Math425 Test 2 Review Topics

- Definition of continuity, ϵ-δ equivalence and proof of. Use definition to prove/disprove continuity. Statements and proofs of the following: Summation, product, composition, absolute value rules of continuous functions; Max. and min theorem of continuous functions on closed intervals; Intermediate Value Theorem; Inverse Function Theorem.
- Definition of uniform continuity, ϵ-δ equivalence and proof of. Use definition to prove/disprove uniform continuity. Proof and application of Theorem 19.6. Proofs of various properties of uniform continuity: Theorems 19.2,4,5.
- Definition of limits of functions along any subsets of real numbers, ϵ-δ equivalences and proofs of. Use definition to prove/disprove limits of functions. Statements and proofs of the following: Summation, product, composition, absolute value rules of limits of functions;
- Power series, statement and proof of radius of convergence by root test, convergence/divergence at end points of intervals of convergence by integral, alternating tests.
- Definitions of pointwise and uniform convergence. Cauchy criterion of uniform convergence and proof of. Use definition to prove/disprove uniform convergence, and technique of Remark 24.4. Statements and proofs of properties of uniformly convergent continuous functions, integrable functions. Proofs and applications to infinite series of functions: Cauchy criterion, Weierstrass M-test (Weierstrass dominant convergent theorem).