MATH 524 University of South Carolina
D. Meade Fall 1995

Homework Problems for Chapter 2
Convex Sets and Convex Functions

Section	Page	Problems
2.1	77	# 11abc
2.3	77	# 1abc, 2ac, 3, 7, 9, 11f, 21
2.4	77	# 8, 15abc, 27
2.5	77	# 15de, 16a, 17a, 26

Notes

- The main topic in Chapter 2 is the same as in Chapter 1 – finding the maximizers and minimizers of a function. The theory developed in Chapter 1 is complete, but the implementation of these results can be very difficult – think about testing a Hessian matrix for positive definiteness when the principal sub-minor method does not apply.
- In Chapter 2 we will learn some additional techniques for answering this type of question. The key will be develop some techniques for working with *convex functions*.
- This study begins in Section 2.1 with an introduction to convex sets. Convex functions are introduced in Section 2.3. It will be important for us to be able to develop both a geometric and an algebraic understanding of convex functions. The new ideas will be applied in Sections 2.4 and 2.5. We will omit Sections 2.2 and 2.6.
- Homework problems will be collected each Monday. In general, problems for each section are due on the first Monday following their discussion in class.
- Do not wait until the last minute to look at the problems. In fact, I suggest that you look at the problems *in advance* of our discussion of the material in class.
- I have tried to keep the number of problems reasonable while still providing ample opportunity for you to obtain some experience and understanding of the material. Some of these problems will require some thought. You should expect that some parts of them do not make sense the first time you read them. However, as you re-read the problem, and the text, you should find that the questions start to become clearer.
- I expect you to come to me for help whenever it's needed. I believe it is very important (for this course) that you successfully work all these problems. My e-mail address is `meade@math.sc.edu`; my office phone is x6183.