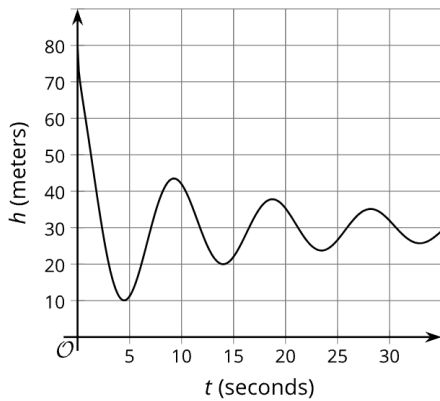


# BUNGEE FUNCTIONS

1. The graph provided shows a jumpers height off of the ground as a function of time since their jump.



- Why does the graph go up and down like it does?
- 20 seconds into their jump, about how high off the ground were they?
- When they were 20 meters off the ground, how long had it been since they jumped?
- Can you determine the time, if you know the height?
- Can you determine the height, if you know the time?
- In this case, \_\_\_\_\_ is/isn't a function of \_\_\_\_\_ because...

2. Below is the data from one group that did the bridge breaking weight experiment. Use the data to answer the following questions.

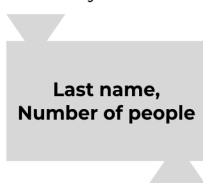
- What is the breaking weight for a 2-layer, 6-inch bridge?
- What were the details of the bridge that had a breaking weight of 12 pennies?
- Can you determine the breaking weight, if you know the length?
- Can you determine the layers and length, if you know the breaking weight?
- Can you determine the breaking weight, if you know the number of layers and the length?

Layers in Bridge (# layers)	Length of Bridge (inches)	Breaking Weight (# pennies)
1	4	14
1	5	12
1	6	9
1	7	8
2	4	25
2	5	19
2	6	14
2	7	12

- In this case, \_\_\_\_\_ is/isn't a function of \_\_\_\_\_ because...

3. Bridge Bungees has an online reservation system. When you reserve your jump time, it asks you for the names of each person in your group. The system is programmed to provide Bridge Bungees with 1) the last name of the first person in the group and 2) the number of people in the group. An example is shown below.

Tamara Ortiz  
Shivam Kramer  
Siena Ashley



Ortiz, 3

- Can you determine the names of the people in the group, if you know the abbreviation?
- Can you determine the abbreviation, if you know the names of the people in the group?
- In this case, \_\_\_\_\_ is/isn't a function of \_\_\_\_\_ because...
- Is this a good system for Bridge Bungees? Why or why not?

# ON YOUR OWN

## Bungee Functions

Can I explain what a function is (and isn't)?

1. Decide whether each of the relationships below is (or is not) a function.

(HINT: It may help to ask yourself: **'Can I determine the output, if I know the input?'**)

- If you think it **IS** a function, explain why and show several elements of each set.
- If you think it is **NOT** a function, explain how it fails to satisfy the definition of a function by showing an example or two that do not 'work'

Email User (input)	Password (output)

Student (input)	Hair Color (output)

Students in our Class	Planet They Live On

Password	Email User

# Days in the Month	Month

Month	# Days in the Month

2. A snail is moving around on the sidewalk and leaves a slime trail of their path, as shown below. Is the snail's location on the sidewalk a function of time? Why or why not?



3. These tables correspond to inputs and outputs. Which of these input and output tables could represent a function rule, and which ones could not? (HINT: Ask yourself, "Can I determine the output, if I know the input?")

a.

in	out
-2	4
-1	1
0	0
1	1
2	4

b.

in	out
4	-2
1	-1
0	0
1	1
4	2

c.

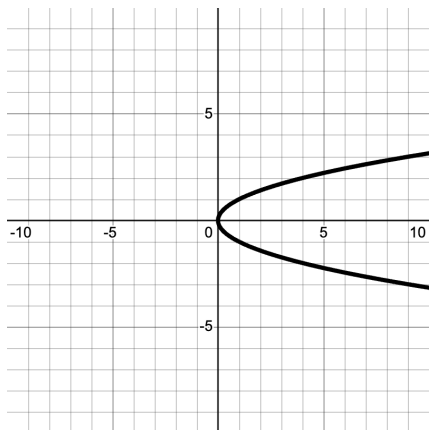
in	out
1	0
2	0
3	0

d.

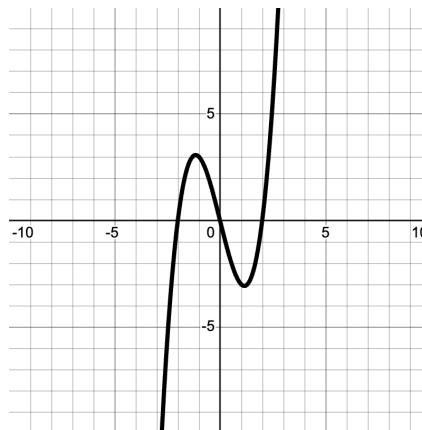
in	out
0	1
0	2
0	3

4. These graphs show relationships between inputs and outputs. Which of these input and output graphs could represent a function, and which ones could not? Explain or show your reasoning. (HINT: *pick a few input values and ask yourself, "Can I determine the output, if I know this input?"*)

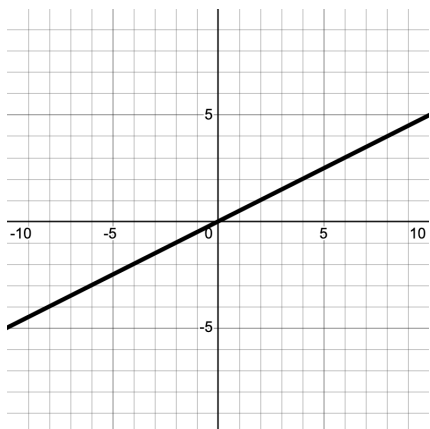
a.



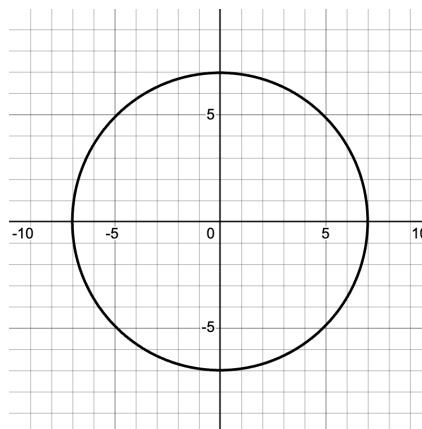
b.



c.



d.



5. The height of water in a bathtub is a function of time. Let's call this function *bathfill*. Match each statement in function notation with a description.

a.  $bathfill(0) = 0$

i. After 20 minutes, the bathtub is empty.

b.  $bathfill(4) = 15$

ii. The bathtub starts out with no water.

c.  $bathfill(15) = 4$

iii. After 15 minutes, there is 4 inches of water.

d.  $bathfill(20) = 0$

iv. The water is 15 inches high after 4 minutes.

6. All of the following statements are also true about the water in the bathtub from Question 5. Draw a possible graph of the height of the water ( $h$ ) as a function of time ( $t$ ).

○  $bathfill(t) \leq 18$

○  $bathfill(8) = bathfill(12)$

○  $bathfill(13) > bathfill(14)$