I do not claim that the list below is exhaustive, but I hope it helps you to study for midterm 1.

Midterm 1 will cover chapters 1 and 2 of the textbook. Lessons 1 through 10, including the following topics:

1. Inf and Sup .

   - Definition
   - Calculation of sup S , inf S
   - Proofs that a given real number c is the sup or inf of a set.

   Convergent sequences.

   - Definition of limit of a sequence.
   - Limits rules.
   - Squeeze theorem.
   - You have to be able to calculate the limit of a sequence and give a proof that the value you found is the limit.
   - You need to be able to prove the limit rules.
   - Every convergent sequence is bounded.

2. Divergent sequences

   - You need to know the definition of sequence divergent to infinity.
   - You need to be able to prove that a sequence diverges to infinity or has no limit (oscillates).

3. Monotone sequences and subsequences. The main theorems are

   - A monotone sequence converges if and only if it is bounded.
   - Every sequence has a monotone subsequence.
   - Every bounded sequence has a convergent subsequence.
   - A sequence converges to a if and only every subsequence converges to a.
   - You need to know these theorems and their proofs and be able to use them to prove new theorems.

4. Open and closed sets.

5. Sequentially compact sets.