x.

Graph A	<input checked="" type="radio"/> Yes / <input type="radio"/> No	Explain	* *	Graph D	<input checked="" type="radio"/> Yes / <input type="radio"/> No	Explain	* *
Graph B	<input checked="" type="radio"/> Yes / <input type="radio"/> No	Explain	* *	Graph E	<input checked="" type="radio"/> Yes / <input type="radio"/> No	Explain	* *
Graph C	<input checked="" type="radio"/> Yes / <input type="radio"/> No	Explain	* *	Graph F	<input checked="" type="radio"/> Yes / <input type="radio"/> No	Explain	* *

9) Find the values of the range of the function $f(x) = x^2 + 2$ given a domain of $\{-1, 0, 2\}$.

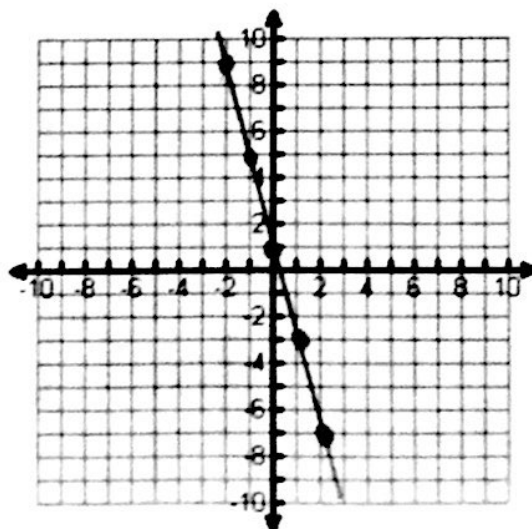
x (input)	y (output)	Ordered pair (x,y)
-1	3	$(-1, 3)$
0	2	$(0, 2)$
2	6	$(2, 6)$

Is this a linear or non-linear function? Explain.

Non-linear - when graphed it doesn't form a straight line.
NO CONSTANT RATE OF CHANGE

10) Graph the function $y = -4x + 1$.

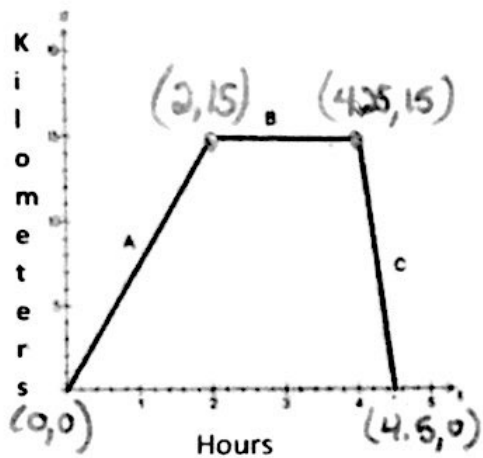
X	$-4x + 1$	Y	(X, Y)
-2	$-4(-2) + 1$	9	$(-2, 9)$
-1	$-4(-1) + 1$	5	$(-1, 5)$
0	$-4(0) + 1$	1	$(0, 1)$
1	$-4(1) + 1$	-3	$(1, -3)$
2	$-4(2) + 1$	-7	$(2, -7)$



Is this function Linear or Non-linear? Explain

- Constant rate of change
- Constant difference of -4

11) John cycles from his home to the shops. The shops are situated 15 km from his home and he cycles at a constant speed. After John has completed all of his shopping he returns home cycling back at a faster, constant speed. The graph below shows his journey to the shops and back. Explain what each section of the graph represents from the story above and what John's rate of change is.



Section A

John cycling at a constant speed to the shops.

Rate of change: $\frac{y_2 - y_1}{x_2 - x_1} = \frac{15 - 0}{2 - 0} = \frac{15}{2} = 7.5$

Section B

John Shopping

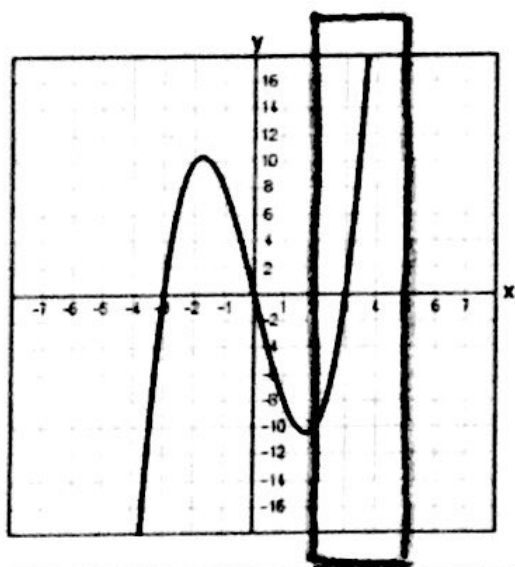
Rate of Change: $\frac{y_2 - y_1}{x_2 - x_1} = \frac{15 - 15}{4.25 - 2} = \frac{0}{2.25} = 0$

Section C

John cycling home at a faster constant speed

Rate of Change: $\frac{y_2 - y_1}{x_2 - x_1} = \frac{15 - 0}{4.5 - 4.25} = \frac{15}{0.25} = -60$

12) Describe the graph of the function between $x = 2$ and $x = 5$? Use words such as increasing, decreasing, linear, or non-linear.



Description:

$(2, 9)$ $(3, 0)$ $(4, \text{about } 18-20)$

- There is not a constant rate of change So it's not linear.
- This part of the graph is increasing.

What is a Function?

Writing & evaluating functions.

Function tables & graphs

Function rules

Functions on the graphing calculator

