8. COMBINATIONS OF FUNCTIONS

One way to graph sums (differences, products, quotients) of functions is to enter \( f(x) \) in \( y_1 \), \( g(x) \) in \( y_2 \), and \( y_1+y_2 \) in \( y_3 \). You must use lower case \( y \)'s; the calculator is case sensitive. If all three functions are selected, the calculator will plot \( f(x) \), \( g(x) \), and \( (f+g)(x) \). If you want to graph only the last, unselect \( y_1 \) and \( y_2 \) by using \texttt{SELCT} on the \texttt{GRAPH/y(x)=} menu.

To graph compositions of functions, say \( f\circ g \), you could just enter the algebraic expression for \( f(g(x)) \). Another way is the following:

Enter \( f(x) \) in \( y_1 \), \( g(x) \) in \( y_2 \), and \( f(y_2) \) in \( y_3 \), substituting the symbol \( y_2 \) for \( x \). You do not have to enter \( f(x) \) in \( y_1 \) unless you want to plot it.

The latter method has the advantage of respecting domains. For example, applied to \( f(x)=x^2 \) and \( g(x)=\sqrt{x} \), the calculator will graph \( y=x \) only for \( x \geq 0 \).