Math 163B **Winter 2003**

Study guide for Test 1.

The first test is in class on Thursday 23 January. This guide is to tell you what to expect.

My philosophy in making a test is that 60% should be "easy" problems. They will be just like the routine homework problems and not have any tricks. The next 30% will be "medium" problems. They will be like the harder homework problems or may require a trick. The last 10% will be a "hard" problem that tests for deeper understanding. Anything is fair game for the hard problem, but the others will stick closely to the book.

Sample Test

1. Solve for x. Show your work.
   (a) $4^{x-6} = 16^{2x+3}$.
   (b) $e^{2x} = 3.12$
   (c) $\log(x-5) + \log(x-2) = 1$
2. Use the properties of logarithms to simplify as much as possible.
   (a) $\log_3(\frac{\sqrt{a}}{9b^3})$
   (b) $\log_{\frac{1}{2}} 8$
3. A person invests \$5,000 in an account that pays interest at an annual rate of 4.15%. How much interest will this money earn in four years if the interest is compounded
   (a) monthly?
   (b) continuously?
4. A couple wants to have \$20,000 in four years for a down payment on a new home. How much should they deposit today, at 6% interest compounded quarterly, to have the required amount in four years?
5. It takes 1250 years for 5 grams of a radioactive substance to reduce to 1 gram.
   (a) Find its half-life.
   (b) How much of this substance is left after 100 years?
6. Graph $2^{x-2} - 1$ and $\log_2(x+1) + 2$. How are they related?