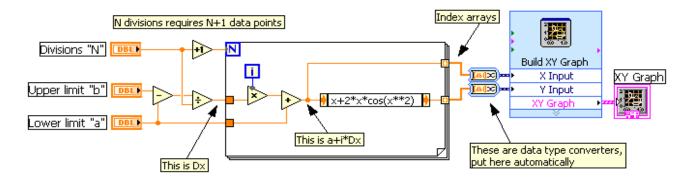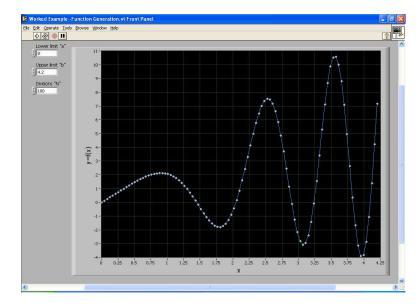# Worked Example: Function Generation

One way to graph a function *f(x)* is to generate a set of *x* values and corresponding *y=f(x)* values, and then send them to the *Express XY Graph* for display. To sequentially generate the *x* values, consider starting at a supplied lower bound $x = a$, and then stepping forward one point at a time by a specified increment *Δx* to a final upper bound $x = b$. We might choose to specify a certain number of uniform steps or divisions *N* to use instead, such that:

$$\Delta x \equiv \frac{b - a}{N}$$

Thus, all of the *x* values are generated as $x_i = a + i \cdot \Delta x$, for $i = \{0,1,2,3,\ldots,N\}$. This process is easily implemented in an iterated loop, in which the *f(x)* values are also evaluated within the loop at the same time. If the *x* and *f(x)* values are indexed within the loop, then two arrays are generated containing all of the *x* and corresponding *f(x)* values for the graph. Create a VI to implement this procedure for the function $f(x) = x + 2x \cdot cos(x^2)$.