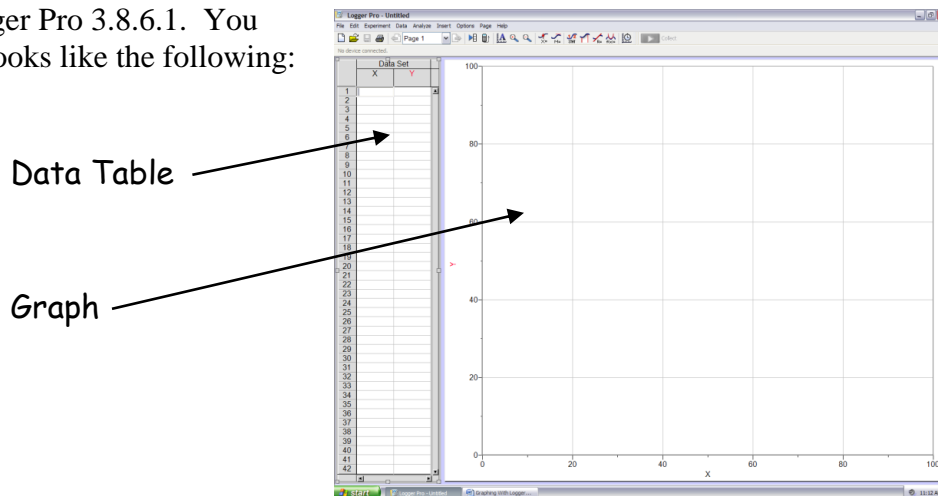


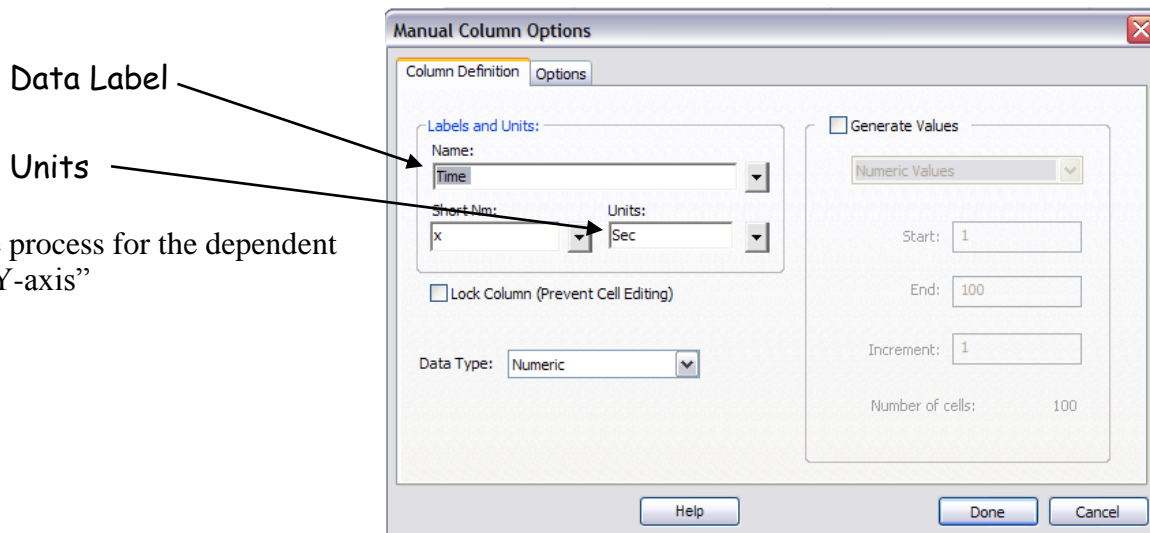
Graphing with Logger Pro Advanced Graphing

In this tutorial you will learn to fit a data set to an equation rather than going through all the manual steps of linearization. Often times with curved lines it difficult to find the exponent of the independent variable.

- 1) On the desk to open Logger Pro 3.8.6.1. You should get a screen that looks like the following:



- 2) The first step is to set up your data labels and units. To do so, double click the “X” in the data table to open the “Manual Column Options” window. Under *Labels and Units*, enter the independent variable data label and its units.



- 3) Repeat the process for the dependent variable “Y-axis”

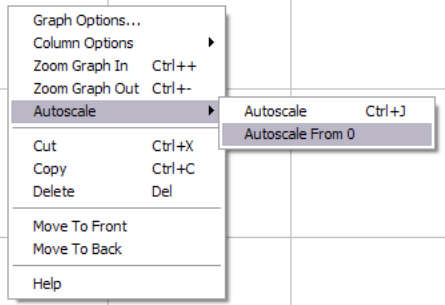
- 4) Enter your data from your table.

You may notice the following things about the graph:

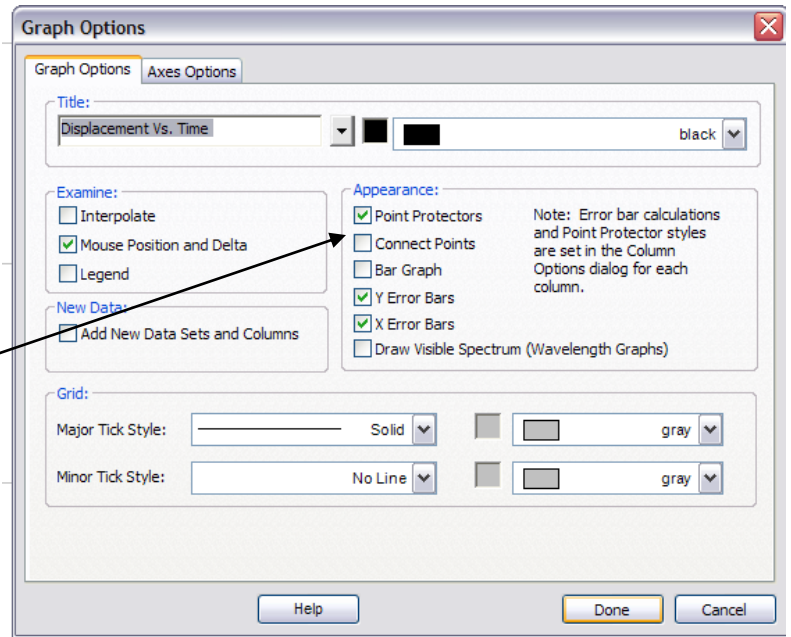
- The graph may not be properly scaled to a full page.
- The “Y” axis may not go to zero.
- The graph automatically “connects the dots” and we want a best fit line.
- We need to add a title to the graph.

5) In this step we will fix these items by reformatting the graph.

A. Right click somewhere on the graph. From the popup menu select Autoscale and Autoscale From zero.



B. Right click somewhere on the graph a second time and open up the Graph Options window. Under appearance, check the point protectors box and uncheck the connect points box.



6) The last step is to place a “best fit line on the graph and obtain the relationship for your data.

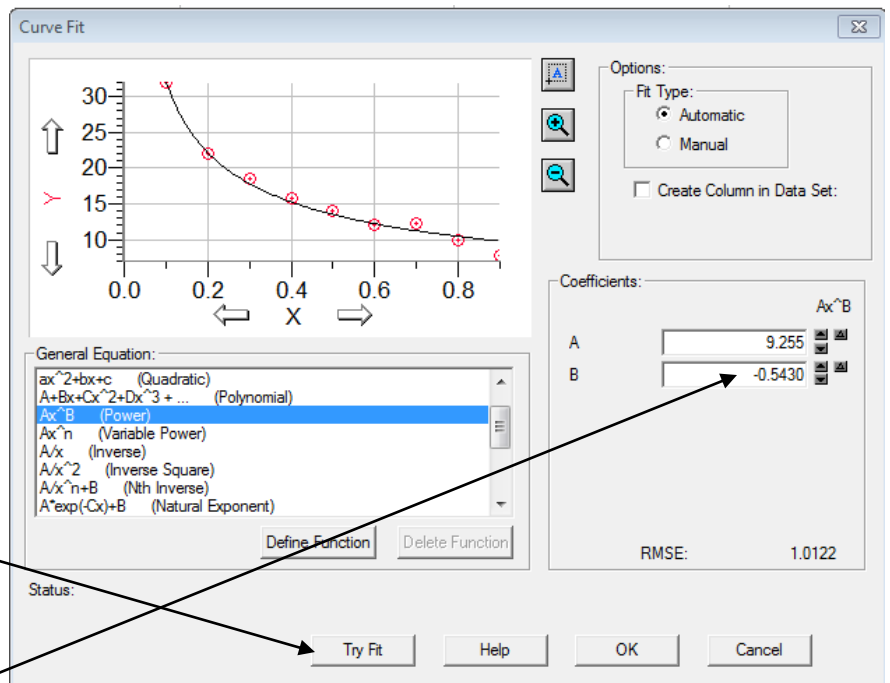
A. From the analyze drop down menu choose “curve fit and obtain the following window.

B. Select the equation that you would like to fit your graph to. In this case, you don't necessarily know what the form of the equation is so choose Power

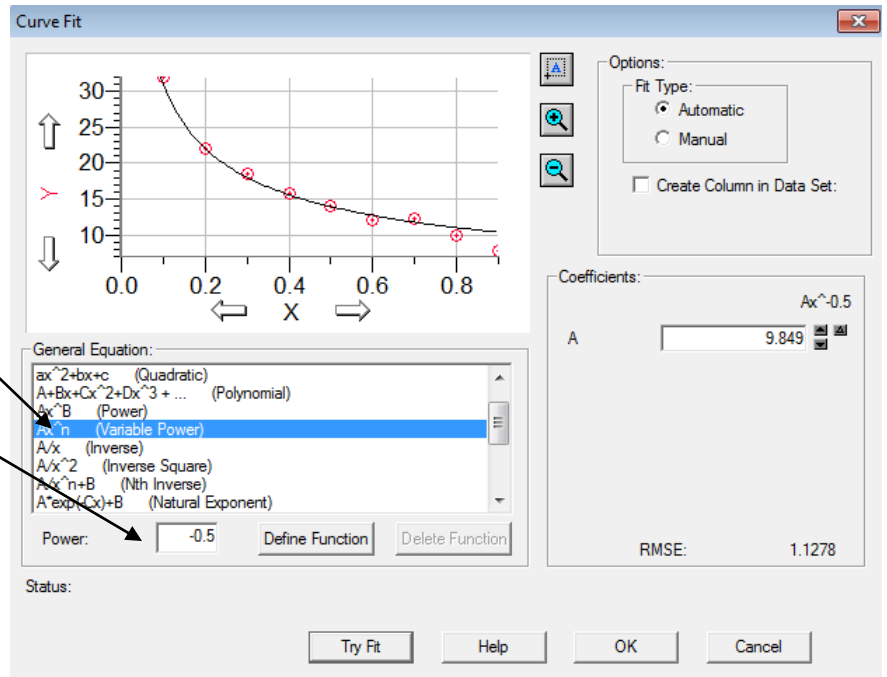
$$y = Ax^B$$

C. Select Try Fit

D. You can see that the exponent “B” is -0.54. in physics, this value is usually a ± 1 , 2 or $\frac{1}{2}$. Since this is close to $-\frac{1}{2}$ we will need to “force the exponent to be $-\frac{1}{2}$ in the next step.

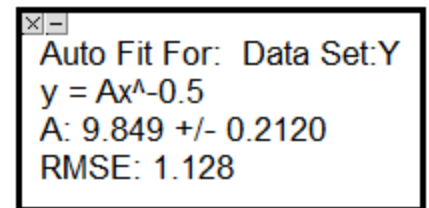


E. For this step use (Variable Power) and set the power to -0.5



Try Fit again and hit OK

Write your equation from the Text Box on the graph. In this case the equation is $y = 9.85 \cdot x^{-1/2}$ and should be simplified as follows:



$$y = \frac{9.85}{\sqrt{x}}$$

Note: Make sure to use proper physics variables in your equation, not the “Generic” x and y