Assignment 13 (10/27)

Subhadip Chowdhury

This homework is due at the beginning of class on Friday 10/20. *You may cite results from class as appropriate. Unless otherwise stated, you must provide a complete explanation for your solutions, not simply an answer. You are encouraged to work together on these problems, but you must write up your solutions independently.*

You are encouraged to think about the problems marked with a (⋆) *if you have time, but you don't need to hand them in.*

Remember that you can always use the result of the previous assignment problems without proof to solve the new assignment problems.

Problem 0⋆

Over this week we will be covering chapter 14. Try to read the corresponding sections from book everyday after class. Once you have solved a homework problem, look up the nearby exercises to understand how else a similar problem could be formulated.

There will be a quiz on Monday on section 14.7 and 14.8.

Problem $\epsilon\star$

We employ the following strategy to find the absolute extremum of a function $f(x,y,z)$ on its domain, that we assume to be a closed bounded set given of the form $g(x,y,z) \leq k$.

Step 1. Find all the local extrema in the interior of the domain, i.e. check the critical points that satisfy $g(x,y,z) < k$.

Step 2. Find the other critical points on the boundary $g(x,y,z) = k$ using Lagrange multiplier.

Then over all of these local extrema, find the largest (resp. smallest) to get the global extrema.

Problem 1

Problems 14.7.$(1,3,4,7,14,15,60)$.

Problem 2

Problems 14.8.$(21,32,35,48)$.