

Math 362 – Test 2 Study Sheet

Some of this is repeated from the list for Test 1, but it will be important again.

Sequences

1. definition of convergence of sequence in a metric space
2. subsequences (and \liminf , \limsup)
3. limits and algebra (3.3, 3.4)
4. Cauchy sequences (definition, 3.11, complete metric spaces)
5. diameter of a set, thm 3.10

Series

1. partial sums, definition of convergence
2. Cauchy criterion for series (3.22)
3. p-series, geometric series, definition of e
4. Convergence Tests (3.22, 3.23, 3.25, 3.27, 3.33, 3.34, 3.42, 3.43)

Continuity

1. limits, continuous functions in metric spaces (4.1, 4.2, 4.5)
2. characterization of continuous functions in terms of open sets (4.8)
3. continuous images of compact sets are compact (4.14)
4. uniform continuity (4.18, 4.19)

Sequences and Series of Functions

1. definitions of convergence (pointwise and uniform)
2. Cauchy criterion (pointwise and uniform)
3. Weierstrass M-Test (7.10)
4. swapping order of limit operations (7.11, 7.12, 7.16, 7.17)
5. sup-norm (7.14, 7.15)
6. nowhere differentiable function (7.18)
7. Weierstrass Theorem (7.26, outline of proof)

Power Series

1. Radius of convergence (3.39)
2. Uniform convergence in interior of interval of convergence
3. Derivatives and continuity (8.1)
4. Relationship of derivatives to coefficients

Miscellaneous

1. Mean Value Theorem
2. L-Hôpital's rule
3. important examples (from homework and lecture), especially 7.2–7.6
4. methods of proof
5. pictures to accompany theorems (it will help you remember statements and proofs)