

Plan

- Set Theory
- Review on real numbers
- Lebesgue measure
- Lebesgue integral
- Classical Banach spaces

Key words 1.1

- motivation
- logical symbols
- Boolean algebra of subsets
- infinite intersection and unions
- σ -algebra
- countable collections

Key words 1.2

- logical tools: equivalence relation
- Axiom of choice, Zorn's lemma
- Well-ordering

Key words 1.3

- Proposition 8: The collection of all countable ordinals
- Problems

Key words 2.1

- ordered fields, real numbers rational numbers
- sequences, problems
- topology of \mathbb{R} (\mathbb{R}^n): open sets, closed sets, closure

Key words 2.3

- Borel-algebra, F_σ , O_δ
- Upper (lower) continuous functions and compact sets.
- uniformly continuous functions (reading material)
- connected sets in \mathbb{R}