

Algebra2
Lesson 3 – Function Notation
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Let's review what makes a function a function!

1. The x-values do not repeat, the independent variable is unique.
2. For each input (x) there is exactly one output (y).
3. Graphically, it passes the vertical line test.

Are the relations functions? Why or why not?

a. $\{(0, 4), (-2, 3), (-1, 3), (-2, 2), (1, -3)\}$

b. $y = x^2 + 5$



Given an equation we may or may not recognize it as a function.

Is $y = x + \arctan(\cot\pi \cdot x) / ((\pi - 1)/2)$ a function?????

Function notation is a specific way to write an equation that indicates the equation is in fact a function.

It precisely identifies the independent variable, the input into the function.

Examples : $f(x)$, $g(x)$, $f(t)$ or $h(x)$. We say "f of x," "g of x," "f of t", or "h of x."

The variable in the parentheses is the independent variable, the input. Note sometimes we see a variable other than x as the independent variable!

So again, is $f(x) = x + \arctan(\cot\pi \cdot x) / ((\pi - 1)/2)$? **Yes! Function notation indicates this craziness is a function.**

Number in the parentheses: when the function notation has a number in the parentheses, the number is the input value.

Example: $f(2)$ this means that when x is 2, what is the answer/output to the equation?

Given the functions $f(x) = |x + 1|$, and $h(x) = t^2 + 2t - 1$, evaluate the following

a. $f(2)$

b. $h(3)$

c. $h(1) + f(8)$

d. $2f(-5) - 3h(1)$

e. $f(c + 1)$

Given each table or graph, determine if each represent a function and evaluate for $f(-2)$, $f(0)$, and $f(3)$

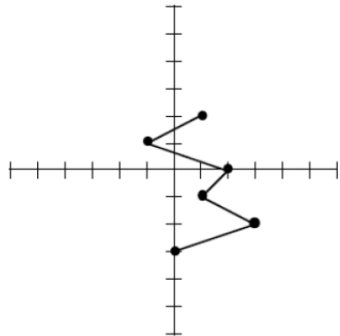
a.

x	$f(x)$
-2	13
-1	12
0	11
1	10
2	9

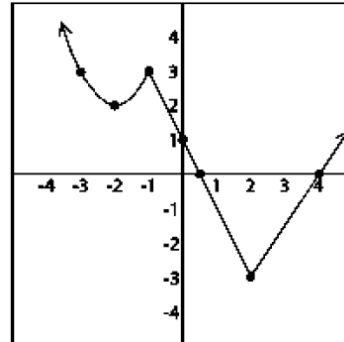
b.

x	$f(x)$
-3	4
-2	7
1	4
2	-1
3	-8

c.



d.



Composite Functions

In a composite function, we apply the results from one function into another function. The notation for a composite function is: $f \circ g(x)$ or $f(g(x))$

Given the functions $f(x) = x - 1$ and $g(x) = x^2 + 3$ evaluate the following:

a. $f(g(-2))$

b. $g(f(3))$

c. $g \circ f(-4)$

d. $f \circ g(1)$