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. **Q** *is dense in* **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.