

Winter 2005 Math 163A Calculus section 01 (Barsamian) Final Exam Information

The final exam is Friday, March 18 from 8:10am - 10:00am. (Start and stop times are firm.)

The ten topics for the final exam are

- 1) Transformations of a graph
- 2) Graphical differentiation
- 3) Sign Chart
- 4) The line tangent to the graph of a given function at a given point
- 5) Graphing using the 10-step method
- 6) Simple partial derivative done two ways:
 - a) Using the definition of the partial derivative (using the limit)
 - b) Using derivative rules
- 7) Fill in the linearity & power rule steps in a partial derivative problem
- 8) Harder partial derivative using the derivative rules
- 9) Finding max/min/saddle points in the graph of a function of two variables using the “D-test”
- 10) A basic maximum profit problem in a problem involving 2 variables, solved three ways:
 - a) Using methods of Chapter 2 (eliminate one variable, then solve the 1-variable problem without calculus)
 - b) Using methods of Chapter 6 (eliminate one variable, then solve the 1-variable problem using calculus)
 - c) Using methods of Chapter 9 (solve the 2-variable problem using method of Lagrange Multipliers)

Remarks on the list of topics

- Notice that topics 1, 2, 3, 4, 5, 10a, 10b are “old”. That is, they were the subject of homework sets 1- 9 and the three midterm exams.
- Topics 6, 7, 8, 9, and 10c are “new”. That is, they use concepts from Chapter 9 and involve functions of two or more variables. This is material covered after the last midterm exam, the subject of homework sets 10 and 11.
- Notice, however, that topics 6, 7, and 8 are very similar to “old” topics involving functions of only one variable. The analogous 1-variable topics were discussed in homework sets 4, 5, and 6, and were included in midterm 2.
- I might not be able to get all ten of these topics on the exam. Some of the problems will have to be easy.

I will give you the following materials

- Ruler
- Table of equivalent statements
- List of derivative rules (linearity, power, product, quotient, chain)
- 10-step method for graphing with calculus
- 10-step method for the “D-test”
- 10-step method for the method of Lagrange Multipliers

You may use calculators, although the problems can be solved without them.