Compound and Continuous Interest Project

Over the course of the semester, we have seen many problems that require us to use the compound interest and continuous interest formulas. For this project, you will explore some real world problems using these two formulas. You will be using excel to complete this project.

You will be required to complete a separate excel sheet for each problem showing all that is necessary to answer that particular problem such as: years, monthly payment, interest paid, remaining balance, etc.

You will also provide a cover sheet summarizing what you found for each problem. (Example excel sheets and cover sheets will be provided)

Here are the problems that you are required to answer:

1. You invest $25,000 dollars into a savings account with an annual interest rate 5.25%. How much money will you have in the account after 25 years if the account is:

* 1. Compounded monthly?
  2. Compounded quarterly?
  3. Compounded annually?

2. You want to purchase your dream car. (Note you will have to look up the cost of your dream car for this problem.) You do not have enough money to purchase the car outright, so you are going to have to set up a payment plan. Suppose your annual interest rate is 7.80%. What would your monthly payments have to be if you wanted to pay off the car in ten years?

3. Now suppose you are purchasing the same car as in problem 2, but this time you can choose between two different payment options:

Option 1: $950 a month with an interest rate of 2.75%

Option 2: $1200 a month with an interest rate of 3.50%

Which payment option would you choose and why? Take into consideration the number of years it would take to pay off the car and the amount of interest that is collected.

4. You are the manager of a bank. A customer comes in with $15,000 to invest in a savings account. They have already been to another bank that promised them an interest rate of 4.5% per year for 25 years. Come up with your own interest rate, which will allow your customer to have the same ending balance in only 20 years.

5. Suppose you invest an x amount of money into a savings account that is compounded continuously with an annual interest rate of 6.7%. What is the amount of money in your account after:

a. 10 years

b. 15 years

c. 25 years

The amount of money you invest is equal to your 810 number, excluding the first three digits.

Cover Sheet Format:

1. The account will have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ after 25 years compounded monthly.

The account will have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ after 25 years compounded quarterly.

The account will have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ after 25 years compounded annually.

2. In order to pay off the car in ten years, the monthly payment would have to be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ dollars.

3. Option 1 accumulated \_\_\_\_\_\_\_\_\_\_\_\_\_ in interest while Option 2 accumulated \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in interest. I would choose Option \_\_\_\_ because…

4. Your bank should have an interest rate of \_\_\_\_\_\_ in order to match your customer’s other bank.

5. The account will have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in 10 years.

The account will have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_in 15 years.

The account will have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_in 25 years.