Functions and Graphs with a GDC

In this section of the syllabus, perhaps more than any other, you are expected to be able to use your graphic calculator for a wide range of techniques. You will use the calculator in four ways:

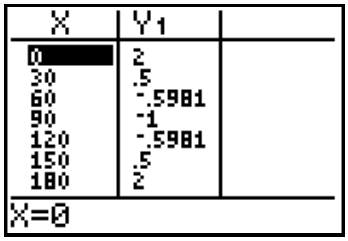
- As a simple "scientific" calculator (ie to do calculations)
- To check answers to questions you have worked out "by hand"
- To work out answers more quickly (especially for graphical questions)
- To answer questions which cannot be done in any other way

Functions: You should be able to use function keys with confidence. Make sure you know how to key in these functions:

Function	Examples
Squaring and other powers	3.2^2, 5.18^4, $(-3)^5$, -3^5
Square roots and other roots	$\sqrt{3.8}$, $\sqrt[4]{28}$
Trigonometric functions *(Make sure your calculator is set in degrees)*	sin33º, $\cos^{-1}0.867$

You also need to know how to use these keys to type in a function of x, eg: $y = \sqrt[3]{\dfrac{x}{x-1}}$

Tables: GDCs have a facility to work out a table of values for a function. Having input the function in the form $y = f(x)$ you can set up a table by selecting the first x value and then the steps by which you want x to increase. In this example, the function $y = 2 - 3\sin x$ has been entered into the function editor, and then a table created starting with $x = 0$ and increasing x in steps of 30. This can be helpful if you need to know several values, if you want to plot a graph by hand or if you're having difficulty creating the appropriate scales for a calculator plot – the table indicates the lowest and highest values of y.



Drawing graphs: Three important points to remember when drawing and using GDC graphs.

- Make sure the function you type into the editor is actually the same as in the question. You may, for example, have to use brackets which aren't actually required on the written page. 2^{x+3}, if typed as 2 ^ x + 3, will work out values of $2^x + 3$. You need a bracket: 2 ^ (x + 3)
- The GDC has a few standard sets of scales, but you will probably have to set up the "window" yourself in order to see the required part of the graph. You may well have to zoom into a part of the graph to see exactly what is happening. The two screenshots on the right are of the same graph, but only the lower one shows the intersections with the x-axis.