

Math 341 Exam 2 Preparation Sheet

Exam 2 is on Sections 2.7 (theoretical), 3.1-3.5, 4.1-4.3.

Definitions to Know: open sets (p.88), limit points (p.89), isolated point (p.90), closed set (p.90), closure of a set (p.91), compact set (p.96), bounded set (p.96), open cover of a set (p.98), finite subcover (p.98), perfect set (p.102), separated sets (p.104), disconnected set (p.104), connected set (p.104), F_σ set (p.107), G_δ set (p.107), nowhere dense set (p.108), limit of a function (p.116), continuous function (p.122).

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

1. Characterization of Compactness (Theorem 3.3.4, pp.96-97)
2. Baire's Theorem 3.5.4 (p.108)
3. Sequential Criterion for Functional Limits (Theorem 4.2.3, p.118)

You should be able to do all of following (several of these will be on the exam):

1. Prove or disprove statements about convergence of infinite series.
2. Prove or disprove sets are open, closed, or neither, and know the consequences of these
3. Determine if a point is a limit point or an isolated point
4. Find the closure of a set
5. Know the properties of compact sets and how to determine if a set is compact or not
6. Determine if a set is perfect (especially the Cantor set)
7. Determine if a set is disconnected or connected, and know the consequences
8. Find the limit of a function if it exists, or be able to prove the limit does not exist
9. Determine if a function is continuous at a point and what this implies