

Further Mathematical Methods

Topics- Alan Beggs

Topic 1. Foundations (applications, including monotone comparative statics)

Topic 2: Analysis in $\mathbb{R}$

Topic 3: Metric Spaces and analysis in $\mathbb{R}^n$

Topic 4: Convexity and its Applications

Topic 5: Spaces of Functions (application to dynamic programming)

Topics- Anders Kock

We will cover σ -algebras. Measures and their properties. Measurable functions. Stability properties of measurable functions — in particular under pointwise limits. The Lebesgue integral and useful result related to it. Construction of the integral via simple functions. Linearity, monotonicity, dealing with null sets. The Monotone and Dominated Convergence Theorems. Markov, Hölder, Jensen, Minkowski inequalities. Induced measures and the substitution rule. Tonelli's Theorem. Radon-Nikodym and densities.