

Calculus 120, Chapter 7 Summary ~ things you should know

notes by Tim Pilachowski

Important concepts:

functions of multiple variables

partial derivatives, second partial derivatives, and mixed partial derivatives

relative maxima and minima of functions of more than one variable

first and second derivative tests for functions of more than one variable

Lagrange multipliers

least-squares method

Be able to:

evaluate a function of more than one variable, given the function and values

formulate the equation for a function of multiple variables in a given application

derive the level curves for given values of z in a function $f(x, y)$

find the equation for all partial derivatives, second partial derivatives, and mixed partial derivatives of a given function

evaluate first- and second-order partial derivatives at specified values

use first derivative test to identify possible relative maxima and minima

use second derivative test to determine whether points are relative maxima, relative minima, or neither

use Lagrange multiplier to find the location of a maximum or minimum of a given objective function subject to a given constraint

use method of least squares to find the linear best-fit equation for a given set of points

Review exercises from the text (13th edition):

Chapter 7 Review of Fundamental Concepts, 1 – 3, 5– 10

Chapter 7 Supplementary Exercises, p. 1 – 33 (answers to odd-numbered problems are in the back)