

## MATH 251

WEEK I : Fields, ordered Fields.

WEEK II : Archimedean property, completeness. The field  $\mathbb{R}$  of real numbers, supremum, infimum.

WEEK III : Open, closed, connected sets in  $\mathbb{R}^n$ .

WEEK IV : Compact sets in  $\mathbb{R}^n$ . Bolzano-Weierstrass Theorem, Heine-Borel Theorem

WEEK V : Sequences in  $\mathbb{R}^n$ . Cauchy Criterion. Sequences of functions, uniform convergence.

WEEK VI : Continuity . Intermediate Value Theorem. Uniform continuity.

WEEK VII : Sequences of continuous functions. Stone-Weierstrass Theorem.

WEEK VIII : Differentiation on  $\mathbb{R}$  : Rolle's Lemma, Mean Value Theorem.

WEEK IX : Differentiation on  $\mathbb{R}^n, n > 1$  : Partial derivatives. Total derivative as a linear map.

WEEK X : Inverse Function Theorem, Implicit Function Theorem.