h(x) FUNction Summary TEMPLATE
Introduction

$$\mathbf{f(x) \rightarrow f(Bx) \rightarrow f(Bx + C) \rightarrow Af(Bx + C) \rightarrow Af(Bx + C) + D = h(x)}$$

MATH by Wilson
Your Personal Mathematics Trainer
MathByWilson.com

Given a basic function f(x), we know its properties and graph. With the parameters A, B, C, & D shown above, we can start with this basic function f(x) and stretch/contract, translate, and reflect its graph horizontally and vertically to obtain a new function h(x). The attachment provides specific details on how the four (4) parameters affect the graph of f(x), but first we need to know the order in which to apply these parameters. After the graph of h(x) is obtained, it is easy to determine its properties.

We consider "x" first since it represents the domain: Bx + C. Since multiplication is preformed before addition, the parameter "B" comes first in the process:

f(x) → f(Bx)

The "B" parameter stretches or contracts the graph of f(x) horizontally and if B < 0, it also reflects it with respect to the y-axis.

Next, the parameter "C" translates the graph of f(Bx) horizontally:

f(Bx) → f(Bx + C)

Since A f(Bx + C) + D = A y + D deals with y values, next is the parameter "A" since multiplication precedes addition.:

f(Bx + C) → A f(Bx + C)

The "A" parameter stretches or contracts the graph of f(Bx + C) vertically and also reflects it in the x-axis if A < 0.

Finally, the parameter "D" translates the graph of A f(Bx + C) vertically:

A f(Bx + C) → A f(Bx + C) + D = h(x)

Again, refer to the attached template for specific details on how to apply the four (4) parameters.

