

Table of Contents

CHAPTER 1 — BANACH SPACES

- 1.1 Basic definitions
- 1.2 Lebesgue spaces
- 1.3 Separability and bases
- 1.4 Bounded linear maps

CHAPTER 2 — LINEAR FUNCTIONALS AND HAHN-BANACH THEOREM

CHAPTER 3 — THE BAIRE CATEGORY THEOREM AND ITS CONSEQUENCES

- 3.1 Baire category theorem
- 3.2 Open and inverse mapping theorems
- 3.3 The closed graph theorem
- 3.4 The uniform boundedness theorem
- 3.5 Summary for Banach spaces

CHAPTER 4 — HILBERT SPACES

- 4.1 Basic definitions
- 4.2 Orthonormal bases

CHAPTER 5 — BOUNDED OPERATORS IN HILBERT SPACES

- 5.1 Adjoint of an operator
- 5.2 Spectrum of bounded operators
- 5.3 Compact operators

CHAPTER 6 — UNBOUNDED OPERATORS

- 6.1 Domain and adjoint
- 6.2 Spectrum of unbounded operators
- 6.3 Closed operators

CHAPTER 7 — LAPLACE OPERATOR

- 7.1 Distributions and weak derivatives
- 7.2 Lebesgue and Sobolev spaces
- 7.3 The Laplacian