Alg.2 Unit 6 Word Problems Name:_____

1. Ariana has a choice of two investments. She can invest $12,000 at 5% for 8 years, or she can invest $9000 at 6.5% for 7 years. Both accounts are compounded continuously. Which investment will result in the greater amount of interest earned?

2. Use the natural decay function, $N(t) = N_0e^{-kt}$, to find the age of a fossil containing 35% of the original amount of a particular substance. This substance has a half-life of 2450 years.
   A. Find the decay constant.

   B. Find the age of the fossil.

3. Use the formula $A = Pe^{rt}$ to compute the total amount for an investment of $4500 at 5% interest compounded continuously for 6 years.

4. The hydrogen ion concentration in moles per liter of a certain solvent is 0.00794.
   A. Write a logarithmic equation for the pH of the solvent.

   B. What is the pH of the solvent?

5. Use the formula $A=Pe^{rt}$ to determine the total number of years an investment of $5000 at a rate of 2.5% will take to be worth $7000.

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6. Mr. Rivera is studying a species of plant. The height of the plant can be modeled by the function $f(t) = 2ln(t + 1.25)$; where $f(t)$ is the height of the plant, and $t$ is the number of days after planting.
   A. In the context of this problem, what is the domain of $f(t)$?

   B. What is the parent function to Mr. Rivera's model?

   C. Describe how the function is transformed from the parent function.

7. Martin borrows $5500. The rate is set at 6% with continuous compounding.
   A. How much does he owe at the end of 2 years?

   B. Martin found a bank with a better interest rate of 5.5%. How much less does he owe at the end of 2 years?