1. This problem investigates the effects of time, rate, and amount invested on the Future Value of an investment.
   a) Suppose you invest $10,000 at 5.7% compounded monthly for 20 years.
      i) What is the Annual Percentage Yield (APY) of this investment? (Write your answer as a percentage and round it to two decimal places.)
      ii) What will be the value of the investment at the end of the 20 years?
   b) Suppose you double the rate of the investment in a) to 11.4% compounded monthly, leaving the amount and time as in a). What will be the value of your $10,000 investment at the end of the 20 years?
   c) Suppose instead you double the time of the investment in a) to 40 years, leaving the rate and amount of investment the same as in a). What will be the value of your $10,000 investment at the end of the 40 years?
   d) Which had the most effect on the value of your investment: doubling the rate or doubling the time? Back up your answer with the results of your calculations above.
   e) Again suppose you invest $10,000 at 5.7% compounded monthly. How long (in years and months) will it be until your investment is worth at least $100,000?

2. Jake wants to purchase a new SUV for cash. It currently costs $27,400, and the price is going up 3.7% each year.
   a) How much should Jake expect the new car to cost 4 years from now? Round your answer to the nearest hundred dollars.
   b) If Jake currently has $25,000 in savings, what interest rate would those savings need to earn for the next 4 years in order for his investment to provide enough money to pay cash for the car at the end of the 4 years? Round your answer to two decimal places when written as a percentage.

3. Sam is planning for his retirement. He is 30 years old and currently has $20,000 in savings for retirement.
   a) Sam feels he could live comfortably on $2500 per month if he retired today. Suppose inflation averages 3.4% per year until Sam retires at age 65. What monthly retirement amount at age 65 will have the same purchasing power as $2500 does today? Round your answer to the nearest hundred dollars.
   b) Most investment advisors say that in order to make your retirement account last throughout your retirement you should not withdraw more than 0.4% of the account each month. How big should Sam’s retirement account be so that 0.4% of it equals the monthly retirement amount you found in a)?
   c) What APY does Sam’s retirement savings account need to earn in order to grow from its current $20,000 value today (recall he is 30 years old) to the amount you found in b) that Sam will need at age 65?

Be sure to fill in and submit the Cover Sheet on the back with your project!
Your project report must be typed or printed via word processor. The body of the report should be written in complete sentences, augmented by calculations, charts and/or tables (these may be hand drawn). The report must contain a clear statement of each question as it is addressed, explain what your conclusions are, and the calculations made and reasoning used to reach those conclusions.