

1. Record Nr.	UNINA9910460076103321
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Titolo	Solutions manual for beginning partial differential equations / / Peter V. O'Neil
Pubbl/distr/stampa	Hoboken, New Jersey : , : Wiley, , 2014 ©2014
ISBN	1-118-88058-7 1-118-62998-1 1-118-96967-7
Edizione	[Third edition.]
Descrizione fisica	1 online resource (199 p.)
Collana	Pure and Applied Mathematics : A Wiley Series of Texts, Monographs and Tracts
Disciplina	515.35076
Soggetti	Differential equations Electronic books.
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di contenuto	Cover; Series; Title Page; Copyright; Preface; Chapter 1: First Ideas; 1.1 Two Partial Differential Equations; 1.2 Fourier Series; 1.3 Two Eigenvalue Problems; 1.4 A Proof of the Convergence Theorem; Chapter 2: Solutions of the Heat Equation; 2.1 Solutions on an Interval [0,L]; 2.2 A Nonhomogeneous Problem; Chapter 3: Solutions of the Wave Equation; 3.1 Solutions on Bounded Intervals; 3.2 The Cauchy Problem; 3.3 The Wave Equation in Higher Dimensions; Chapter 4: Dirichlet and Neumann Problems; 4.1 Laplace's Equation and Harmonic Functions; 4.2 The Dirichlet Problem for a Rectangle 4.3 The Dirichlet Problem for a Disk 4.4 Properties of Harmonic Functions; 4.5 The Neumann Problem; 4.6 Poisson's Equation; 4.7 An Existence Theorem for the Dirichlet Problem; Chapter 5: Fourier Integral Methods of Solution; 5.1 The Fourier Integral of a Function; 5.2 The Heat Equation on the Real Line; 5.3 The Debate Over the Age of the Earth; 5.4 Burgers' Equation; 5.5 The Cauchy Problem for the Wave Equation; 5.6 Laplace's Equation on Unbounded Domains; Chapter 6: Solutions Using Eigenfunction Expansions; 6.1 A Theory of Eigenfunction Expansions; 6.2 Bessel Functions

6.3 Applications of Bessel Functions 6.4 Legendre Polynomials and Applications; Chapter 7: Integral Transform Methods of Solution; 7.1 The Fourier Transform; 7.2 Heat and Wave Equations; 7.3 The Telegraph Equation; 7.4 The Laplace Transform; Chapter 8: First-Order Equations; 8.1 Linear First-Order Equations; 8.2 The Significance of Characteristics; 8.3 The Quasi-Linear Equation; Series List; End User License Agreement

Sommario/riassunto

As the Solutions Manual, this book is meant to accompany the main title, Beginning of Partial Differential Equations, Third Edition. The Third Edition features a challenging, yet accessible, introduction to partial differential equations, and 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, the book begins with first-order linear and quasi-linear equations, followed by second-order linear equations with constant coefficients, the method of separation of variables for parabolic, hyperbolic, and elliptic equations, and the Fourier series. The book concludes with a survey of nonlinear equations and their applications.
