Laboratory Two - Cool Down
Report

Your laboratory report should be written in paragraph form and have this sheet stapled on top with the names of all group members written above. It must be typed and should be free of spelling, grammatical and punctuation errors. Be sure to include the following:

1. A brief description of the overall situation being modeled.

2. A brief description of the procedure used for collecting your data. What does the CBL measure?

3. What is your equation of the form $y = Ab^t + C$, $0 < b < 1$, which you obtained using the trial and error method? Describe that method, including how you obtained the coefficients $A$, $b$ and $C$. What does each coefficient represent and what role does each play in fitting the shape of the temperature curve?

4. What is your equation of the form $y = Ab^t + C$, $0 < b < 1$, which you obtained using the algebraic method? Describe that method, including the calculations used to find $b$. Why does the method used for computing $b$ make sense? What is the equation of the asymptote of this function? When you repeated the calculation using a different data point, was there a better or worse match of the data? If so, where?

5. What is your equation of the form $T(t) = T_a + (T_0 - T_a)e^{-kt}$ which you obtained using base $e$? Describe that method, including the calculations used to obtain $k$. Why does this method for computing $k$ make sense? What is the equation of the asymptote of this function?

6. Which of the functions best fit your data? Note any sources of error in your ability to obtain a good fitting curve for each method. Does an exponential function of either of the forms provide a reasonable fit to the physical phenomenon of cooling to an ambient temperature?

7. Why is it possible to use the base $b$ you found to closely match the collected data as well as use base $e$ that also closely matches the same collected data? What is the difference between the two functions that allows this to occur?

8. Provide a data point graph with axes labeled and scaled containing at least 6 labeled data points. The graph should be drawn using the axes on the back of this sheet.
Laboratory Two: Final Data Point Graph