**Homework:**

**p. 457 #50, 51, and 52**

**and the following five problems:**

1.Some prehistoric cave paintings were discovered! The paintings contained only 14.3% of the original carbon-14. Carbon-14 decays according to the equation

A = A0e-0.000121t, where time is measured in years. Approximately how old, to the nearest year, are the paintings?

2. Valeriya has three accounts, each of which involve interest compounded continuously according to the formula A = P\*ert, where A is the amount of money in the account, P is the principal amount, r is the rate, and t is the number of years. The equations for the accounts are as follows:

 Account A: A = Pe0.0025t

 Account B: A = Pe0.0028t

 Account C: A = Pe-0.026t

a. One of these accounts represents money that Valeriya has already saved, and is currently using to pay off a loan. Which account is this, and how do you know?

b. State the interest rate for the other two accounts.

3. A new Acura is valued at $39,000, but its value depreciates 3.8% per year. Write a function, v(t) to represent the value of the car after t years.

You would like to sell the car before it is worth less than $10,000? What is the maximum amount of years you should wait before selling the car?

4. An antique item was purchased in 2011 for $450, and was appraised as having a value that would increase by 8% each year.

a. Write a function V(t) to represent that value, V, of the item after t years since its appraisal.

b. By how much money did the value of the item increase in the first year?

c. What is the value of the item currently?

d. Does the rate of change of the value of the item increase, decrease, or maintain over time?

e. How long will it take the item to be worth at least $2000?

5. Potassium-40 is a common isotope found in nature. Its half-life is 1,280,000,000 years. Write a function M(t) to determine the mass of Potassium-40 found in any rock/mineral. Then determine how old a rock/mineral that has one-fourth of the amount of its initial Potassium-40 is.

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