Test 1 Study Guide

To review for Test 1, you should know the things mentioned in the chapter summary and key terms for chapter 3 (p. 204) and chapter 4 (pp. 263–264). The problems, unless noted, refer to the chapter 3 and chapter 4 review exercises at the end of the chapter.

You should also know how to work problems involving:

- Limits (one-sided and two-sided limits, limits as \( x \to \pm \infty \) and limits that approach \( \pm \infty \), calculating vertical and horizontal asymptotes, limits of rational functions). See chapter 3 problems 5–22.

- Continuity (finding and classifying discontinuities, redefining a function so the function is continuous). See chapter 3 problems 3, 23–24, 25–30, 31–32.

- Computing average rates of change. See chapter 3 problems 35–38.

- Definition of a derivative (computing derivatives using the definition, determining points where the function is not differentiable, understanding what the definition means, relationship between continuity and differentiability). See chapter 3 problems 2, 39–40.

- Graphing the derivative of a function. See chapter 3 problems 43–44.

- Derivatives (computing derivatives using the rules listed in the chapter 4 summary, finding equations of tangent lines, finding where the tangent line has a certain slope, understanding what a derivative means, computing derivatives using implicit differentiation, computing derivatives using logarithmic differentiation). See chapter 4 problems 1–38, 40–49, 69. Also p. 376, 10–16.

- Marginal analysis (what the marginal cost, revenue, profit functions are). See chapter 3 problem 46 and chapter 4 60(a-d).

Some final hints: Much of the test will test your ability to quickly and accurately compute derivatives. Please make sure you are comfortable with this. I will assume that you know how to work problems like the problems in quizzes 3 and 4 (the quizzes over the test material).
The test will be in-class on Monday, 26 Sep 2005. No books, notes, or calculators will be allowed. Friday's class will be devoted to reviewing material and answering questions you may have. Please be prepared with specific questions over material we have covered. Also, I will have my office hour Friday for an hour after class in the math lab.