Information Sheet

Math 336, Section 1, Spring 1998

Instructor:

Prof. John Cao, Room 221 CCMB, 631-8847 (office), 272- 4296 (home).

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Textbook:

M. H. Protter and C. B. Morrey: *"A first course in real analysis"*, second edition, Springer-Verlag, 1997.

Office Hours:

Prof. Cao: Wed 2:30-3:30pm, Room 221 CCMB, or by appointment.

Exams: (to be arranged.)

How things count: (to be discussed.)

Homework Policy:

One third credits will be given each time if you hand in your homework on time. No later homework will be accepted.

Syllabus: (tentative)

1. Review;
2. Chapter 6, Metric Spaces;
3. Chapter 9, (§9.1-§9.4), Series;
4. Chapter 7, (§7.1-§7.3) Differentiation in R^n;
5. Chapter 13, Fixed point theorems
6. Chapter 14, (§14.1 - §14.2) Implicit function theorems.

Math 336, Section 1   **Due Wednesday, January 28, 1998**

Homework Assignment 1

Question 1, Distance functions and metric spaces (Section 6.1)

    p134, #1, 2, 3, 5.

Question 2, More examples of metric spaces (Section 6.1)

    p134, #7, 8.

Question 3, Applications of Schwarz inequality (Section 6.1)

    p134, #10, 12.

Math 336, Section 1   **Due Wednesday, February 4, 1998**

Homework Assignment 2

Question 1, Closed and open subsets in metric spaces (Section 6.2)

    p144, #3, 4, 5.

Question 2, Limit points and isolated points (Section 6.2)

    p144, #6, 7

    p145, #16

Question 3, Geometry and algebra of subsets (Section 6.2)

    p144, #10, 12.

Math 336, Section 1   **Due Wednesday, February 4, 1998**

Homework Assignment 3

Question 1, Countable and uncountable subsets (Section 6.3)

    p149, #1, 3, 5, 12.

Math 336, Section 1 **Due Wednesday, February 27, 1998**

Homework Assignment 4

Important Reminder: There will be an exam in Friday's class, at 9:35 am, February 20, Room 300 CCMB. This exam will cover §6.1- §6.4, p130-157.

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Question 1, Properties of compact sets (Section 6.4)

   p155-156, #1, 2, 13.

Question 2, Examples of non-compact sets (Section 6.4)

   p156, #4, 7, 14.

Math 336, Section 1 **Due Wednesday, March 3, 1998**

Homework Assignment 5

Question 1, Lebesgue Theorem and more about compact sets (Section 6.4)

   p156, #3, 9, 10.

Question 2, Functions on compact sets (Section 6.5)

   p159, #3, 11, 12, 13, 14.

Math 336, Section 1 **Due Wednesday, March 25, 1998**

Homework Assignment 7

Important Reminder:

   Exam 2 will take place on March 27, Friday, in class. This Exam will cover Chapter 6 and Chapter 7.

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Question 1, Continuous maps (Section 6.7)

   p172, #4, 5, 7, 9, 10, 17, 19.

Question 2, Partial derivatives and the chain rule (Section 7.1)

    p178, #4, 6, 10.

Question 3, Taylor's theorem and critical points (Section 7.2)

    p187, #1,

    p188, #2, 8, 9

Question 4, The gradient of a smooth function (Section 7.3)

    p192, #2, 3.

Math 336,   **Due Wednesday, April 8, 1998**

Homework Assignment 8

Question 1, Taylor's theorem and critical points (Section 7.2)

    p188, #7, 8, 9

Question 2, The gradient of a smooth function (Section 7.3)

    p192, #2, 3, 4, 7.

Question 3, Infinite sequences and infinite series (Section 9.1)

    p221, #4, 15.

Math 336,   **Due Wednesday, April 15, 1998**

Homework Assignment 9

Question 1, Tests for convergence and divergence (Section 9.1)

    p215, #2, 4, 7, 9, 10

Question 2, Limit comparison Theorem (Section 9.1)

    p215, #16, 17, 18

Question 3, Absolutely convergent and conditional convergent (Section 9.2)

    p221, #5, 10, 14, 16.

Question 4, Convergence radius for power series (Section 9.2)

    p221, #17, 20, 22

Math 336,   **Due Wednesday, April 15, 1998**

Homework Assignment 9

Question 1, Tests for convergence and divergence (Section 9.1)

    p215, #2, 4, 7, 9, 10

Question 2, Limit comparison Theorem (Section 9.1)

    p215, #16, 17, 18

Question 3, Absolutely convergent and conditional convergent (Section 9.2)

    p221, #5, 10, 14, 16.

Question 4, Convergence radius for power series (Section 9.2)

    p221, #17, 20, 22

Math 336,   **Due Wednesday, April 29, 1998**

Last Homework Assignment

An Important Remainder:

    The Final Exam will take place at 4:15 - 6:15 pm, Monday, May 4, 1998 in Room 328, CCMB.

    The final exam will cover Ch6, Ch7, §9.1-9.4, §13.1-13.2.

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Question 1, Fixed points of contraction mappings (Section 13.1)

    p334, #10, 11.

Question 2, Applications of the fixed point theorem (Section 13.2)

    p339, #1, 2, 5