

How to Produce Graphs of Functions

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Week four of Math 209 is graph intensive. Here are three methods to produce graphs of functions.

Graphing manually by the plug-n-chug method.

You can graph *any* function by the "plug-n-chug" method creating a table of points, plotting them on graph paper, and connecting them to form the curve.

Example: Graph $y = -2|x - 3| + 1$.

Choose some x-values (at least five) such as $x = -1, 0, 1, 2, 3, 4, 5$.

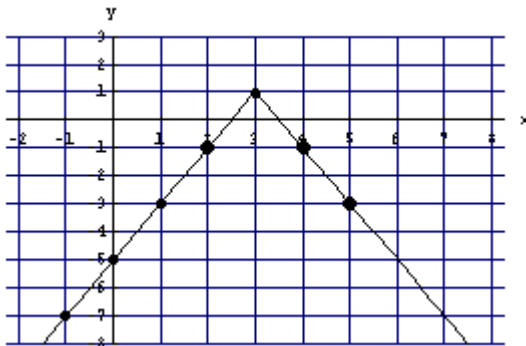
Plug those into the equation to generate the corresponding y-coordinate.

E.g., if $x = -1$ then $y = -2|(-1) - 3| + 1 = -2|-4| + 1 = -2(4) + 1 = -8 + 1 = -7$, so the point $(-1, -7)$ is on the graph. Do this for each of the x-values you chose.

List them in table format such as:

x	$y = -2 x - 3 + 1$
-1	-7
0	-5
1	-3
2	-1
3	1
4	-1
5	-3

Now plot these points $(-1, -7)$, $(0, -5)$, etc. and connect them to form the curve.



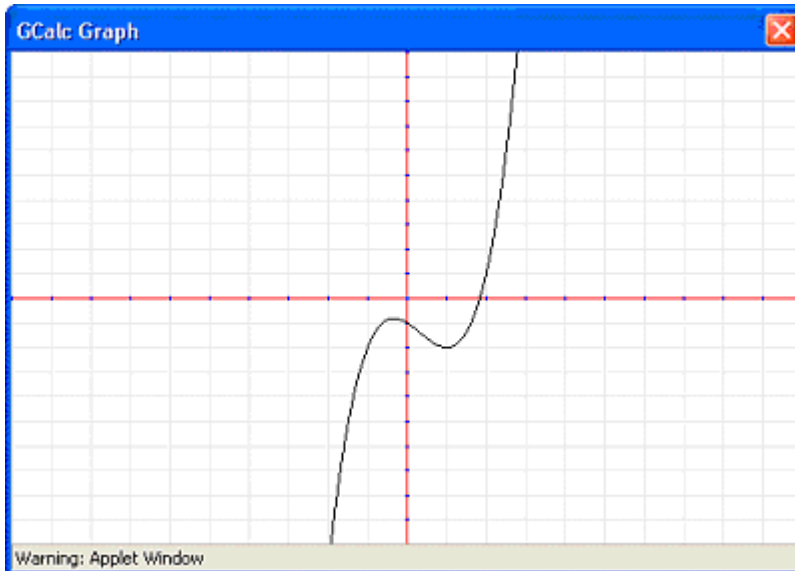
Graphing electronically using the ALEKS grapher.

Before producing a graph using the ALEKS grapher you first need to have a table of points to plot, so creating a plug-n-chug chart as detailed above is still an important first step. Then you can plot the points electronically in ALEKS grapher. To learn how, in ALEKS, click "Help" in the top bar menu, then "All topics for UOPHX Math 209", and you will see several help topics such as "How do I plot a point", "How do I draw a graph", etc.

Graphing electronically using online graphing software.

You can produce a graph straight from a function rather than via a table of points using an online grapher such as GCalc available at www.gcalc.net. To graph in GCalc, go to the GCalc website, press the "Click to start GCalc 2 Applet" button, type your

equation in the top box above the axes (try for instance x^3-x^2-x-1), and hit ENTER. Your graph will look like this:



You can then adjust the window settings, ZOOM in/out, or locate the coordinates of the axis intercept points. If you want to save your graph, click "Graph Window" to get a new window containing just the graph and do a screen print (see www.jolenemorris.com/InfoSeries/ScreenPrint.htm for directions).