Calculus I Spring 2008 Final Exam Notes

Your final exam will be held Thursday, May 8, 2008 from 12:00 noon to 1:50 pm in McLaury 205. No books or notes will be allowed. The following notes should serve as a guide for what to expect on the exam. First, there will be a short set of questions for you to answer with the aid of your COMPUTER. These will make use of one or both of the tools we used during the semester, Maple and Excel.

The second part of the test must be done without a computer. On this section, you will see five multiple choice differentiation questions and five multiple choice integration questions much like the ones you saw during the semester. These questions cover material from sections 2.2, 2.3, and 2.4 (differentiation) and 4.1 and 4.5 (integration). The remainder of the second part of the test will be much like the tests you took in class during the semester. It will consist of questions from the following text sections. Text sections not listed on this review sheet will not be included on the exam.

1.3-1.5 You should be able to compute the basic limits from these sections. Note also the limits in section 3.5.

2.xx Throughout Chapter 2 (and in other chapters!) you are expected to interpret the derivative. Geometrically, the derivative represents the slope of the tangent line to a curve at a given point. In applications, the derivative represents the rate of change of a function with respect to its variable. In particular, know how derivatives are related to the position, velocity, and acceleration of an object.

3.3-3.6 You will be asked questions about the graph of a function. You will be asked to identify relative maxima and minima, inflection points, intervals of increasing or decreasing, intervals of concave up or down, and any asymptotes. Expect a problem similar to the one on Exam 2.

3.7 Be able to solve applied maximum/minimum problems similar to those in this section. Be able to verify that your answer is a maximum (or minimum).

4.1 Be able to find velocity and position from acceleration using antiderivatives. Problems 67-75 odd are typical.

4.4 Understand the Fundamental Theorem of Calculus and be able to use it to compute definite integrals, including those involving substitutions.

4.6 Be able to approximate the value of a definite integral using using the Trapezoidal Rule or Simpson’s Rule. You should be comfortable doing this in Excel. Also, be able to find a bound for the error in your approximation. I will provide any necessary formulas for Trapezoidal, Simpson, and the error bounds.

Chapter 7 was not covered on any of your earlier exams, so you are certain to see one or more questions from this material.

7.1 Be able to compute the area between curves. This includes finding points of intersection of two curves.

7.2, 7.3 Be able to find the volume of a solid formed by revolving a region about a line in the xy-plane. Understand how to choose the best method (disks or shells) for a given problem. These questions will be typical of the assigned exercises in these sections. It is possible (likely?) that I will ask you to set up, but not evaluate the appropriate integrals.