1. Record Nr. UNINA9910791029003321 Autore O'Neil Peter V. Titolo Beginning partial differential equations / / Peter V. O'Neil Pubbl/distr/stampa Hoboken, New Jersey:,: Wiley,, 2014 2014 **ISBN** 1-118-83210-8 Edizione [Third edition.] Descrizione fisica 1 online resource (453 p.) Pure and Applied Mathematics: A Wiley Series of Texts, Monographs Collana and Tracts MAT007000 Classificazione Disciplina 515/.353 Differential equations, Partial Soggetti Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Note generali Includes index. Nota di bibliografia Includes bibliographical references and index. Nota di contenuto Beginning Partial Differential Equations; Copyright; Contents; Preface; 1 First Ideas: 1.1 Two Partial Differential Equations: 1.1.1 The Heat. or Diffusion, Equati; 1.1.2 The Wave Equation; 1.2 Fourier Series; 1.2.1 The Fourier Series of a Function; 1.2.2 Fourier Sine and Cosine Series; 1.3 Two Eigenvalue Problems; 1.4 A Proof of the Fourier Convergence Theorem: 1.4.1 The Role of Periodicity: 1.4.2 Dirichlet's Formula: 1.4.3 The Riemann-Lebesgue Lemma; 1.4.4 Proof of the Convergence Theorem: 2 Solutions of the Heat Equation: 2.1 Solutions on an Interval [0, L] 2.1.1 Ends Kept at Temperature Zero2.1.2 Insulated Ends; 2.1.3 Ends at Different Temperatures: 2.1.4 A Diffusion Equation with Additional Terms; 2.1.5 One Radiating End; 2.2 A Nonhomogeneous Problem; 2.3 The Heat Equation in Two Space Variables; 2.4 The Weak Maximum Principle: 3 Solutions of the Wave Equation: 3.1 Solutions on Bounded Intervals; 3.1.1 Fixed Ends; 3.1.2 Fixed Ends with a Forcing Term; 3.1.3 Damped Wave Motion; 3.2 The Cauchy Problem; 3.2.1 d'Alembert's Solution; 3.2.1.1 Forward and Backward Waves; 3.2.2 The Cauchy Problem on a Half Line 3.2.3 Characteristic Triangles and Quadrilaterals 3.2.4 A Cauchy Problem with a Forcing Term; 3.2.5 String with Moving Ends; 3.3 The Wave Equation in Higher Dimensions; 3.3.1 Vibrations in a Membrane

with Fixed Frame; 3.3.2 The Poisson Integral Solution; 3.3.3

Hadamard's Method of Descent; 4 Dirichlet and Neumann Problems; 4.1

Laplace's Equation and Harmonic Functions; 4.1.1 Laplace's Equation in Polar Coordinates: 4.1.2 Laplace's Equation in Three Dimensions: 4.2 The Dirichlet Problem for a Rectangle; 4.3 The Dirichlet Problem for a Disk; 4.3.1 Poisson's Integral Solution

4.4 Properties of Harmonic Functions 4.4.1 Topology of Rn; 4.4.2 Representation Theorems; 4.4.2.1 A Representation Theorem in R3; 4.4.2.2 A Representation Theorem in the Plane; 4.4.3 The Mean Value Property and the Maximum Principle; 4.5 The Neumann Problem; 4.5.1 Existence and Uniqueness: 4.5.2 Neumann Problem for a Rectangle: 4.5.3 Neumann Problem for a Disk; 4.6 Poisson's Equation; 4.7 Existence Theorem for a Dirichlet Problem; 5 Fourier Integral Methods of Solution; 5.1 The Fourier Integral of a Function; 5.1.1 Fourier Cosine and Sine Integrals; 5.2 The Heat Equation on the Real Line 5.2.1 A Reformulation of the Integral Solution 5.2.2 The Heat Equation on a Half Line: 5.3 The Debate over the Age of the Earth: 5.4 Burger's Equation; 5.4.1 Traveling Wave Solutions of Burger's Equation; 5.5 The Cauchy Problem for the Wave Equation; 5.6 Laplace's Equation on Unbounded Domains; 5.6.1 Dirichlet Problem for the Upper Half Plane; 5.6.2 Dirichlet Problem for the Right Quarter Plane; 5.6.3 A Neumann Problem for the Upper Half Plane; 6 Solutions Using Eigenfunction Expansions: 6.1 A Theory of Eigenfunction Expansions: 6.1.1 A Closer Look at Expansion Coefficients

6.2 Bessel Functions

Sommario/riassunto

"Featuring a challenging, yet accessible, introduction to partial differential equations, Beginning Partial Differential Equations provides a solid introduction to partial differential equations, particularly methods of solution based on characteristics, separation of variables. as well as Fourier series, integrals, and transforms. Thoroughly updated with novel applications, such as Poe's pendulum and Kepler's problem in astronomy, this third edition is updated to include the latest version of Maples, which is integrated throughout the text. New topical coverage includes novel applications, such as Poe's pendulum and Kepler's problem in astronomy"--

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