1. Now that you are an investment wizard, you decide to start saving for retirement. Assume the current interest rate is 4% (approximately what bankrate.com gives for a 1 year or longer CD). Since you are a poor college student, you will begin by making $50 monthly contributions to the account. After graduation, you get a job paying $40,000 (the median U.S. household income, according to the last census). Consider the following scenarios upon graduation:

   a. You are saddled with debt from your college days, so you can only continue with $50 monthly contributions for now. In five years, you have repaid the debt and increase your contribution to $500 a month (approximately 15% of your income) for the next ten years.

   b. You graduate debt-free! You are able to invest $300 a month (approximately 10%) into your retirement account for the next ten years.

After you have made periodic contributions, you allow the accumulated cash to continue to earn interest. How much money do you contribute in each scenario? How much will you have at retirement (at 65) under the two scenarios? If you wish to live off the interest, what would your monthly income be under each scenario?

2. Suppose you know that you can afford $1000 a month for a house payment (approximately 1/3 of the median U.S. household income). The current APR for a 30 year, fixed-rate mortgage is 5.9% (bankrate.com). How much of a loan can you afford? If you intend to make a 20% down-payment on a house (a fairly standard amount), approximately what listing price can you afford? How much money do you pay in interest over 30 years? Suppose you borrow the same amount, but pay it off in 20 years (by increasing your monthly payment); how much interest do you pay financing over 20 years?

3. The current PowerBall jackpot is $47 million (according to powerball.com). A winner may choose to take jackpot as a 30 year annuity (we will assume equal yearly payments of $1.57 million) or as a lump-sum of $22.4 million. Since the good people at PowerBall guarantee the annuity, they invest in a low-risk account paying around 4%. What is the present value of the annuity? If you take the lump-sum payment and invest more aggressively (in stocks), you hope to make 18% compounded monthly (the DOW average for 1990–1999); what is the future value?

4. The current cost to attend UE is approximately $31,100 per year. Suppose that after scholarships, grants, work-study and your family’s contribution, you still need to borrow $15,000 per year to pay you bill. Stafford loans come in two flavors: subsidized, where the federal government pays the interest while you are in school, and unsubsidized, where the interest accrues while you are in school. According to staffordloan.com the current interest rates are 6.5% while you are in school and 7.1% during the repayment period (after you leave school). If $5,000 of your loan is subsidized and $10,000 unsubsidized, how much will you owe upon graduation? Stafford loans are paid off over ten years; what is your monthly payment?