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

It will cover most of chapters 1 and 2 ,3 and sections 9.1, 9,2, 9.3 and 9.4 (theorem 9.31 only) of the textbook, 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.
6. Cauchy sequences.
7. Series .
   - Definition of sum of a series as limit of the sequence of partial sums

- Harmonic and Geometric series.
- Divergence test (that is if $\lim_{i\to\infty} a_i \neq 0$ then $\sum_{i=1}^{\infty} a_i$ diverges).

8. Convergence tests for positive series
   - Comparison test.
   - Limit test.
9. Alternating series test
10. Absolute convergence
    - Ratio test
11. Limit of a function
    - Definition of $\lim_{x\to x_0} f(x) = l$. We have given two equivalent definitions.
    - Limit laws.
    - Limit calculations.
12. Continuity
    - Definition
    - Sum, differences, products, quotients composition of coninuous functions are continuous
    - Elementary functions are continuous (no proof for e^x)
    - Proofs of continuity. That is given a function f you need to be able to prove that it is (or it is not) continuous.
    - Extreme value theorem
    - Intermediate value theorem
    - Monotonic functions
    - Inverses
13. Uniform continuity
14. Sequences of functions
    - Pointwise convergence
    - Uniform convergence