Calculus I MA113:10-12

The final exam will be from 6-8pm on Thursday, 8 May 2003 in White Hall Classroom Building, room 106.

I will hold a session to answer questions in preparation for the final at 10am on Wednesday, 7 May 2003 in the Math House on Columbia Avenue across from Young Library. Approximately half of the exam will be over material from the first three exams and half of the exam will cover new material from sections 4.2–4.5 and 5.1–5.2. The questions on the exam that do not cover new material will be taken from the questions on the first three exams. I will change the details of the question such as the numbers and functions. As always, you should be familiar with the examples presented in lecture and the homework assignments on the syllabus. It is my expectation that you work every problem listed on the syllabus.

- Please review the related rate problems from section 2.8.
- Please review the applied max/min problems from section 3.8.
- You will, of course, be expected to compute derivatives and limits.
- From sections 4.2 and 4.3, you should be find right or left Riemann sums with specified partitions. Please be able to find areas and definite integrals "the hard way" as in Theorem (5), p. 276. You will be given the formulae for $\sum_{k=1}^{n} k^{j}$ if they are needed.

Please know the definition of the definite integral.

- §4.2 #3, 9,13, 23.
- §4.3 #17, 25, 33, 35, 55.
- Please know the statements of both parts of the Fundamental Theorem of Calculus.
- §4.4 #7, 9, 17, 41, 63, 82
- Be able to carry out simple substitutions in definite and indefinite integrals. This is a basic skill that will be needed by students who hope to move on to MA114.
- §4.5 #11, 47, 63.
- Finding areas and volumes. Please be able to explain how one slices up a region, find the area of a typical slice, write a Riemann sum that approximates the area and then take a limit to express the area as an integral. A similar argument will be needed to explain how to find volumes.

Please be able to find the volume obtained when we rotate a given region about lines parallel to the axes (such x = 2 or y = -1).

Please be able to find the volumes of familiar shapes such as right circular cones and spheres.

- §5.1 #11, 17, 19, 25, 29.
- §5.2 #5, 7, 13, 33, 49.