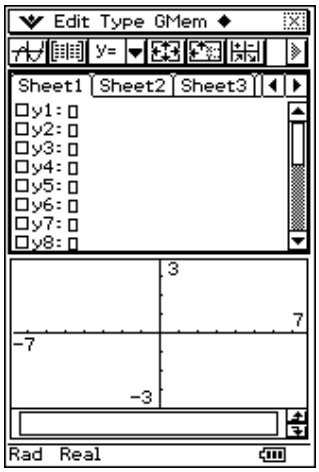
1 Graphing on the Casio

1.1 Graphing Application

To use the graphing utility on the calculator you access the application marked 

This brings up two screens: one to enter the expression and the other to display the graph.



Now, if you have the equation of the form $y = \frac{3}{2}x - 1$ or $y = 2x^2 + 10x - 5$, this is called *y-equals* form and you can enter it into the calculator. Tap on the line next to **y1:** and type-in the equation and finally press (EXE).

The ✓ symbol means the equation is engaged.

Tap the  button to tell the calculator to draw the graph.

The Tool bar buttons let you reach many useful menus.

Now graph:

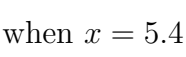
y1=$\sqrt{}$(***x***)
y2= abs(***x***)

(Use the soft keyboard to access the square root and type `abs`.)

Once you have seen the graphs, use the (Clear) to erase **y1** and **y2**.

Now graph the following.

$$\mathbf{y1=}\ \boldsymbol{x}\mathbf{\text{^}5 - 8}\,\boldsymbol{x}\mathbf{\text{^}3 + 6}\,\boldsymbol{x}$$

A nice feature of the calculator is to allow you to evaluate the graph at any given value of x inside the window. For example, if you wanted to know the value of y when $x = 5.4$, tap  to enter **trace** mode.

Type **5.4**  . The result is **3364.3382**. Your only limitation is that the x-value must be between xmin and xmax in the **window** menu.

This last graph has a lot of high and low points, called local minimum points or local maximum points. In later classes, you will be interested in finding such points. One way we can estimate the high or low points is to use the **trace** button, tap  .

Along the bottom of the screen, are figures

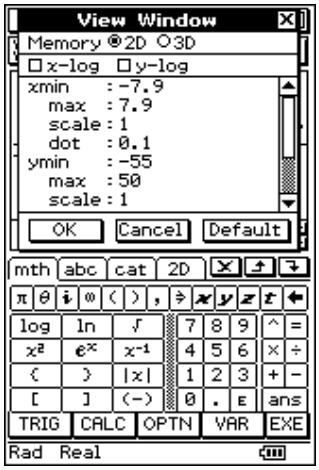
xc= yc=

This is the location of the cursor, (the blinking cross-hairs).

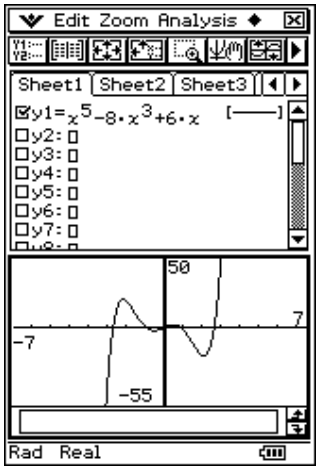
Try pressing the arrow keys. What happens?

Notice as you move the cursor, the $x =$ and $y =$ values change, these values represent the coordinates of the cursor. Notice that it is not very exact, and the numbers involved are very ugly.

Tap  for the **window** menu. This gives the dimensions of the viewing window. Any changes here will affect your view of the graph. Set the values as illustrated.



After tapping `OK`, you should have this screen.



Now try tracing. Notice that the $x =$ numbers are all 1 decimal place numbers. This was caused by the dot size. Try to find the coordinates of the local maximum around $x = -2$. You can not get very accurate, can you? Let's try to use the **Zoom** menu on the menu bar.

Box	Box zoom. Use the stylus to draw a box around the desired area.
Zoom In	Zooms in.
Zoom Out	Zooms out.
Square	This makes a unit length in the x direction the same as a unit length in the y direction.
Previous	Zoom to the previous view. Lets you back up once, if you zoomed the wrong way.
Quick Standard	Quick standard always returns to the standard window of -10 to 10 for both x and y.

Try to zoom in on the local maximum around $x = -2$.

What do you get?

Another way to find minimums or maximums is to use the buttons 

and 

on the right side of the tool bar. Use ▶ .

We are looking for a local max., so tap 

. Use the arrow keys to move between the local maxs.

Another common type of problem is to find the x-intercepts or zeros for a graph.

Use the `Zoom` **Quick Standard** to redraw our graph. Now tap 
. The cursor will jump to the first x-intercept. With the arrow keys you can find the remaining x-intercepts.

Finally, you may be asked to find a point where two graphs cross, called the intersection.

On your calculator, graph $y1 = 3\,x\text{\^{}}2 - 5$ and $y2 = 2\,x + 1$.

Notice that the graphs cross in two places.

Use the menu option `Analysis` followed by `G-Solve` and then `Intersect`.

The cursor will jump to the first point of intersection. Again, the arrow keys move between different points of intersection.