You will not be allowed to use any type of calculator whatsoever, you will not be allowed to have any other notes, the test will be closed book, and there is no escape. The actual test will be graded in red ink! There will be no mercy for the weak. Mathematics is cumulative. Deal with it. What you don’t know will hurt you. You need to be able to make simple and/or standard simplifications. In order to get credit or partial credit, your work must make sense.

I strongly suggest that you take this practice test under the conditions of the actual test! (The only exception being that since this test is longer than the actual test, it makes sense for you to take it in more than one sitting.)

1. Assume $1000 is deposited on 1/1/07 to an account with a nominal rate of 8% interest compounded quarterly. Write down an expression for how much it will be on 1/1/27. How much would it be if the interest was compounded continuously?

2. Assume that you want to have $10,000, ten years from now. How much would you have to invest immediately (one lump sum) if you could get 12% nominal interest compounded monthly? What if it was only compounded quarterly? What if it is compounded continuously?

3. Work out the effective annual rate of interest for each of the rates in the two preceding problems.

4. Now suppose that you are saving up for retirement by depositing $100 each month starting 1/1/07 into an investment which will return 8% interest compounded semiannually. If these deposits continue until 1/1/57, when you retire, then write down an expression for how much you will have then. Be sure to simplify this expression. What if the interest is compounded continuously?

5. Now redo the previous problem, but assume that your last deposit is on 1/1/47. What will you have ten years later on 1/1/57 when you retire? Simplify your expression!
6. Here are data for tests in three different sections.

   Section 1: 80, 79, 78, 77, 76, 75, 40.
   Section 2: 79, 78, 77, 76, 75, 74, 73.
   Section 3: 99, 98, 97, 80, 15, 14, 13.

   Rank the sections in terms of mean, median, and standard deviation. (You don’t need to compute these in order to rank them!)

7. Here are data for student’s homework averages and their test averages for three different sections.

   Sec 1: (40, 80), (39, 79), (39, 78), (38, 77), (38, 76), (38, 75), (20, 40).
   Sec 2: (37, 31), (42, 47), (58, 51), (62, 69), (78, 71), (83, 89), (99, 93).
   Sec 3: (55, 99), (53, 98), (54, 97), (54, 80), (56, 15), (55, 14), (56, 13).

   For each of the first two sections and to the nearest whole number, what will the slope of the least squares regression line be? Rank the sections in terms of the correlation between the homework average and the test average.

8. True or False: If Data Set A has a correlation of .9, and Data Set B has a correlation of .3, then the slope of the least squares regression line for Data Set A will be larger than the slope of the least squares regression line for Data Set B.

9. Find a 95% confidence interval for the percentage of voters that prefer Jane to John for an election to the senate assuming that 1000 voters are found at random, and 57% of them favor Jane. From this data, can you determine for sure who will win the election?