

Short list of topics for final exam

Some of the topics listed here will be included (in a rephrased form) in the exam. It will be required to formulate the relevant definitions and theorems, and provide a detailed proofs.

- (1) Theorem about convergence of bounded monotone sequences.
- (2) Cauchy criterion for convergence of a sequence.
- (3) Existence of monotonic subsequences.
- (4) The Riemann rearrangement theorem.
- (5) Definition of continuous maps between topological spaces and their simplest properties. Section 3.1 from the Complements.
- (6) Continuity at a point and its relation to continuity. Section 3.2 from the Complements.
- (7) Sequential continuity and its relation to Continuity. Section 3.3 from the Complements and Theorem 17.2 from the textbook.
- (8) Extreme Value Theorem (18.1).
- (9) Integrability of monotonic and continuous functions (theorem 33.1 and 33.2).
- (10) Convergence radius of a power series (23.1).
- (11) Continuity of the uniform limit of a sequence of continuous functions (24.3).
- (12) Theorem about limit of integrals and integral of the limit (25.2)