**Exponential Function Project**

1) **Part #1**

At the reading of the will of your great aunt you find that she left you $10,000 to help you buy a house when you finish your education. However, your great aunt was very frugal. The will stipulates to receive the money you must find the bank in your town that gives you the highest interest and you cannot make any withdrawals for 7 years.

Contact three financial institutions by looking on the internet. Find the interest rate for a student savings or personal savings account. For this assignment, assume that the given interest rates are compounded 1) annually, 2) quarterly, 3) monthly and 4) daily. Use the table below to record your information (note: find banks with different interest rates):

|  |  |  |  |
| --- | --- | --- | --- |
|  | FINANCIAL INSTITUTION | WEB ADDRESS | INTEREST RATE |
| 1 |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |

Compounded ( Annually, Quarterly, … n times) Compounded continuously

|  |  |
| --- | --- |
|  |  |

Based on the given information and the interest data you found answer the following.

**1.**  **Choose the bank which will give you the highest interest rate and write the mathematical model.**

Bank Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Annually: Monthly:

Quarterly: Daily:

**2.**  **How much money will you have in the bank in 7 years?**

Annually: Monthly:

Quarterly: Daily:

**3. When will your money double?**

Annually: Monthly:

Quarterly: Daily:

This is part 1 of your project.

**Exponential Function Project**

**Part #2**

You are going to buy a car that will need to be financed. You will need to look at different options and decide which will be the best choice for your situation. You will need to find a car on the internet that you want to purchase.

**Process**

1. Find an advertisement for a car that you would like to purchase. You can look at any internet site, but you might consider:  [http://www.edmunds.com](http://www.edmunds.com/) to learn how the advertised prices compare with market prices generally for cars of the same make, model and year.

Car Make \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Model \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Year \_\_\_\_\_\_\_\_ Miles \_\_\_\_\_\_\_\_\_\_\_\_\_ Price \_\_$\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. Once you have found the automobile you want to purchase and determined how much you will be spending on the car, you need to calculate the monthly payments. There is a monthly payment calculator at<http://www.onlineloancalculator.org/> which can help you calculate the monthly payments according the amount you will be borrowing, the interest rate, and the number of years you plan to make payments. Calculate the monthly payment for your car for each option given below. Use 6% sales tax.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Loan** | **Interest Rate** | **Length in Years** | **Monthly Payment** | **Actual Cost of Vehicle after Loan is Paid** |
| 1 | 5% | 5 |  |  |
| 2 | 7.5% | 3 |  |  |
| 3 | 9.99% | 4.5 |  |  |
| 4 | 11.5% | 2.5 |  |  |
| 5 | 18% | 4 |  |  |

3. Make a decision as to what you think is the best option and be able to justify your conclusion. Think about what situations might make you decide not to take each of the following:

Lowest interest rate

Smallest monthly payment

Shortest time

Loan with lowest cost

4. Write up a final report including the following:

Part 1 - An ad for the car you chose to purchase (with a picture)

Part 2 – The completed table that shows the monthly payment and the total cost of the loan for each option. Also, copy and paste the loan summary and yearly amortization schedule from the loan calculator website.

Part 3 – Your explanations to #3. (they don’t have to be long, just explain each one)

Part 4 - Summary of which is the best loan option for you along with a justification of why.

Part 5 - Summary of what you learned from this project.

Your final report should be organized with each part labeled and it should be easy for me to read.

**Graphic Organizer for you your project:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***PART I:***   * ( Bank interest rate summary )  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  |  |  | | --- | --- | --- | --- | |  | FINANCIAL INSTITUTION | WEB ADDRESS | INTEREST RATE | | 1 |  |  |  | | 2 |  |  |  | | 3 |  |  |  |  |  |  |  | | --- | --- | --- | | **1.**  **Choose the bank which will give you the highest interest rate and write the mathematical model.** | **2.**  **How much money will you have in the bank in 7 years?** | **3. When will your money double?** | | 1. **Annually** 2. **Monthly** 3. **Quarterly** 4. **Daily** | 1. **Annually** 2. **Monthly** 3. **Quarterly** 4. **Daily** | 1. **Annually** 2. **Monthly** 3. **Quarterly** 4. **Daily** | | |
| ***PART II ( Car Payment / LOAN )***   * Car Features summary:  |  | | --- | | * Car Make - Year * Car Type - Miles * Car Model - Price $: * MPG |  * Advertisement of the car you chose to purchase ( Include pictures )  |  | | --- | |  |  * The Completed table that shows the monthly payment and the total cost of the loan for each options. (Don’t forget to add the loan summary from <http://www.onlineloancalculator.org/> )  |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Loan** | **Interest Rate** | **Length in Years** | **Monthly Payment** | **Actual Cost of Vehicle after Loan is Paid** | | 1 | 5% | 5 |  |  | | 2 | 7.5% | 3 |  |  | | 3 | 9.99% | 4.5 |  |  | | 4 | 11.5% | 2.5 |  |  | | 5 | 18% | 4 |  |  |  * Brief explanation for the each choice  |  | | --- | |  |  * Summary of the best loan option for you and why….  |  | | --- | |  |  * Detailed summary of the project and what you have learned from it.  |  | | --- | |  | |