- Homework B will be due on Wednesday, 36 January 2003. For this homework, I would like to you to 1. State the internediate value theorem. 2. Use the intermediate value theorem to show that $x^4 - 7x^2 + 10 = 0$ has a root.

  Please write your answers in complete sentences.

- On Monday, 10 February 2003, we will move to our new classroom, White Hall Classroom Building 212. Lectures will be in this room for the rest of the semester. Recitations will not move.

- Our first exam will be on Tuesday, 11 February 2003. The exam will be from 7:30-9:30 pm in the White Hall Classroom Building 106. All of our exams will be in this room.

- The error of the week: Abuse of the equal sign.

  Example:
  $$\lim_{x \to 1} \frac{x^2 - 1}{x - 1} = x + 1.$$

  The equality is not correct. The result of the limit is a number, while the expression $x + 1$ usually represents a function.

- The quiz on Thursday, 6 February 2003 will be cover section 2.1 of the text. Please know the definition of the derivative and be able to compute derivatives using the definition.

- Please keep up with the homework assignments. I will use these assignments and my lectures as I try to think of examination problems.

- A review sheet will be available on Wednesday, 5 March 2003, to help you prepare for the exam.

- There will be two interesting lectures sponsored by the the Departments of Chemistry, Mathematics, Physics and ΦBK. Please consider attending, if the lecture does not conflict with your calculus reecitation.

  Free Public Lecture, Chaos, a New Science, Thursday, February 6, 2003, Room 155, Chemistry-Physics Building, Refreshments at 3:30 PM in Room CP 179

  This is a general pictorial and non-mathematical introduction to an ongoing scientific revolution–of interest to anyone who has wondered why the weather is not necessarily predictable, or why snowflakes and fingerprints are thought to be in a "no-two-alike" category

  Colloquium, Friday, February 7: Quantum Mechanics in the Large: The 2001 Nobel Prizes, Friday, February 7, 4:00 PM, Room 155, Chemistry-Physics Building, Refreshments at 3:30 PM in Room CP 179

  In the 1920's Bose and Einstein suggested that a novel type of particle, which we now call a Boson, might have unusual properties–one of these being the possibility that many Bosons

might occupy a single quantum state. Einstein suggested that gases of atoms might actually do this, and the 2001 Nobel Prizes in Physics reflect the recent success in actually carrying out the "Bose-Einstein Condensation" in the laboratory. In this introduction to "coherent matter waves," some history and current state-of-the-art experiments are introduced. It is seen that "quantum mechanics in the large" is in the here and now.

- Below are a few puzzles for your amusement.

    - Can you find a function which is continuous, but not differentiable?
    - Suppose f is differentiable at 0. Show that the limit

    $$\lim_{h \to 0} \frac{f(h) - f(-h)}{h}$$

    exists and find its value.
    If the above limit exists, is the function differentiable at 0?