

Function Notation

When a function is expressed as an equation, it is often written as " $f(x)$." In creating a table of values for an equation, for example $y = 5x - 1$, we use this rule, "multiply by five and subtract one" to transform an input x value into the one resulting y value. By giving the expression "multiply by five and subtract one" the name f , we have an easy way to show that we're applying the rule to different numbers and variables. In general, the symbol $f(x)$ replaces y and is read as f of x , which does not mean f times x . It means the value of expression f for a given value of x .

Example

Evaluate the function for the given value of the variable.

$$f(x) = 5x - 1 \text{ when } x = 3$$

$$f(x) = 5x - 1 \quad \text{Write the original equation}$$

$$f(3) = 5(3) - 1 \quad \text{Substitute the value for } x$$

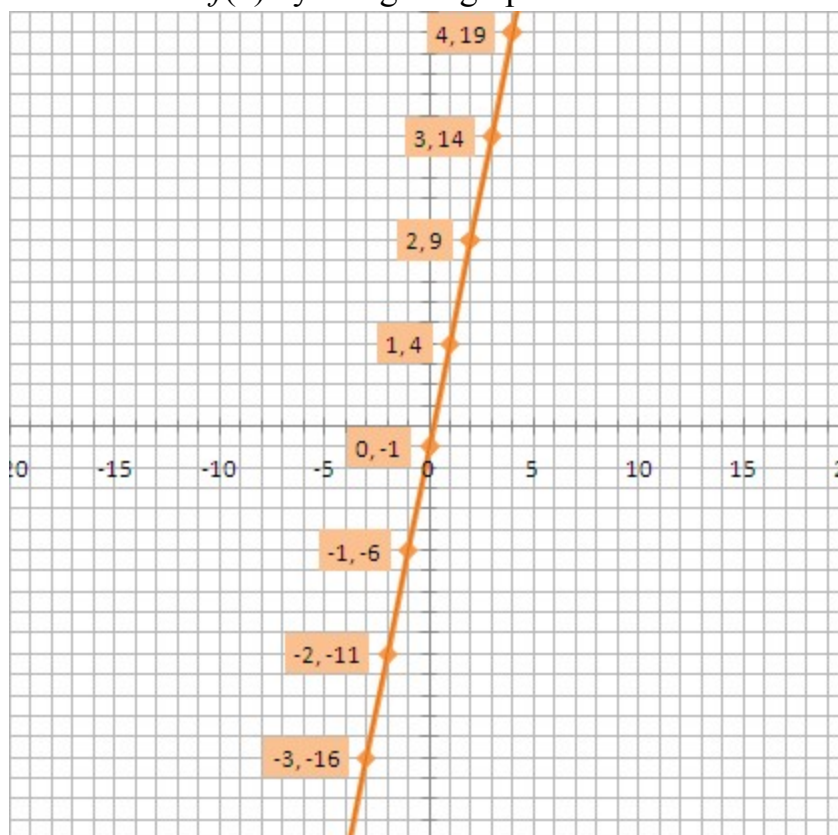
$$f(3) = 14 \quad \text{Simplify}$$

Graphing a Linear Function

Since the function notation lets us write $f(x)$ instead of y , the graph of a function f is the set of all points $(x, f(x))$, where x is in the domain of the function.

Example

Graph $f(x) = 5x - 1$ and find the value of $f(3)$ by using the graph.



The y -intercept is -1 and the slope is 5 . When $x = 3$, y equals 14 . This confirms the answer found in the previous example.