Technical Definition of a Function

1. A function named C is given by $\{(1,2),(2,4),(3,6),(4,6),(5,8)\}$.

   a) What are the domain and range of C? Give your answers using set notation (with the curly braces).

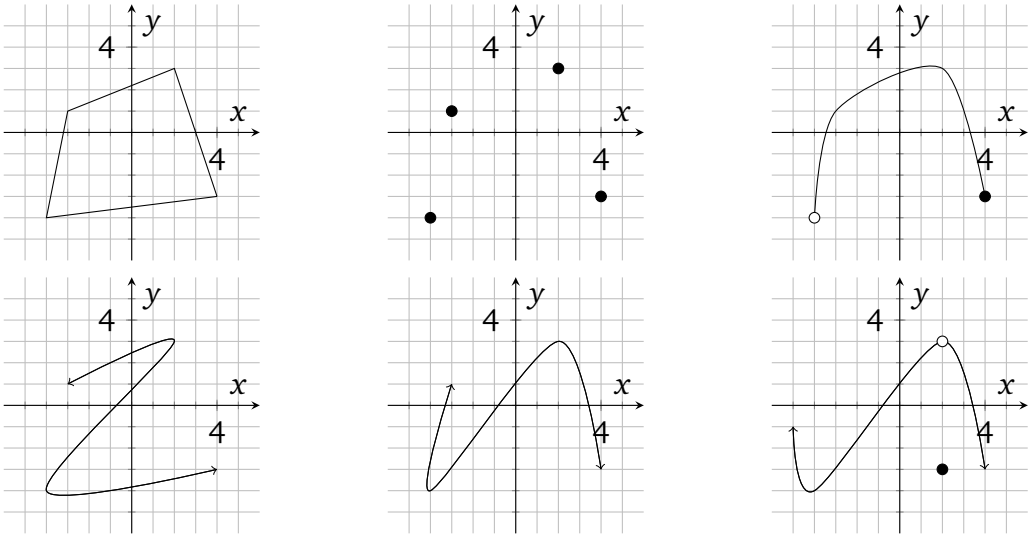
   b) Graph C.

   c) What is $C(2)$? What is $C(6)$?

   d) Solve the equation $C(x) = 8$.

   e) Solve the equation $C(x) = 0$.

2. Here are some graphs that give relations between x and y. Your job is to determine if the relation can be used to define y as a function of x. For each graph, after you make your decision, say a little bit about why. If you decide that the relation *can* be used to define a function, then you can just say that. But if it *cannot*, then give a reason why. For example, you might say something like "There is more that one possibility for what $f(2)$ would be."



3. Which of these tables describe y as a function of x? For each table, after you make your decision, say a little bit about why. If you decide that the relation *can* be used to define a function, then you can just say that. But if it *cannot*, then give a reason why. For example, you might say something like "There is more that one possibility for what $f(2)$ would be."

x	y
1	-12
2	10
3	8
4	5
5	13
6	11

x	y
10	3
15	4
20	3
25	4
30	3
35	4

x	y
-12	9
10	8
8	3
5	-2
13	1
11	1

x	y
2	-2
4	17
5	1
8	8
4	13
5	10

x	y
3	-1
8	10
7	14
7	14
12	13
16	-9

x	y
red	Mercury
orange	Venus
yellow	Earth
green	Mars
blue	Jupiter
purple	Saturn

4. For each of these relations between x and y, decide if y is a function of x.

   a) $y = 3x - 2$ b) $2y = 3x - 2$ c) $y^2 = 3x - 2$

   d) $x^2 + y^2 = 4$ e) $|x| - y^2 = x^2$ f) $y = \pm\sqrt{x}$

5. Think about one specific person, living or dead. Let a represent the age of that person, and h represent their height.

   a) Is h a function of a? If not, explain why not.

   b) Is a a function of h? If not, explain why not.

6. Let w represent the weight of a (1 foot) × (1 foot) × (1 foot) package you want to send through the postal service, and C represent the cost to ship it.

   a) Is C a function of w? If not, explain why not.

   b) Is w a function of C? If not, explain why not.