Using Function Notation $f(x)$

1) Write down the formula for function f
2) Insert parentheses around the input variable x
3) Erase and replace x with input expression or value
4) Evaluate or simplify the result with PEMDAS

Synonyms

The input for a function is sometimes also called:
   x-value, domain value, argument

The output of a function is sometimes also called:
   y-value, range value, function-value

Some Examples of Function Notation

Difference Quotient – the input is another expression like $x + h$

Evaluate $\dfrac{f(x+h) - f(x)}{h}$

Piecewise Functions – the input is just a number like **-2**

Evaluate $f(-2)$ when $f(x) = \begin{cases} 2x - 5 & \text{if } x > 3 \\ 3x^2 + 4 & \text{if } x \le 3 \end{cases}$

Composition of Two Functions – the input is another function $g(x)$

Evaluate $(f \circ g)(x) = f(g(x))$ when $f(x) = 2x - 5$ and $g(x) = 3x^2 + 4$

Transformations – the input uses the **y-values** of the function $f(x)$

Graph $g(x) = 2 \times f(x - 1) + 4$ if $f(x)$ has the graph: