Basic Graphing on the TI-85/86

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Entering an Equation

Equations are entered into the calculator by first pressing the GRAPH key. Then simply enter the equations as you see them. To graph the equation, press F5.

Changing the Viewing Window

If you have entered and graphed an equation, such as $y = x^3 + 7x^2 + 4x$, part of the graph may run off the screen. To change the size of the viewing window, press F2 for RANGE (on the TI-85) or WIND (on the TI-86). The calculator now asks you for the smallest and largest values of x and y that will show up on the screen. If xMin = -10, xMax = 10, yMin = -10, and yMax = 10, the graph of runs off both the top of the screen. To view the complete graph, try changing the value to yMax =20. If this does not give you a nice picture, guess again. You are also asked for Xscl and Yscl. These setting control the tick marks that are along the x and y axis. Finding the correct viewing window is a matter of practice and guessing. The more experience you have, the easier it will be. However, the ZOOM menu offers some help. xres is the graphing resolution. This can be set to any value from 1 to 10, the default is 2 which means that the graph will plot a point every 2 pixels.

Zooming

Pressing F3 for ZOOM will present a menu of many options. This page will discuss what I consider the most useful of the ZOOM options. Refer you to your manual or your instructor for help with the other options.

BOX allows you to draw a box around a selected portion of a graph and enlarge the portion of the graph inside the box. To use this option, select [BOX], use your cursor keys to move your cursor to one corner of the box you want to draw, press ENTER, move your cursor to the diagonally opposite corner of the box, and press ENTER again.

ZIN/ZOUT allows you to will change Min and Max of x and y by a factor of 4 (Zoom out multiplies each by 4, Zoom In divides each by 4). Also it allows you to pick what the center of the window will be. If you select [ZIN], you get a cursor in the middle of the screen that you may move around with the arrow keys. When you press ENTER, that point becomes the center of the screen and the min and max values are adjusted accordingly.

ZSTD is a quick way to return your screen to the standard viewing rectangle, xMin = -10, xMax = 10, yMin = -10, and yMax = 10.

ZPREV will revert the screen back to the last minimum and maximum values.

ZFIT instructs the calculator to change only the yMin and yMax part of the viewing rectangle, not the *x* part. In doing so, the calculator will attempt to adjust the *y* values so that all maximums and minimums over the x interval are shown in the graphing window.

ZSQR changes only one of the values so that the x-axis and y-axis have the same scale. A nice way to think about it is that this command will make the graph of a circle look like a circle.

The equation switch

If you have several equations in the calculator and you don't want all of them to be graphed, you can switch then on and off. In the y(x)= editor notice that once you have entered and equation the = sign becomes highlighted. If you press F5 for SELCT this will unhighlight the = sign, pressing F5 again will highlight the = sign. When you press 2nd [M5] for GRAPH the calculator will only graph the equations that have highlighted = signs.

Tracing a Graph

Once an equation has been graphed, you can trace along the graph by pressing the TRACE key under the window. Pressing the left and right arrow keys moves you along the graph while displaying both the x and y coordinates.