Name _____ Period _____ Date_____

Homework #4.8: Option 2 Solving Problems (10 points)

Part 1: Reflect on the work you did in class today on radioactive decay and answer the following.

c) List two things that you learned today:

i)

ii)

d) List one question or wondering that you have about the class experiment or radioactive decay in general.

Part 2: Solve each of the following problems (use the back of the page or staple your work to this sheet and **show your work and equations**).

1. Suppose you see 36 mosquitos in the yard on Monday, 48 on Tuesday and 64 on Wednesday. If the population is growing exponentially, when will there be more than 10000 mosquitos?

2. Tickets for the upcoming Taylor Swift concert are in high demand and as the concert draws near the prices are increasing exponentially. Yesterday a ticket cost $150 and today it is $162. What is the daily percentage increase in the price? What will the price of a ticket be one week from today if this keeps up? What was the price of a ticket one week ago?

3. The decay of a certain radioactive element can be modeled by the equation $y = 600(0.80)^t$ where 600 is the initial grams of material being studied, t is time (in days) and y is the amount of the material at any point in time. What is the half-life of this element? In how many days will there only be 150 grams of the material left?

4. You save $10,000 in a bank account that pays you 5% annual compound interest and you promise to leave the money in the bank for 10 years. The Bank takes your money and loans it to a customer for that 10 year period and they charge the borrower 10% interest compounded annually.
- How much money will you have at the end of the 10-year period?
- How much will the bank get paid back from its borrower on the loan?
- After 10 years, what is the bank's net profit after they pay you back your $10,000 with interest.