Algebra II w/ support Unit 5 - Application Practice

Name: _____ Date:

1. In1990, the tuition at a private college was $15,000. During the next 9 years, tuition increased by about 7.2% each year.
   a. Write a model giving the cost *C* of tuition at the college t years after 1990.

   b. What is the tuition in 2010?

   c. What year was the tuition $20,000? Give the answer to 3 decimal places.

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2. You purchase a stereo system for $830. The value of the stereo system decreases 13% each year.
   a. Write an exponential decay model for the value of the stereo system in terms of the number of years since the purchase.

   b. What is the value of the system after 2 years?

   c. When will the stereo be worth half the original value?

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3. You have bought a new car for $26,500. The value *y* of the car decreases by 18% each year.
   a. Write an exponential decay model for the value of the car.

   b. Use the model to find the value of the car after three years.

   c. When will the car have a value of $18,000? Give your answer to 3 decimal places.

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4. You deposit $2000 in an account that earns 5% annual interest. Find the balance after five years if the interest is compounded
   a.
   b. Annually
   d. Monthly
   c. Quarterly
   e. Continuously

5. A customer purchases a television set for $800 using a credit card. The interest is charged on any unpaid balance at the rate of 18% per year compounded monthly.

   a. If the customer makes no payment for one year, how much is owed at the end of the year?

   b. How long will it take the customer's credit card to reach $1000 balance(3 decimals)?

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6. If you deposited $1000 into a savings account earning 6% annual interest compounded quarterly,

   a. How much money do you have at the end of 3 years?

   b. What if it was compounded continuously?

   c. How long will it take for you to double your investment compounding continuously (3 decimals)?

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7. A local bank advertises two special savings accounts. You have $500 and you want to decide which offer is the best investment if you are investing for one years.

   a. One account offers 4.9% compounded daily. Write a formula and find the balance of this account at the end of one year.

   b. The other account offers 5% compounded quarterly. Write a formula and find the balance of this account at the end of one year.

   c. Explain which account is the best investment **and** by how much.