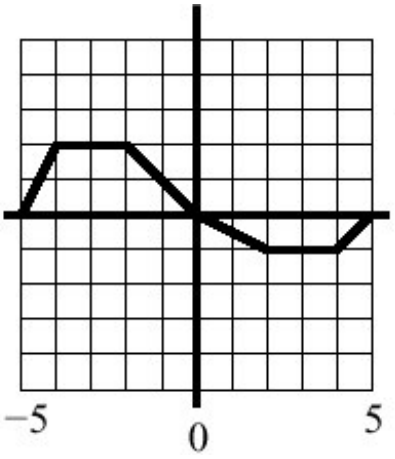
Function Shifts and Scaling:

Below are some graphs to illustrate the various ways graphs can be shifted (by adding or subtracting) or scaled (by multiplying).

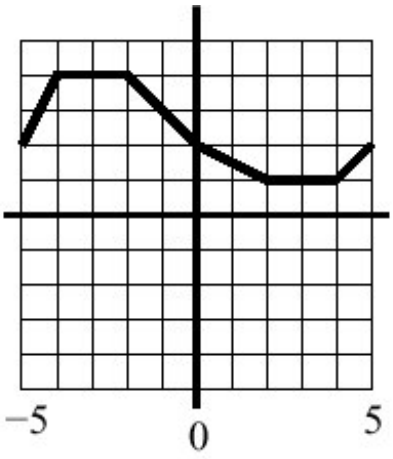
Assume f(x) is given as:

f(x) **=**



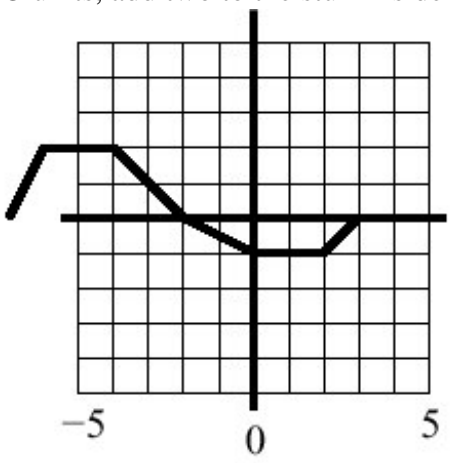
To shift the graph UP TWO units add two to f(x), i.e. "f(x) + 2"

2 + f(x) **=**



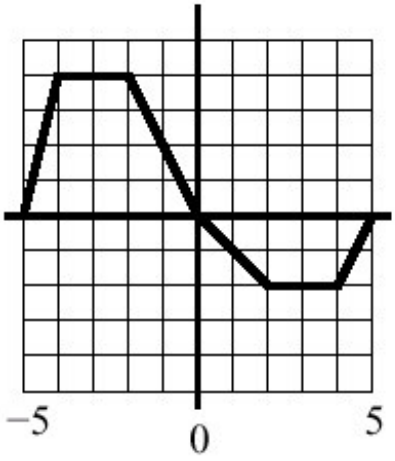
To shift the graph LEFT TWO units, add two to the stuff inside the parentheses: f(x + 2)

f(x + 2) =



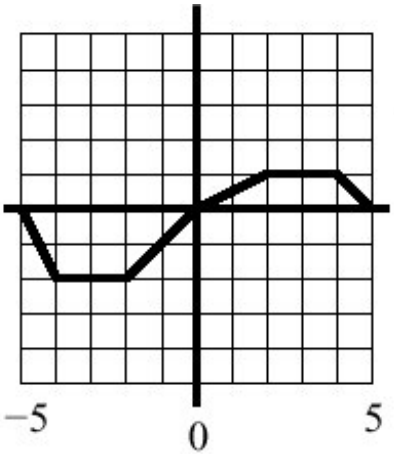
To scale the VERTICAL aspect by two, multiply f(x) by two: 2 * f(x)

2 * f(x) =



To flip the graph UPSIDE DOWN, multiply f(x) by negative 1: -1 * f(x)
(Notice this is also scaling by –1, or inverting)

- f(x) =



To mirror the image, so the left half and right half get flipped multiply the stuff inside the parentheses by negative 1: f(-x)

f(-x) **=**