

The final exam will be from 6-8pm on Thursday, 13 December 2001 in Memorial Hall 103. This exam will concentrate on the new material from sections 4.2–4.5 and 5.1–5.3. There will be a work session for students studying for the final. This will be in the Math House from 2:30 to 4:00pm on Wednesday, 12 December 2001. Please come to this session armed with questions.

As always, you should be familiar with the examples presented in lecture and the homework assignments. You will find additional problems from the assignments which you may want to concentrate on for your review.

- You will not be asked to state theorems or provide proofs from Chapters 1–3 on the exam.
- 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 able to 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 #1, 13, 23.
- §4.3 #1, 3, 15, 17, 23, 25, 27, 33, 35.
- Please know the statements of both parts of the Fundamental Theorem of Calculus.
- §4.4 #5, 7, 9, 17, 19, 21, 23, 25, 27, 29, 31, 71.
- 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 #1, 3, 5, 7, 9, 11, 13, 15, 39, 41, 43, 55.
- 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 volumes using both disks and shells.

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, 15, 19, 49.
- §5.3 #1, 9, 17, 19, 25, 33.