

Evaluating Functions, Algebraically

Aim: How do we evaluate functions algebraically?

Warm Up: Answer the following questions based on the information below:

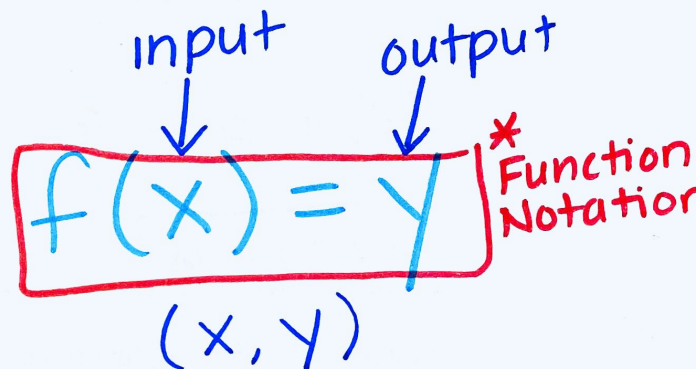
Let $x = \{1, 2, 3, 4\}$ and $y = \{5, 6, 7, 8, 9\}$. Function g is defined below.
 $g: x \rightarrow y$
 $g: \{(1,5), (2,6), (1,8), (2,7), (3,7)\}$

a) Is g a function? Explain why or why not.

No, there are inputs with more than one output.

b) Find $g(3) = 7$
 ↑
 input

c) Find $g(2) = 6$ or 7
 ↑
 input



Guided Practice: Evaluating Functions

Exercise 1- When given the function $f(x) = 10x + 18$

F(x) is replacing y The rule is $10x + 18$

<p>Evaluate when $f(3)$ ↑ input (plug in) $10(3) + 18 = 48$ $f(3) = 48$ $(3, 48)$</p>	<p>Evaluate when $f(10)$ ↑ input $10(10) + 18 = 118$ $f(10) = 118$ $(10, 118)$</p>
<p>Evaluate when $f(x) = 78$ Find x! ↑ output (answer) $10x + 18 = 78$ $\frac{-18}{10} \quad \frac{-18}{10}$ $\frac{10x}{10} = \frac{60}{10}$ $x = 6$ $f(6) = 78$</p>	<p>Evaluate when $f(x) = 158$ $10x + 18 = 158$ $\frac{-18}{10} \quad \frac{-18}{10}$ $\frac{10x}{10} = \frac{140}{10}$ $x = 14$ $f(14) = 158$</p>

Exercise 2- Given the following function, $f(x) = 2x + 3$, evaluate for the following:

$f(10)$ $2(10) + 3 = 23$ input (x) → $f(10) = 23$ ← output (y)	$f(-4)$ $2(-4) + 3 = -5$ $f(-4) = -5$
$f(-2)$ $2(-2) + 3 = -1$ $f(-2) = -1$	$f(0)$ $2(0) + 3 = 3$ $f(0) = 3$
$f(3)$ $2(3) + 3 = 9$ $f(3) = 9$	$f(5)$ $2(5) + 3 = 13$ $f(5) = 13$

Exercise 3- Evaluate the following functions:

If $f(x) = 2x - 5$, find $f(4)$ ↑ plugin 4 $2(4) - 5 = 3$ $f(4) = 3$	If $f(x) = 3x - 1$, find $f(-5)$ ↑ plugin -5 $3(-5) - 1 = -16$ $f(-5) = -16$	If $f(x) = 7x + 12$, find $f(2)$ $7(2) + 12 = 26$ $f(2) = 26$
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Let's summarize before we move on

$f(x)$ really replaces Y

When you're ask to find $f(\text{any \#})$... Plug in that # for x (input)!

When you're asked to find x if $f(x) = a \#$.. create equation,
set rule = that # and solve for x !