1. Suppose we deposit $150 into a bank account. How many years will it take for the value of the account to double under each of the following interest schemes:

(a) 8.5% compounded annually
(b) 7.5% compounded semi-annually
(c) 7% compounded monthly
(d) 6.75% compounded continuously

Does the amount of money originally deposited into the account affect the doubling time?

2. First determine how much $1000 compounded annually at 9% will grow to in 12 years. Once you’ve done this, determine the rate of interest that would be necessary to grow the same $1000 to the same final amount in the same 12 years, but assuming the money is compounded continuously instead of just annually.

3. A corporate bond has a redemption value of $100,000, but does not come due until after 20 years. Also, at the end of every second year, starting with the end of year 2 and ending at the end of year 20, the bond makes coupon payments of $5000. Assuming that the market rate for money is 4.5% compounded annually, what is the value of the bond right now?

4. A young couple decides to take out a 30-year mortgage on a home they want to buy for $225,000. The lending company requires that the couple makes a 5% down payment, and the company will lend them the rest. They charge 3% interest, compounded monthly. What will the couple’s monthly mortgage payment have to be?

5. (a) Suppose that on a girl’s 10th birthday her parents decide to open a college savings fund by depositing $A$ dollars into an account. They deposit the same $A$ dollars on every birthday up to and including her 18th, at which time they want the value of the fund to be $75,000. If the money in the account compounds continuously at 7%, determine $A$. Once you’ve done this, figure out what percentage of the $75,000 was deposited by the parents, and what percent comes from the interest.

(b) Do part (a) again, including the percentage calculations, but assume the parents begin depositing money on the girl’s 4th birthday.