Graphics Calculator Notes

These notes assume the later model Casios. Older ones are missing many functions discussed here.

The [EXE] button, bottom right, executes your commands and is the "equals" button, effectively.

Ordinary arithmetic is done in the **Run** menu but, like all functions, this must be selected before you start. To do this, you use the [MENU] button. You can use the arrows to navigate, then use [EXE] to execute your choice – pressing 1 to 9 will take you to the appropriate first nine menus.

If you get an error message, you need to press [AC/ON] to clear it before anything else will work.

The [EXIT] button will go back up levels once inside a menu. The only other way to go up is to "quit" the screen all the way to the top of the current menu, QUIT (= [SHIFT]–[EXIT]).

If you are going to re-do a very similar calculation, rather than retype from scratch, it is usually much easier to use the arrows on the big "replay" button to go back up and overtype the new values. The [DEL] button allows you to delete material and [SHIFT]–[DEL] will insert extra values.

Numbers may be stored for later use with the [→] button and then [ALPHA]–letter (in red). For example typing in 6→[ALPHA]-[B], means that 2 × [ALPHA]-[B] will return 12.

Changing Settings in SET UP = [SHIFT]–[MENU]

Display sets the form of how numbers are shown (e.g. in scientific, normal or rounded). Note that the calculator actually calculates every answer in full, even if it does not display all the digits.

Angle changes between degrees and radians. The default is radians, and this will need to be changed whenever the calculator has its memory cleared (such as before an exam).

Complex Mode changes the form which complex numbers will be displayed.

Arithmetic

Scientific notation is done with the [10^x] = [SHIFT]–[log] button (with no need for any ×). So that [3] [.] [2] [SHIFT] [log] [5] = 3.2×10^5 and an output of 4.77E+6 means 4.77×10^6.

Fractions are done with the [$a\,^b/_c$] button. With that, "3⌟4" means ¾ , whereas "2⌟3⌟4" means 2¾. For changing an answer between fractions and decimals, use the [F↔D] button just to its right.

Powers are done using the [^] button, so that 2^5 is entered as 2^5.

Roots are done using the $\sqrt[x]{}$ function, (= [SHIFT]–[^]) so that $\sqrt[4]{8}$ is entered as 4 $\sqrt[x]{}$ 8 (note: both square root and cube root are built in, via shift-x^2 and shift-(respectively).

GRAPH Menu

Type in your equations in terms of *x* using the [X,θ,T] button, and enter with [EXE] .

Equations will default to "*y* =" graphs, but you can also enter others, such as "*x* = 3" and parametric types with **F3** = **TYPE**. Remember to delete such graphs and turn the type back afterwards!

Once your equation or equations are entered, **F6** = **DRAW** draws the graph or graphs. **F1** = **SEL** will turn on and off which graphs will display (useful when finding intersections of only two of them).

If the resulting graph is not visible, or only partly visible, then the window size needs changing:

- **F3** = **V-Window** then:
  - You can manually enter the minimum and maximum *x* and *y* values, or
  - **F1** = **INIT** will give the initial default setting, which is quite zoomed in.
  - **F2** = **TRIG** sets a standard size for trigonometric graphs.
  - **F3** = **STD** will give the most useful size, with both *x* and *y* values going from –10 to 10.
- **F2** (Zoom) then **F5** = **AUTO** will give an automatic zoom, but is rather unreliable, and **F3** = **IN** and **F4** = **OUT** will zoom in and out centred on the cross hairs moved by the arrows. This is usually slow and clunky, but good for looking at particular points

(Looking at the axes will often give a hint how far zoomed in or out you are. A very thick axis indicates points close together, while few markings indicate you a zoomed in a long way.)

Once the graph is properly visible, then you can use **F5** = **G-Solv** to locate points of interest (Note: G-Solv does not work on points that cannot be seen, so it is **vital** to get the visibility right first):

- **F1** = **ROOT** gives where the *x*-axis intercept(s). The arrows allow you to move from one root to the next.
- **F2** = **MAX** and **F3** = **MIN** find local minimums and maximums. Arrow between them.
- **F4** = **Y-ICPT** gives where the *y*-axis intercept.
- **F5** = **ISCT** gives where two graphs intersect (cross).
- **F6** then **F1** = **X-CAL** allows you to calculate *x* values from a given *y*. and **F1** = **Y-CAL** allows a similar calculation of *y* from *x*.

F1 = **Trace** moves a point along a drawn graph, giving its values as it does. With later calculators you can also type in an *x* value and be given the matching *y* value..

F6 (G↔T) alternates between graph and table. **F4** (Sketch) is of specialised use only.

The [OPTN] button followed by **F5** (Num) gives access to the **F1**(Abs) Absolute value function . You must bracket anything you wish to be inside that function.

TABLE Menu

The Table menu allows you to enter functions of the same types as the Graph menu. I recommend drawing most graphs from Table initially, only using Graph to check the shape, as more values are displayed and it is easier to work from.

Any equation entered Table will appear in Graph and **vice versa**, so there is no loss of time entering twice. Table will accept different types, and it can be a very good way to follow what is happening with parametric equations.

Once the equation is entered, at the bottom **F5** is **RANG** (for range). Set it for your lowest *x* value of interest, your highest *x* value of interest and a "pitch" of how far apart you want individual points, then [EXE] .

Now, back in the main Table Function menu, **F6** is **TABL** (for table) and it will give you all the points in a matching *x* then *y* format. If you have multiple formulas, then they will be in side-by-side columns.

You can see what the graph of the table looks like by pressing **F5** = **G-CON** (for graph with connected points).

You can type over the top of the *x* value, and the *y* value(s) will change automatically. This allows you to quickly sketch points on a graph, or find approximate solutions, without needing to change the range each time.