

Class 29: *Monday, November 14*

Optimization

Reading: *Smith & Minton* Section 3.7.

Optimization – finding maximum and minimum values of a function as well as where these occur – is one of the most important problems in applied sciences and in mathematics itself. During this class as well as the next, we will use first and second derivatives to classify both local and global maxima and minima. One is often interested in finding *global* maxima or minima over an open or closed interval. Maxima and minima occur at critical values of the function. These values include zeros of the first derivative, endpoints of the domain over which the function is defined as well as points within the domain where the function (or its derivative) is discontinuous.

Homework 12: *Smith & Minton* Section 3.7: 6, 23, 26, 31, 32, 33, 41; Section 3.6: 31; Chapter Review (pp. 319-320): 46. **Bonus: Chapter Review: 28**

Lab: *Monday, November 14 and Tuesday, November 15.*

Visualization of Multivariable Functions

Quiz 10 given in Lab

Class 30: *Wednesday, November 16*

Optimization Continued

Please refer to Class 29 for a description as well as the reading and homework.

Class 31: *Friday, November 18*

Multivariable Functions: Vertical Slices

Most optimization problems involve functions of several variables. To begin to get a handle on functions of two variables, we will look at “vertical slices” of them. Setting one of the variables to a fixed value, we have a function of the one remaining variable. We will refer to this single-variable function as a “vertical slice” of the original two-variable function. The derivative of a vertical slice is referred to as a *partial derivative* of the function of two variables. As we will see in the coming weeks, partial derivatives are useful for locating extreme points of a function of two variables.

Homework 12: Handout given in class.

Take Home Quiz handed out in class

Homework 11 due in the Math 114 Course Box by 5 pm