Lecture 10: Optimization problems

Math 195 Section 91

Monday July 13, 2009

Goal: 15.7 and 15.8
Next midterm: orally on Friday. I'll send an email with signups.

1 Extrema

define global min, global max
define local min, local max
theorem re continuous image of closed, bounded sets.
example: $f(x, y) = x^2 + y^2$.
if local extrema, then derivative vanishes
critical point: partials vanish, or partial dne.
second derivative test
procedure: find critical points, find boundary extrema, find largest and smallest.

2 Lagrange multipliers

find extrema with a constraint
intuitive argument: curves on constraint
classic problem: biggest box (without a lid) with 12 square units of cardboard.