

Math 341 Exam 1 Preparation Sheet

Exam 1 is on Sections 1.1-1.6, 2.1-2.7

Definitions to Know:

1. Axiom of Completeness (p.15)
2. Bounded above and least upper bound (p.15)
3. Countable and uncountable (p.26)
4. Sequence (p.42)
5. Convergence of a sequence (p.43)
6. Bounded sequence (p.49)
7. Monotone sequence (p.56)
8. Infinite series and its sequence of partial sums (p.57)
9. Subsequence (p.62)
10. Cauchy Sequence (p.66)

Theorems to Know (be ready to give the statement and the proof of all of the following; ONE of them is on the exam):

1. The Nested Interval Property (p.20)
2. Monotone Convergence Theorem (p.56)
3. Bolzano-Weierstrass Theorem (p.64)

You should be able to do all of following:

1. Find the least upper bound (supremum) and the greatest lower bound (infimum) of a bounded set.
2. Compute, compare, and prove results on cardinality.
3. Prove that a sequence converges using the ϵ - N definition.
4. Prove limit theorems for sequences (as in Section 2.3).
5. Prove a sequence is monotone and bounded, and find the limit.
6. Construct convergent subsequences and prove properties of subsequences.
7. Prove a sequence is Cauchy and know the consequences.
8. Prove convergence for a series using the tests in Section 2.7.
9. Prove basic properties for convergent series.