

Math 303, Fall 2008
Assignment for Sep. 26 - Oct. 15

Reading Assignment: Read pages 151-179 of the textbook (Riley, Hobson, & Bence, 3rd Edition)

Homework 2 (Due on Thursday, October 16, 14:00): Solve Problems 5.3, 5.5, 5.9, 5.15, 5.32 on pages 180-184 of the textbook and the following problems.

1. Use the method of lagrange multipliers to find the volume of the largest rectangular parallelepiped with faces parallel to x -, y -, and z -axes that is inscribed in the ellipsoid defined by

$$\left(\frac{x}{a}\right)^2 + \left(\frac{y}{b}\right)^2 + \left(\frac{z}{c}\right)^2 = 1,$$

where $a, b, c \in \mathbb{R}^+$.

2. Find the point(s) on the plane defined by $2x + 3y + z = 11$ for which $4x^2 + y^2 + z^2$ has a minimum value.
3. Find the shortest distance from the origin to the line of intersection of the planes defined by $2x + y - z = 1$ and $x - y + z = 2$.