

## Chapter 4: Additional Problems

1. Assume a rich relative has just promised to give you money once a year. The first payment will occur one year and four months from today and your final payment will occur six years and four months from today. The first payment will equal \$1000 and the payments will grow by 2% each. If the interest rate is 5.5% per year, what amount of money today would be equivalent to this gift you have received? Note: you don't have to solve anything, just set up all of the equations and fill in all of the numbers that would be required to solve the problem.
2. You are considering whether or not to buy stock in a firm that will pay a dividend of \$1.50 nine months from today. After this initial dividend, the firm will continue to pay dividends once a year forever and will increase its dividend payments by 1% per year. What is the most you would be willing to pay today for the stock if you need to earn a return of 6% per year on the stock? Note: you don't have to solve anything, just set up all of the equations and fill in all of the numbers that would be required to solve the problem.
3. You have sold your old car to your brother. Your brother plans to make annual payments to you with the first payment coming seven months from today (after he has made money from a summer job) and the final payment coming seven years and seven months from today. The first payment will equal \$500 and the payments will grow by 1.5% each. If you invest all of the payments in a savings account that earns an annual interest rate of 4.5%, how much will you have in your account eight years from today? Note: you don't have to solve anything, just set up all of the equations and fill in all of the numbers that would be required to solve the problem.
4. Assume you have just deposited \$2100 in a bank account. Five months from today, you plan to make the first of a series of annual withdrawals from the account. Your first withdrawal will equal \$250, will continue through nine years and five months from today, and will grow by 3% each.
  - a. Set up the calculations to determine the interest rate on your account. Note: You do not need to solve anything. Just set up all equations, plug in all the numbers you would need to solve the equations, and indicate which variable you are solving for (in each equation).
  - b. Assume that just before you make your deposit, the bank raises the interest rate on the account. Will you be able to increase or must you reduce your first withdrawal. Note: A one-word answer is sufficient!
  - c. Assume you decide to make your final withdrawal eight years and five months from today instead of nine years and five months from today. Will you be able to increase or must you reduce your first withdrawal (relative to your answer in b). Hint: This will reduce the number of withdrawals you make.