

## College Mathematics

### annuities and loans homework

Assume payments are made at the *end* of every month.

1. At 12% annual interest, compounded monthly, what is the future value of
  - \$50 per month for 10 years; for 20 years; for 30 years; for 40 years?
  - \$100 per month for 10 years; for 20 years; for 30 years; for 40 years?
  - \$200 per month for 10 years; for 20 years; for 30 years; for 40 years?
  - \$300 per month for 10 years; for 20 years; for 30 years; for 40 years?
  - \$500 per month for 10 years; for 20 years; for 30 years; for 40 years?
  
2. At 6% annual interest, compounded monthly, what is the future value of
  - \$50 per month for 10 years; for 20 years; for 30 years; for 40 years?
  - \$100 per month for 10 years; for 20 years; for 30 years; for 40 years?
  - \$200 per month for 10 years; for 20 years; for 30 years; for 40 years?
  - \$300 per month for 10 years; for 20 years; for 30 years; for 40 years?
  - \$500 per month for 10 years; for 20 years; for 30 years; for 40 years?
  
3. What monthly payment should you make to an annuity growing 8.4% annually, compounded monthly, in order to have \$1,000,000 in 30 years?
  
4. What monthly payment should you make to an annuity growing 10.5% annually, compounded monthly, in order to have \$2,000,000 in 40 years?
  
5. What monthly payment must you make to pay off a \$16,000 loan at 5.4% interest, compounded monthly, in 3 years?
  
6. What monthly payment must you make to pay off a \$125,000 loan at 6% interest, compounded monthly, in 30 years?
  
7. Suppose you want to borrow money to buy a car and have your monthly payment be \$250. If you qualify for 4.8% interest, compounded monthly, and want to pay off the loan in 5 years, how big a loan can you afford?
  
8. Suppose you want to borrow money to buy a house and have your monthly payment be \$800. If you qualify for 5.4% interest, compounded monthly, and want to pay off the loan in 30 years, how big a loan can you afford?