Linearizing Data. Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Open Fathom Document titled Linearize.ftm.

The number of bacteria in a culture is observed for several hours with the following results received in the following fathom document. A graph and table have been provided for you to Linearize this data to find the best function fit.

What function do you think will best fit this data. Choose one.

Linear, Power , Exponential, or Logarithmic

You will now need to add new Titles to your collection table. Create a title called LogHours and LogBacteria. In your Collection go to the new titles and type the formulas log(Hours) and log(Bacteria) into the appropriate spots.

Your job now is to try the following tables to see which combination will best linearize the data. Remember to try all options.

Hours, Log Bacteria

LogHours, Bacteria

LogHours, LogBacteria

Now click on each graph and run the residual plots, sum of squares and least-squares line to make a conclusion to which graph linearizes the data the best.

Which combination of X and Y values best linearizes this data? What lead you to choosing this?

Find the equation of the line that fits the **linearized** data. Remember that your axes may not represent x and y. So substitute for log x or log y into your equation as appropriate and solve for y.

y = mx + b

Predictions (Interpolation and Extrapolation)

According to your model how many bacteria will be in the culture after 6.5 hours? What is the residual for this output? Show all of your calculations below.

According to your model how long will it take for the bacteria to reach 100 count? Show your calculations below.

According to your model how many bacteria will be in the culture after one full day? Show your calculations below.