Fall 2009

MA 22400 – Topics List

Functions of One Variable

I. Evaluating improper integrals
- Given the improper integral

II. Numerical integration using the trapezoidal rule
- Both given the definite integral and n, and in word problems

Functions of Two Variables

I. Introduction to functions of two variables
- Evaluating given a point
- Finding the domain
- Sketching level curves

II. Partial derivatives
- Finding first order partial derivatives
- Evaluating a partial derivative at a given point
- Finding second order partial derivatives
- Finding the derivative using the chain rule

III. Applications of partial derivatives
- Determining substitute and complementary commodities
- Finding the rate of change in word problems
- Using marginal analysis to estimate the change in a function
- Using incremental approximation to estimate the change in a function (note – the text instructions in these problems says to "use calculus to estimate" the change)

IV. Optimizing functions of two variables
- Finding and classifying critical points given a function and in word problems

V. Least squares line
- Both given points and in word problems

VI. Method of Lagrange multipliers
- Given a function and a constraint