TVM Program: Loan and Annuity Calculator Problems PreCalculus

1. Calculate the future value of an account that has a present value of $2000 and deposits of $300 quarterly for five years. The interest is 4% and it is compounded quarterly.

2. Calculate the future value of an account that has a present value of $1000 and semiannual deposits of $500 for six years. The interest rate is 6.5% and it is compounded semiannually.

For the remaining problems, the P/Y and the C/Y should be set to 12 for monthly payments.

3. You took a loan out to buy an $18,500 car. The interest rate is 4.25% and it is a 5-year loan. What are your monthly payments?

4. You can afford a monthly car payment of $235 per month. If the bank is offering loans at 3.85% interest for 4 years, how much money can you borrow?

5. You borrow $32,000 to go to college. After you graduate, the interest rate is 2.4%. They give you 10 years to pay off the loan.
   a. Determine what your monthly payments would be.
   b. Determine how long it would take you to pay off the loan if you paid $50 extra each month.
   c. Calculate how much money you save by paying extra each month.

6. When you have a child, you want to start saving for her college education. If you save $100 per month for 18 years and the bank pays 2.5% interest on the savings, how much would she have when she goes to college?

7. You take an economics class in college and it gets you interested in index funds. You find a fund that typical earns 7.35%. If you invest $200 per month in this fund for 10 years, how much money will you have?

8. You want to be a millionaire by the time you are 50 years old. If you can earn an average of 11% on your investments, how much would you have to invest each month to reach your goal? Use your current age.

9. Your grandparents gave you a $25,000 annuity to pay for college and graduate school. The annuity has an interest rate of 6.25%. If you plan to spend 4 years in college and 2 years in graduate school, how much money can you withdraw from the annuity each month?

10. You want to have $250,000 in a retirement account 30 years from now.

    a. If you earn 6% interest compounded monthly for 30 years, how much do your payments need to be?
    b. Using the payment amount you found in part a, calculate how much of your own money you have to put into the account.
    c. Calculate the amount of interest you earned on the account.

11. You want to use your $250,000 retirement account starting at age 70. You want the money in the account to last for 15 years. Your account earns 6% interest compounded monthly.

    a. How much money can you withdraw each month?
    b. What is the total amount of money you will receive from this account?
    c. How much interest did you earn on this account?