

MA 109: August 29

Function Notation: Algebra and Solving

Start of Class

Instructor Information

Name:

Email:

Office Hours:

Warm-up Questions

Notes

Example: Suppose $f(x) = x^2 + 1$ and $g(x) = 3x - 2$. Evaluate $2f(-1) + g(3)$.

Functions are a special kind of group, so we evaluate those first.

Step 1: $\rightarrow f(-1) = (-1)^2 + 1 = 1 + 1 = 2$
 $\rightarrow g(3) = (3)^2 + 1 = 9 + 1 = 10$

Step 2: $2f(-1) + g(3)$
 $= 2(2) + (10)$
 $= 4 + 10$
 $= 14$

Example: Suppose $f(x) = x^2 + 5x - 1$

Question 1: Evaluate $f(a) + 7$	Question 2: Evaluate $f(a + 7)$
<p>a is the input, 7 is on the outside.</p> <p>Add 7 after plugging in a</p>	<p>$(a + 7)$ is all together the input</p>

Example: Suppose $h(x) = 3x + 7$. Solve $h(x) = -2$.

\uparrow -2 is the output
 \uparrow
we are looking for x

Strategy: $h(x) = 3x + 7$, so $h(x) = -2$ when $3x + 7 = -2$

$$3x + 7 = -2$$

$$\frac{3x}{3} = \frac{-9}{3}$$

$$x = \boxed{-3}$$

Example: Suppose $p(x)$ is given in the graph below. Solve $p(x) = 0$.

\uparrow 0 is output

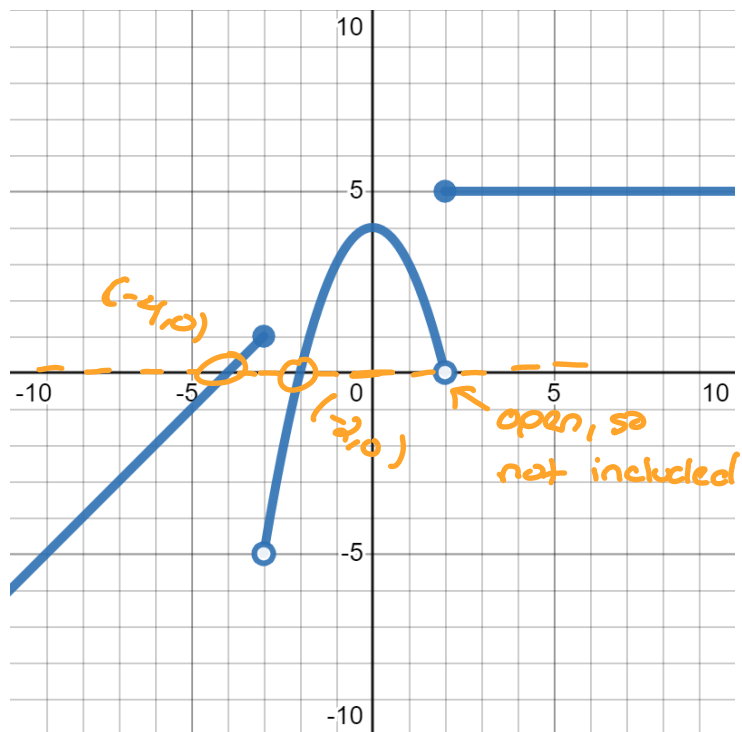
On a graph:

- x -coordinates are inputs
- y -coordinates are outputs

Strategy: find $y = 0$,

then look left/right

to find the x -coordinates on the graph



$$x = \boxed{-4, -2}$$

2 is the output for $h(x)$

Example: Using the table below, solve $h(x) = 2$.

inputs ↓	outputs for $g(x)$ ↓	outputs for $h(x)$ ↓
x	$g(x)$	$h(x)$
-3	6	3
-1	2	-3
2	5	7
3	4	2

Strategy: find 2 in the outputs column for $h(x)$, the answer is the number in the input column

$$x = \boxed{3}$$

End of Class

Write a summary of what you learned today:

What questions do you have about the material from today?

What do you need to do between now and the next class meeting?