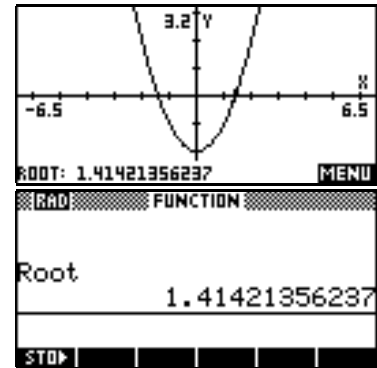


## Using the VARS button Plot variables

When you find roots, intersections, extrema or signed areas in the **PLOT** view, the results are stored into variables for later use.

For example, if we use **FCN** Root to find the x intercept of  $f(x) = x^2 - 2$  then the result is stored into a variable called **Root**, which can be accessed anywhere else. Similar variables called **Isect**, **Area**, and **Extremum** are stored for the other **FCN** tools.



You can access these names by typing them in using the **ALPHA** key, or by using the **VARS** key. Press **VARS** and you will see a list of the **HOME** variables.



If you press **SK2**, labelled **APLET**, then the display changes to show the variables specific to whatever aplet you are currently using. Those shown right are for the Function aplet and show the group of *Plot FCN* variables.

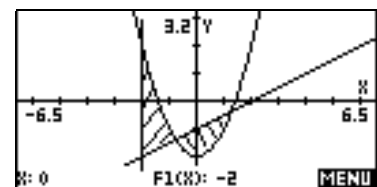


If you look at the screen shot you will see that the **NAME** tag is currently selected (**NAME**) and this means that when you press **OK** the name of the variable will be pasted into what ever view you were using when you pressed the **VARS** key. Pressing the **VALUE** screen key will cause the *value* of the variable to be pasted instead. There is no effective difference in most situations.

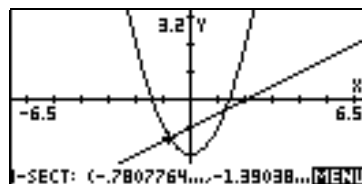
This can be very useful in finding areas, as you will see in the example following.

Suppose we want to find the area between

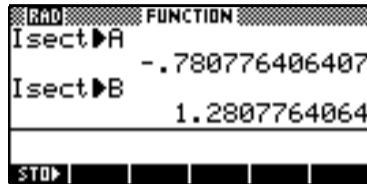
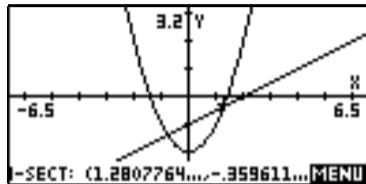
$f(x) = x^2 - 2$  and  $g(x) = 0.5x - 1$  from  $x = -2$  to the first positive intersection of the two graphs. From the graph shown right it can be seen that to find the area we need to split it into two sections, with the boundaries being  $-2$  and the two intersections.



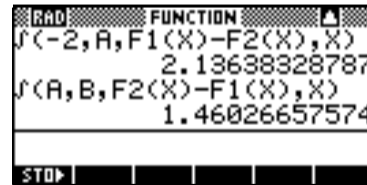
The shortcut here is to use **FCN** Intersection to find the first intersection, storing the results into memory variable **A**.



We then do the same thing for the second intersection, storing the result into **B**.



We can now calculate the area in the **HOME** view, using  $f_1 - f_2$  for the first and  $f_2 - f_1$  for the second.



Adding the two values will give the final answer.