Radiation Lab

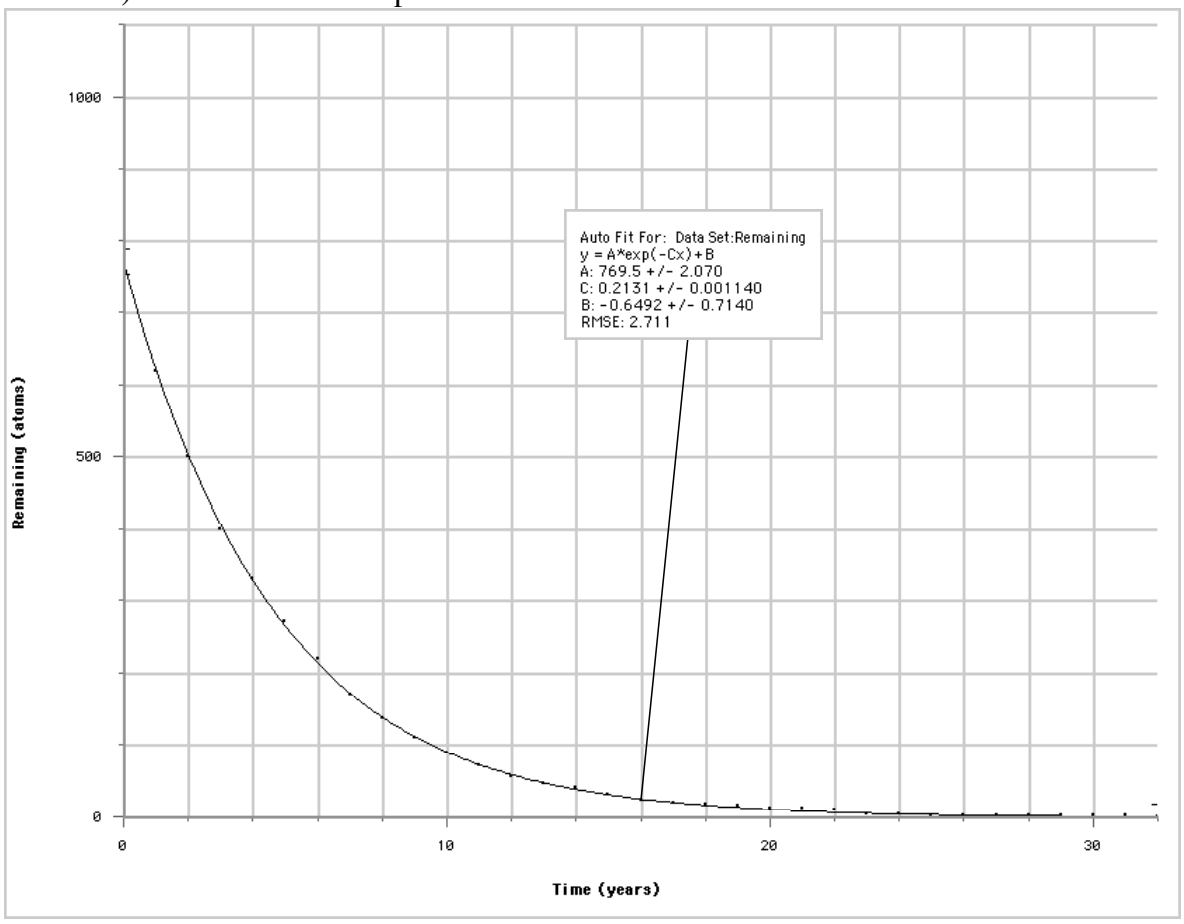
Pre-lab Questions:

1. Briefly describe three kinds of radiation involved with radioactive decay.

2. What does the term "half life" mean in regards to radioactive decay?

3. Suppose you have a 480 g sample of radioactive unobtanium-437 with a half life of 7.5 years. How much of this sample will be left after 22.5 years?

4. Carbon-14 decays into Nitrogen-14 with a half life of 5730 years. Suppose a sample is discovered which still contains 28 g of Carbon-14 plus 84 g of the "daughter" Nitrogen-14.
   A) How much Carbon-14 was there originally?
   B) How old is this sample?



5. The above curve shows the decay curve for a sample of radioactive material. What is the half life of this material?

Purpose:

Determine the half life of a sample of a radioactive substance.

Procedure:

1. Run the "RADLAB" program.
2. Be sure to record your sample number.
3. Obtain a copy of your data. After the program is done, press STAT and EDIT to see your data. The years are stored in L_1 and the atoms remaining are in L_2.
4. Run the program a second time to get data for your partner.

Data:

Sample Data Table	
Sample Number _____	
Year	Atoms Remaining
0 (= Start)	
1	
2	
etc…(Record ALL data!)	

Be sure to record *all* of the data the calculator provides to you.

Analysis.

1. Plot your data on graph paper (or create one using Graphical Analysis or a spreadsheet program). Connect the points with a smooth curve.

2. Use your data and your graph to determine the half life of your sample. Explain and justify your answer. Remember to pay attention to "Sig Figs"; i.e., approximate answers are not acceptable.

3. Copy and complete the following table:

Half Life Number	Atoms Remaining (Theoretical)	Atoms Remaining (from graph)
0 (= Start)		
1		
2		
etc…		

4. Does the above table support your choice for the half-life? Explain.

Note: Be sure to include your Sample Number and Half Life in your conclusion.