Exam #3 objectives

For Exam #3, a well-prepared student should be able to

- determine the equation of a tangent plane at a given point for a given function of two variables
- determine the linearization based at a given point for a given function of two or more variables
- use a linearization to approximate outputs of a function for inputs near a given input
- determine an upper bound on the error in using a linearization as approximation for a function
- compute and use a relation among differentials given a relation among two or more variables
- determine how percentage changes are related for two or more variables with a given relationship
- find and classify (as local minimizer, local maximizer, or neither) all critical points for a given function on a given domain
- find the global minimum and global maximum for a given function on a given domain
- solve a given applied optimization problem
- solve a given constrained optimization problem using a substitution strategy or the method of Lagrange multipliers
- state and understand Fubini's Theorem
- state and use basic properties of double integrals
- set up an iterated integral (in a chosen or specified coordinate system) equal to a double integral for a given function and given domain in the plane
- evaluate a given iterated integral
- construct and evaluate an integral to compute the total for some quantity given a region and a density for that quantity