Activity 6

Time Value of Money: Perpetuities & Annuities

Group:

Section:

1. Citigroup preferred stock currently trades at $28.43 and its dividend is $2 per year. What is the required rate of return (discount rate) of the marginal investor in it (i.e. the person who is just willing to pay $28.43 for the preferred stock)?

2. You are buying a house and need to borrow $150,000 (mortgage) from the bank to pay for it. The terms of the mortgage are as follows: 30 years, annual payments (with the first one occurring one year from today), an interest rate of 5% per year, nothing owed (no "balloon") at the end. What is the annual payment that the bank expects you to pay them (which amortizes the loan)?

3. You win the lottery and are *told* that you won $20 million. You actually won $1 million every year for the next 20 years (with the first payment 1 year from today). (a) If your required rate of return is 10%, how much would you accept today in exchange for those 20 payments? (b) If the first payment were to be made *today*, what would you accept today in exchange for all 20 payments? Assume a 10% required return.

4. Planning for your retirement, you decide you need to have $3 million, 30 years from today. You plan to make equal yearly payments beginning one year from today into a retirement account that will earn 14% per year. The last payment is made 30 years from today. What is the payment size? What will be the payment if you start making payments 12 years from today?