We have the second hour exam in CB118 from 7:30pm-9:30pm on Tuesday, 16 October 2001. Below are a few problems to help you review for the exam. In addition to what is listed below, students should be familiar with the correct solutions to all homework that was collected and with material presented in lecture.

I have decided to include the material from section 2.10, Newton's method on the second test. Thus, you should be familiar with the problems listed for section 2.10 in the third unit of the course.

- Please know the statements and proofs of the product rule and quotient rule. The statements and proofs in the textbook are a good model to follow. The product and quotient rules are not just formulae. You must state the the assumptions that are needed in order to conclude that the formula is true. In your proof, you should clearly indicate how these assumptions are used.

- Please be able to use all the formulae in the table on page 119 quickly and correctly.

- §2.2 #1–34, 43, 45, 57, 71.

- §2.3 # 5, 7

- Please know the basic limits,

$$\lim_{\theta \to 0} \frac{\sin \theta}{\theta} = 1 \qquad \text{and} \qquad \lim_{\theta \to 0} \frac{1 - \cos \theta}{\theta} = 0.$$

  Please be able to use these limits to evaluate more interesting limits as in the text. You will not be examined on the proof of the limit of $\sin \theta / \theta$. But you will be a better person if you study the proof presented in class.

- Please memorize the derivatives of sin, cos, sec and tan.

- Please be able to derive the derivatives of tan, cot, sec and csc from the derivatives of sin and cos by using the quotient rule.

- §2.4 #11, 13, 21, 23, 25, 37, 43, 45, 47.

- Please be able to use the chain rule quickly and accurately.

- §2.5 Try problems # 37, 39, 41, 43, 45, 47. If these do not go well, please work #1–47. # 51, 67, 69.

- Please be able to find tangent lines to curves defined by an equation.

- §2.6 # 5, 7, 9, 11, 21, 43.

- §2.7 #1, 5, 27, 29, 43.

- Please know the basic facts from the geometry of triangles that are needed to solve related rate problems.

- §2.8 #9, 11, 13, 23, 31.

- §2.9 # 31, 33, 45, 47, 54.

- In section 2.9, we only discussed linear and quadratic approximations. You will not be examined on differentials.

- Please be able to derive the iterative formula in Newton's method. Please be able to carry out Newton's method graphically and numerically.

- §2.10 #1, 13, 23, 25.