Assignment 8 (10/11)

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 ($\star$) *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$\star$

Over the third and fourth week we will be covering chapter 14. Try to read the corresponding sections from book everyday after class.

Problem 1

The linearization $L(x, y)$ of a function $f(x, y)$ is the function

$$L(x, y) = f(x_0, y_0) + \frac{\partial f}{\partial x}\bigg|_{(x_0,y_0)} (x - x_0) + \frac{\partial f}{\partial y}\bigg|_{(x_0,y_0)} (y - y_0)$$

Note that this is essentially the equation of the tangent plane with the z value treated as a function (the height function).

Problems 14.4.$(5, 11, 15)$.

Problem 2

Problems 14.5.$(3, 5, 11, 35, 39, 47, 58\star)$.