Topics for Exam 2

1. Consequences of Completeness
   1.1. Archimedean Property
   1.2. Density of the rational numbers in the set of real numbers.

2. Sequences of Real Numbers
   2.1. Definition of convergence and limit of a sequence
   2.2. The squeeze theorem for sequences
   2.3. Bounded, monotone convergence theorem
   2.4. Subsequences
   2.5. Cauchy sequences

Relevant sections and chapters in the text: Section 4.6, Chapter 5, Section 6.1 and Sections 9.2-9.5.

Relevant problem sets: 4 and 5.

Relevant assignments: 7 through 12.

Important Concepts

Completeness, denseness of rational numbers, convergence, Cauchy criterion, monotone and bounded sequences.

Important Results.

1. \( \mathbb{Q} \) is dense in \( \mathbb{R} \): Problem 5 in Problem Set #4
2. The Squeeze theorem for sequences: Problem 2 in Problem Set #5
3. Bounded, monotone convergence theorem: Problem 7 in Problem Set #5

Important Skills

1. Know how to prove whether a given sequence converges.
2. Know how to apply the Squeeze Theorem for sequences.
3. Know how to apply the bounded, monotone convergence theorem.