This list is not in final form. Like, stuff may yet be added to it.

Test #2 is

Friday
11/10/06.

The test will emphasize the material of Assignments #6 – #11, roughly, that is, sections 9-14, roughly, and ____ Note that we’ve bypassed section 13.

Stuff to know for the test

(a) The definition of Monotone Sequence.

(b) What the Monotone Sequence Theorem says, and how it derives from more basic theorems or axioms.

(c) The definition of \( \lim sup \) and of \( \lim inf \) for a sequence ( not to be confused with theorems offering alternative characterizations ).

(d) Examples of \( \lim sup \) and \( \lim inf \) for some simple situations.
   
   (i) A sequence for which \( \lim sup \) and \( \lim inf \) differ.

   (ii) Sequences \( s_n \) and \( t_n \) for which equality fails in problem 12.4.

   (iii) A sequence for which \( \lim, \lim sup, \) and \( \lim inf \) are all different. A sequence where only two of these are the same.

(e) How does the proof go for what’s true if sequence \( a_n \) has \( \lim inf(a_n) = \lim sup(a_n) \)?

(f) The definition of Cauchy Sequence ( not to be confused with theorems offering alternative characterizations ).

(g) Simple examples of Cauchy and non-Cauchy sequences.

(h) The definition of Subsequence.

(i) Simple examples of sequences with “essentially different” subsequences.

(j) The definition of the sum of an infinite series.

(k) The Cauchy Criterion for infinite series

(l) Cauchy’s Theorem about the relation of the series. \( \sum_{n=1}^{\infty} a_n \) and \( \sum_{n=1}^{\infty} 2^n a_{2^n} \).
(m) Use of Cauchy’s Theorem to show the famous \( p \)-series facts.

(n) The famous \( p \)-series facts.

(o) The famous Geometric-Sequence facts.

(p) The famous Geometric-Series facts.

(q) The famous MATH-175 infinite series tests as upgraded with \( \text{lim inf} \) and \( \text{lim sup} \).