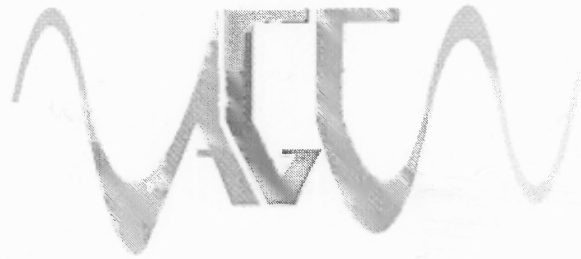




Graphing Tutorial



Audio Graphing Calculator

Before you can plot a data set on a graph, you must first have a data set. This tutorial is here to provide you with the tools you need to effectively recreate a function audibly and/or visibly. This tutorial deals primarily with the Data 1 and Data 2 pages. Please navigate to the Data 1 page. You can click on the tab or use the menu navigation, ALT+O, 1. You will also need the graph displayed if you wish to review your results visibly. Press F3 at this time to open the visual graph if it has not already been opened.

Let's begin with a simple expression: the sine of x. Enter the following expression into the display and press return:

$\sin(x)$

Please note: If you are reading this document with a screen reader, the expression for sine of x is "s i n (x)", not "s i n e (x)".

A data table will be generated for a certain number of points between a certain range. The number of points and range can be manipulated, but we will discuss that later on in the tutorial. Your data set will begin at the first data point (the lowest value for x) and progress to the last data point (the highest value for x).

Plot	Wave	Speech	Calculator
Data 1	Data 2	Evaluator	Matrix

f(x) =

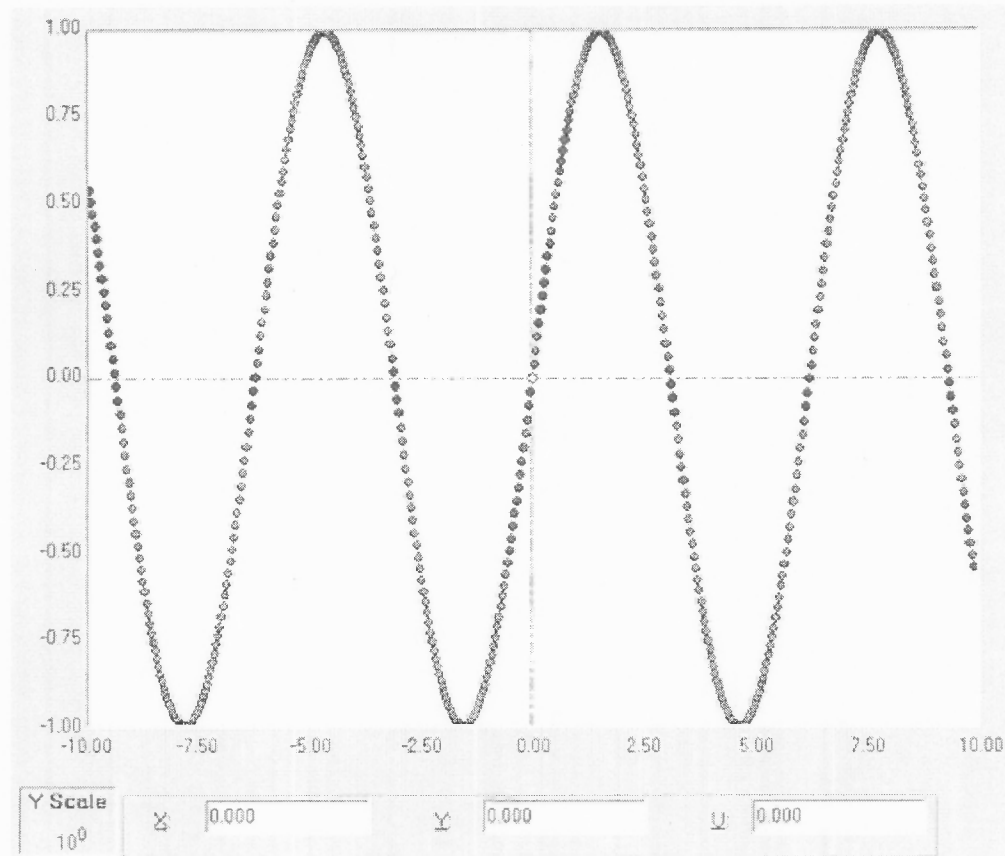
Coordinates

Rectangle Polar

x	f(x)	f'(x)	f(x)
-10.0	0.544	-0.84	0
-9.96	0.51	-0.86	0.042
-9.92	0.475	-0.88	0.061
-9.88	0.44	-0.898	0.079
-9.84	0.403	-0.915	0.096
-9.8	0.366	-0.93	0.109
-9.76	0.329	-0.944	0.122
-9.72	0.291	-0.956	0.134
-9.68	0.252	-0.967	0.144
-9.64	0.214	-0.977	0.153
-9.6	0.174	-0.984	0.16
-9.56	0.135	-0.991	0.166
-9.52	0.095	-0.995	0.169
-9.48	0.055	-0.998	0.171
-9.44	0.015	-1	0.172
-9.4	-0.025	-0.999	0.171
-9.36	-0.065	-0.998	0.166

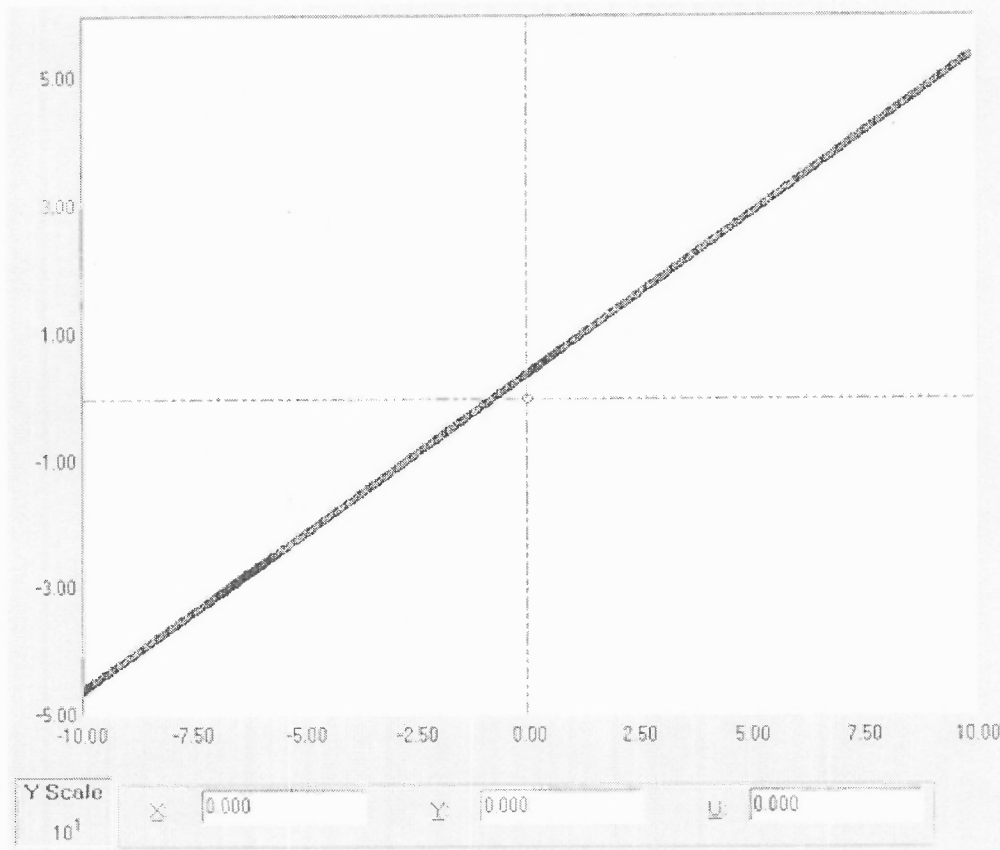
Statistical Description of Data Set

Graphically, the representation of the data set will begin on the left and end on the right, also progressing from lowest to highest value. The evaluated answer to each input of x is the value y. In this instance, y will be somewhere between -1 and 1. As the graph progresses from left to right, the corresponding value for y will be placed somewhere from -1 to 1.

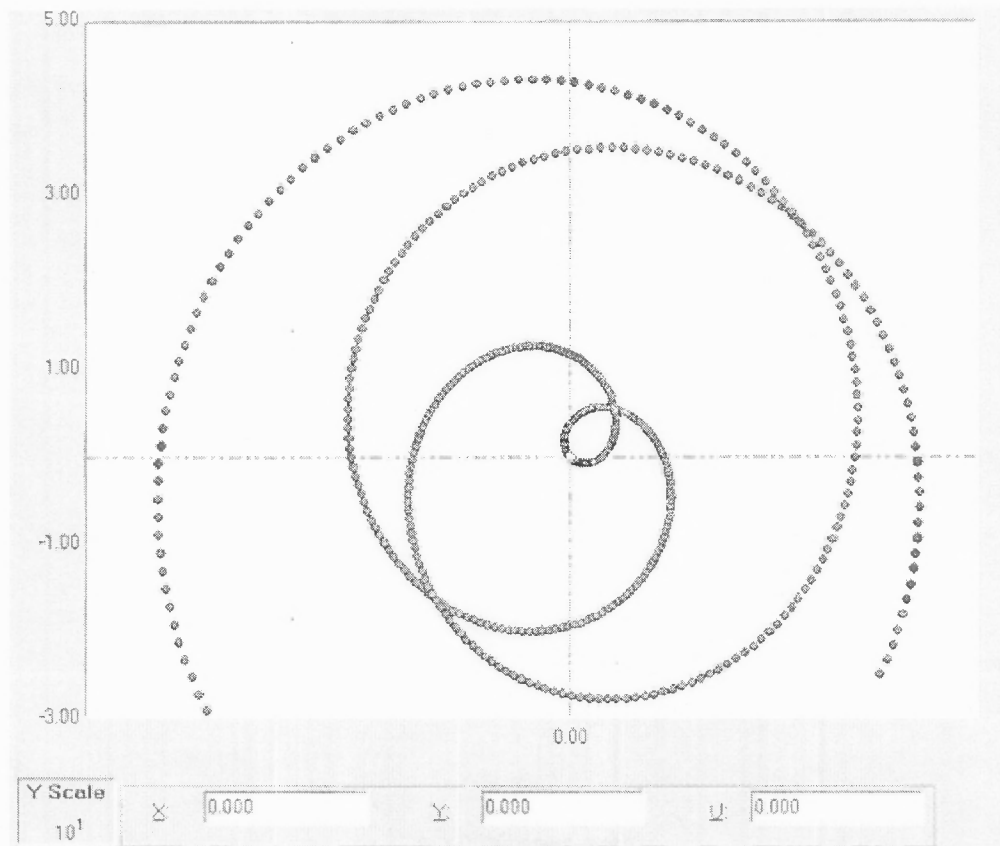


Not all expressions have to be of a trigonometric function. Some can be linear, such as:

$$(5 * x) + 4$$



A new feature in AGC is the ability to plot your coordinates in polar form. Change your plot type to polar and go up to the expression box and press return. The graph looks significantly different using this plot type.



Feel free to experiment. Should you come across any problems, here are a couple of things you can try:

Put parenthesis around the portions of your expression you want to have calculated first.

Remember to include operators. $3x$ is not the same as $3 * x$ to the AGC.

GRAPHING

The default settings are useful for many applications, but there may come a time when you wish to isolate a certain portion of a graph for attention. Before we begin, we must set up a scenario that would require adjustment. Please enter the following function into the textbox on the Data 1 screen and then press return:

$$-(1/2 * x)^2 + 20$$

You can now examine the graph visually by pressing F3 or audibly by pressing F5 or F6.

1. For this scenario, let's pretend we are only interested in the portion of the data set that falls in the first quadrant (both x and y must be positive values).
2. We can adjust that quite easily from the Plot screen. Navigate to the Plot screen. You can use the hotkey sequence ALT+O, P, R to do so.
3. From here, we will want to adjust our X values. Please set the new X minimum to 0. Leave the X maximum at 10. Also, make sure X -Axis Auto-Scale checkbox is cleared.p>
4. Press F4 to reevaluate the expression after your changes to the plotting have been made. If you are exploring the graph audibly, press F5 at this time. Notice how the graph has changed?
5. It's close, but it's still not exactly what we want. Some of the graph still falls below 0 for the Y coordinates. Press the tab key until you've located the Y minimum text box. Delete the entry and enter 0. Next, double check that the Y maximum is set to 30. Also, press tab until you've located the Y -Axis Auto-Scale checkbox and clear it. Reevaluate the graph and view it.

You should now understand how to change the viewing area of any graph. Feel free to experiment and try to isolate other sections of the data set. The other checkboxes on this page are for presenting the data visually. Sighted users can experiment by checking or clearing the checkboxes at this time.

[Back to the tutorial index](#)

[Back to the main index](#)

[Next tutorial: Using the Data 1 Screen to Graph a User Defined Data Set](#)