Show all work

1. (12 pts) 5 years ago, you borrowed some money from Rob at a simple interest rate of 11.5%. If the total amount you now repay is $3,150, how much money did you originally borrow?

2. (12 pts) Parents of a college student want to set up an annuity that will pay $600 per month to the student for the next 4 years. Write the equation you would use to find out how much they should deposit now at 12% interest compounded monthly to establish this annuity. Simplify, but do not solve the equation.

3. (12 pts) You have saved $5,000 toward the purchase of a car costing $12,000. How long will the $5,000 have to be invested at 9.6% compounded monthly to grow to $12,000? Give your answer in months, rounded to the next higher month.

4. (12 pts) Rob deposits $200 each month into an account earning 10.2% compounded monthly. Write the equation you would solve to find out how much money Rob would have after 8 years. Simplify, but do not solve the equation.

5. A car costs $14,000. Rob pays 20% down and amortizes the rest with equal monthly payments over a 6 year period, paying 16.8% compounded monthly.

   a) (12 pts) Write the equation you would solve to find out how much Rob’s monthly payment would be. Simplify, but do not solve the equation.

   b) (10 pts) By solving the equation in (a), Rob finds that his monthly payment is $247.91. How much total interest would Rob pay over the 6 years?

6. (10 pts) What is the effective rate of interest for money invested at 8.7% compounded monthly? Round your answer to the nearest thousandth of a percent.

7. (12 pts) A company estimates it will need $54,000 in 6 years for a major purchase. If it establishes a sinking fund by making fixed quarterly payments into an account paying 11.6% compounded quarterly, how much should each payment be?

8. (15 pts) An ordinary annuity pays 8.4% compounded monthly. Rob will deposit $150 monthly for 25 years and then will make equal monthly withdrawals for the next 20 years, reducing the balance to zero. What will Rob’s monthly withdrawals be?