Notes 4-2 Definition of a Function

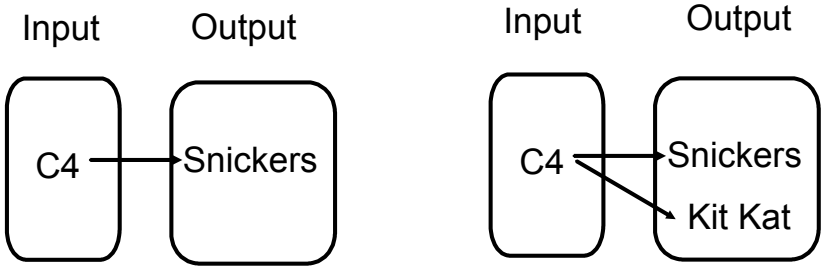
Identifying Functions

A function is a relationship between x -values and y -values. It is a special type of equation where each x -value is paired with exactly **one** y -value. The x-value is called an input and the y-value is called an output.

This means there is exactly one output for each input and we can also say that each x value is paired with exactly one y value.

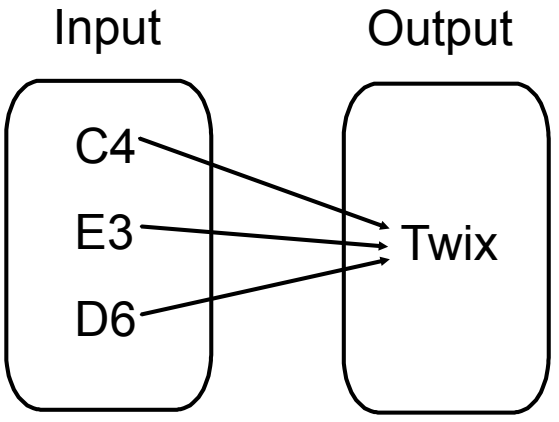
x input
y output

The Candy Machine



Function

Not a Function

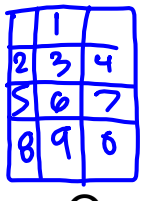


Texting is..... MATH!

T-9 Texting represents a relation. Each button represents a few letters, or each input value relates to a couple output values.

not ö

abc →

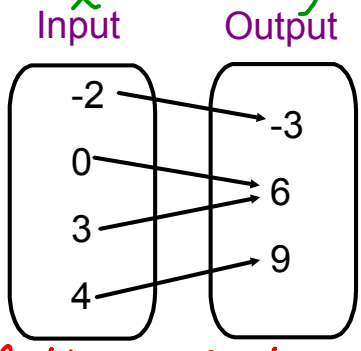


Keyboard Texting represents a function. One button represents one letter, or each input value relates to one output value.

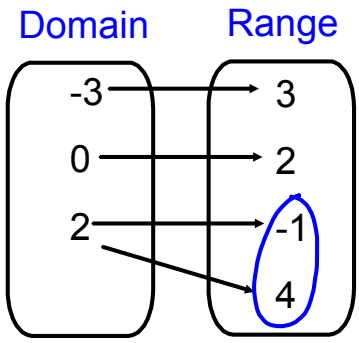
function

Are the following relations functions? Why or why not?

domain x range y



function, each input has exactly 1 output



no, because 2 has 2 outputs different

Are the following relations functions? Why or why not?

Input x	1	3	5	1
Output y	4	2	4	-4

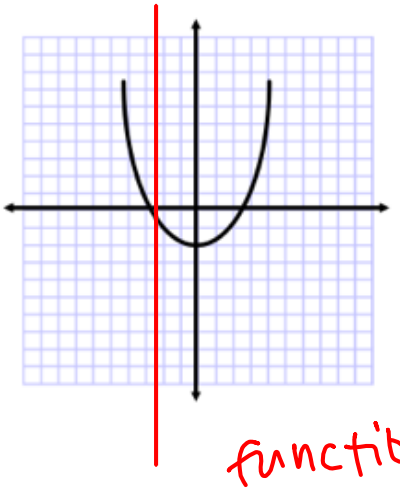
no, 1 has 2 outputs

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

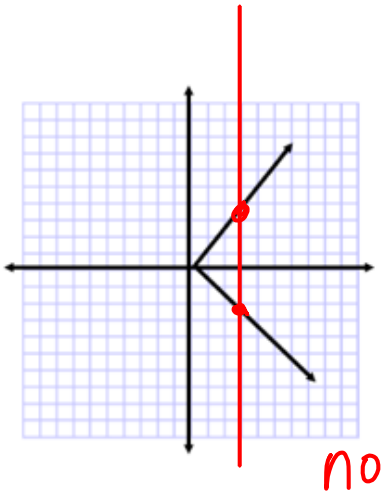
function, each x has one y

We can use the vertical line test to see if a graph represents a function.

If a vertical line intersects the graph more than once, then the graph is not a function. If it intersects the graph only once then the graph is a function.

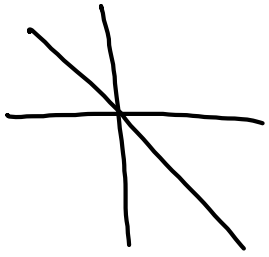


function

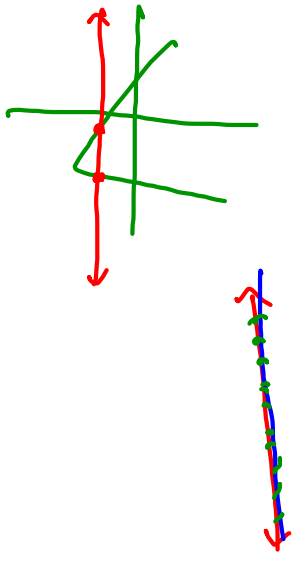


not

Function



Not a Function



Function Notation

f of x

f(x) = y

f(*x*)= means: the value of the function *f* at *x*.

y= means: the value of the equation at x.

Equation	Function Notation
y= 3x - 8	f(x)= 3x – 8

(x, f(x))

(1, -5)

Plug in the point (1,-5) to each example:

(x, y)

$-5 = 3(1) - 8$

$-5 = -5$ ✓

$-5 = 3(1) - 8$

$-5 = -5$ ✓

Write the following values in function notation $f(x)$

x (input)	2	5	6	7
f(x)	-2	0	3	5

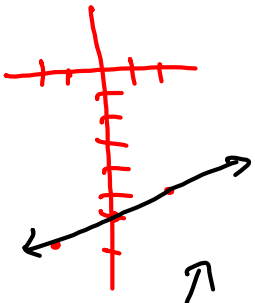
$f(2)=-2$ $f(5)=0$ $f(6)=3$ $f(7)=5$

Given f(-1)=3, f(0)=5, f(1)=7, f(2)=9, write the relationship as a table of values.

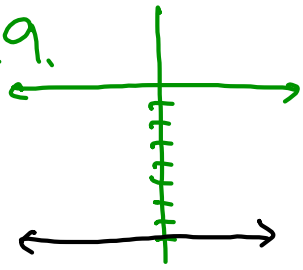
x	f(x)
-1	3
0	5
1	7
2	9

HW 4-2: pg 51: 1-8, 9a, 26a, 27-31

4.



29.



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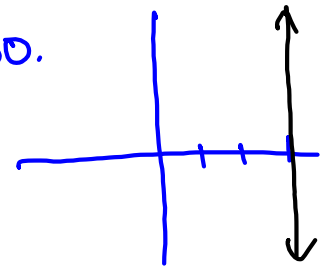
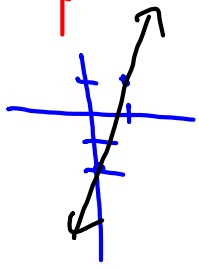


31.



Don't forget to EXPLAIN WHY!!!