Functional notation

Functional notation is a way of writing a function. A function is given a name, such as f, and the value of the function f at an input x is written as $f(x)$. There's nothing special about using f or x; we could use any letter for the name of the function, and any variable for the input.

We're usually given a general mathematical expression for $f(x)$. In order to find the output for a specific input, we replace the x with that input. If we wanted to find the output when $x = 2$, we'd write $f(2)$ and then plug in 2 for every x in the expression for $f(x)$.

Example

If $f(x) = 10 - 2x$, find $f(-6)$.

Here, -6 is a specific input (a specific value of the variable x), so we'll substitute (plug in) -6 for the x in the expression for $f(x)$ (for the x in $10 - 2x$). Remember to use parentheses when plugging in numbers.

$$f(-6) = 10 - 2(-6)$$

Now we'll simplify the right side following the order of operations.

$$f(-6) = 10 + 12$$

$$f(-6) = 22$$

Let's try another example of functional notation.

Example

If $f(x) = x^2 - 7x + 12$, find $f(4)$.

Plug in 4 for every x in the expression for $f(x)$ (for every x in $x^2 - 7x + 12$).

$$f(4) = (4)^2 - 7(4) + 12$$

Now simplify following the order of operations.

$$f(4) = 16 - 28 + 12$$

$$f(4) = -12 + 12$$

$$f(4) = 0$$