1. Record Nr. UNINA9910826098503321 Autore Gonzalez-Velasco Enrique A Titolo Fourier analysis and boundary value problems / / by Enrique A. Gonzalez-Velasco San Diego, : Academic Pres, c1995 Pubbl/distr/stampa **ISBN** 1-281-03822-9 9786611038229 0-08-053193-8 Edizione [1st ed.] Descrizione fisica 1 online resource (565 p.) Disciplina 515/.353 Soggetti Fourier analysis Boundary value problems - Numerical solutions Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Description based upon print version of record. Note generali Nota di bibliografia Includes bibliographical references (p. 539-542) and index. Nota di contenuto Front Cover; Fourier Analysis and Boundary Value Problems; Copyright Page; Table of Contents; Preface; CHAPTER 1. A HEATED DISCUSSION; 1.1 Historical Prologue: 1.2 The Heat Equation: 1.3 Boundary Value Problems; 1.4 The Method of Separation of Variables; 1.5 Linearity and Superposition of Solutions; 1.6 Historical Epilogue; Exercises; CHAPTER 2. FOURIER SERIES; 2.1 Introduction; 2.2 Fourier Series; 2.3 The Riemann-Lebesgue Theorem; 2.4 The Convergence of Fourier Series; 2.5 Fourier Series on Arbitrary Intervals; 2.6 The Gibbs Phenomenon; 2.7 Fejer Sums; 2.8 Integration of Fourier Series 2.9 Historical EpilogueExercises; CHAPTER 3. RETURN TO THE HEATED BAR; 3.1 Existence of a Solution; 3.2 Uniqueness and Stability of the Solution; 3.3 Nonzero Temperature at the Endpoints; 3.4 Bar Insulated at the Endpoints; 3.5 Mixed Endpoint Conditions; 3.6 Heat Convection at One Endpoint; 3.7 Time-Independent Problems; 3.8 The Steady-State Solution; 3.9 The Transient Solution; 3.10 The Complete Solution; 3.11 Time-Dependent Problems; Exercises; CHAPTER 4. GENERALIZED FOURIER SERIES; 4.1 Sturm-Liouville Problems; 4.2 The Eigenvalues and

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Sommario/riassunto

Fourier Analysis and Boundary Value Problems provides a thorough examination of both the theory and applications of partial differential equations and the Fourier and Laplace methods for their solutions. Boundary value problems, including the heat and wave equations, are integrated throughout the book. Written from a historical perspective with extensive biographical coverage of pioneers in the field, the book emphasizes the important role played by partial differential equations in engineering and physics. In addition, the author demonstrates how efforts to deal with these problems hav