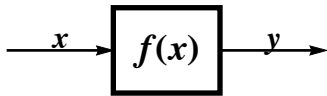


## Evaluation of Functions (review)

Recall from previous notes that a function can be represented by a machine that takes an input value,  $x$  and gives an output value,  $y$ .



Evaluating a function simply means determining the  $y$ -value for a given input value,  $x$ . For example, if we want to know the  $y$  value for an input value of 2, we would write that (using functional notation) as:

$$y = f(2)$$

How you actually determine  $f(2)$  would depend on how the function is specified.

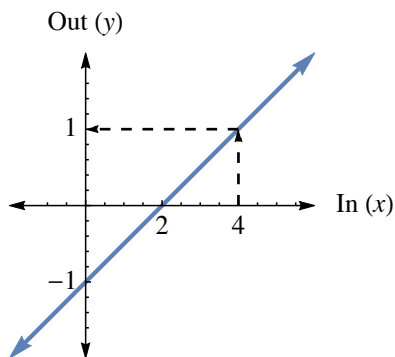
### In-Out Tables

If the function is specified as an In-Out table, then evaluating the function means simply searching in the  $x$  column for the value of interest and then reading off the corresponding  $y$  value. For example, in the table below,  $f(-1) = -7$  and  $f(4) = -1$ .

In ( $x$ )	Out ( $y$ )
-4	-10
-1	-7
0	3
4	-1
2	2

### Graphs

If the function is graphed, evaluating the function means simply reading the corresponding  $y$  value for a given  $x$  value. An example for a simple linear function is shown in the graph below where it has been determined that  $f(4) = 1$ .



### Equations

If the function is specified as an equation, evaluating the function means taking the input value ( $x$ ) and plugging it into the equation to get the corresponding  $y$  value. For example, if  $f(x) = x^2 - 3x + 7$  and we wanted the value of this function when  $x = 2$  we would get:

$$f(2) = (2)^2 - 3(2) + 7 = 4 - 6 + 7 = 5$$

so  $f(2) = 5$ .