**Chapter 4 Extra Problems**

1. If $5,000 is invested in an account at 5.6% compounded quarterly, how much money is in the account after 10 years? How much money is in the account after 10 years if compounded continuously?
2. If you invested $400 into an account that has an interest rate of 2% and compounds quarterly, how long would it take for the account to have $4000?
3. Assume the cost of a loaf of bread is $6. With continuous compounding, find the time it would take for the cost to triple at an annual inflation rate of 5%.
4. Benjamin Franklin gave Boston a gift of about $4,400. This amount grew to about $2,000,000 in 200 years. At what interest rate compounded annually would this growth occur?
5. The half-life of carbon-14 is 5730 years. How long does it take for 3.4 grams of carbon-14 to be reduced to 0.1 grams of carbon-14 by radioactive decay?
6. If 15 grams of radioactive waste reduces to 10 grams of radioactive waste after 1000 years, then what is the half-life for this radioactive element?
7. The level of a sound in decibels () is determined by the formula where is the intensity of the sound in watts per square meter. To combat noise pollution, a city has an ordinance prohibiting sounds above on a city street. What value of gives a sound of ?
8. In 1935 Charles Richter defined the magnitude of an earthquake to be , where is the magnitude of the earthquake, is the intensity of the earthquake, and is the intensity of a standard earthquake or benchmark earthquake. Write the formula for the magnitude of an earthquake as a single logarithmic function. What is the Richter scale rating of an earthquake for which ?

When you have completed the 8 problems, and shown all of your work, check your answers with the key and take the short quiz on I-learn found in the resource folder.

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