
Ordinary And Partial Differential Equations Md Raisinghanian

Uniqueness and Nonuniqueness Criteria for Ordinary Differential Equations
Ordinary and Partial Differential Equation Routines in C, C++, Fortran, Java, Maple, and MATLAB
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Numerical Solution Of Ordinary And Partial Differential Equations, The (3rd Edition)
Ordinary and Partial Differential Equations : Proceedings of the Conference Held at Dundee, Scotland, 26-19 March, 1974
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Ordinary Differential Equations
Applications of Lie's Theory of Ordinary and Partial Differential Equations
Ordinary and Partial Differential Equations
ORDINARY AND PARTIAL DIFFERENTIAL EQUATIONS
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Ordinary and Partial Differential Equations
Ordinary And Partial Differential Equations For The Beginner

*Ordinary And Partial
Differential Equations
Md Raisinghan*

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**Uniqueness and Nonuniqueness
Criteria for Ordinary Differential
Equations**

Courier Corporation
This book develops the theory of ordinary differential equations (ODEs), starting from an introductory level (with no prior experience in ODEs assumed) through to a graduate-level treatment of the qualitative theory, including bifurcation theory (but not chaos). While proofs are rigorous, the exposition is reader-friendly, aiming for the informality of face-to-face interactions. A unique feature of this book is the integration of rigorous theory with numerous applications of scientific interest. Besides providing motivation, this synthesis clarifies the theory and enhances scientific literacy. Other features include: (i) a wealth of exercises at various levels, along with commentary that explains why they matter; (ii) figures with consistent color conventions to identify nullclines, periodic orbits, stable and unstable manifolds; and (iii) a dedicated website with software templates, problem solutions, and other resources supporting the text (www.math.duke.edu/ode-book). Given its many applications, the book may be used comfortably in science and engineering courses as well as in mathematics courses. Its level is accessible to upper-level undergraduates but still appropriate for graduate students. The thoughtful presentation, which anticipates many confusions of beginning students, makes

the book suitable for a teaching environment that emphasizes self-directed, active learning (including the so-called inverted classroom).

Ordinary and Partial Differential Equation Routines in C, C++, Fortran, Java, Maple, and MATLAB CRC Press

Lie's group theory of differential equations unifies the many ad hoc methods known for solving differential equations and provides powerful new ways to find solutions. The theory has applications to both ordinary and partial differential equations and is not restricted to linear equations.

Applications of Lie's Theory of Ordinary and Partial Differential Equations provides a concise, simple introduction to the application of Lie's theory to the solution of differential equations. The author emphasizes clarity and immediacy of understanding rather than encyclopedic completeness, rigor, and generality. This enables readers to quickly grasp the essentials and start applying the methods to find solutions. The book includes worked examples and problems from a wide range of scientific and engineering fields.

Ordinary and Partial Differential Equations World Scientific

This textbook is intended for college, undergraduate and graduate students, emphasizing mainly on ordinary differential equations. However, the theory of characteristics for first order partial differential equations and the classification of second order linear partial differential operators are also included. It contains the basic material starting from elementary solution methods for ordinary differential equations to advanced methods for first

order partial differential equations. In addition to the theoretical background, solution methods are strongly emphasized. Each section is completed with problems and exercises, and the solutions are also provided. There are special sections devoted to more applied tools such as implicit equations, Laplace transform, Fourier method, etc. As a novelty, a method for finding exponential polynomial solutions is presented which is based on the author's work in spectral synthesis. The presentation is self-contained, provided the reader has general undergraduate knowledge.

Ordinary and Partial Differential Equations Sultan Chand & Sons

The primary objective of the textbook is to provide the basic concepts of ordinary and partial differential equations as per the requirement of the students appearing for B.A. (Prog.) Semester-V, B.Sc. (Hons.) (Mathematics and Physics) under CBCS pattern followed by Central Universities of India including the University of Delhi. This book covers the entire syllabus of the paper Differential Equations — Generic Elective of IIIrd Semester (GE-3) for all Honours courses other than Mathematics and B.Tech. of various Universities. It is also useful for various competitive examinations and the School of Open Learning, University of Delhi. There are Eleven Chapters in this book and in each of them, the concepts are properly supported by illustrations followed by several varied types of examples to provide students an integrated view of theory and applications. There are about 247 examples in this book. A large number of self-practice problems and answers have been added in each chapter to enable students to learn. Most of the questions conform to the examination style

followed in the University examinations and professional examinations.

A Treatise on Ordinary and Partial Differential Equations Bookboon

The Numerical Solution of Ordinary and Partial Differential Equations is an introduction to the numerical solution of ordinary and partial differential equations. Finite difference methods for solving partial differential equations are mostly classical low order formulas, easy to program but not ideal for problems with poorly behaved solutions or (especially) for problems in irregular multidimensional regions. FORTRAN77 programs are used to implement many of the methods studied. Comprised of six chapters, this book begins with a review of direct methods for the solution of linear systems, with emphasis on the special features of the linear systems that arise when differential equations are solved. The next four chapters deal with the more commonly used finite difference methods for solving a variety of problems, including both ordinary differential equations and partial differential equations, and both initial value and boundary value problems. The final chapter is an overview of the basic ideas behind the finite element method and covers the Galerkin method for boundary value problems. Examples using piecewise linear trial functions, cubic hermite trial functions, and triangular elements are presented. This monograph is appropriate for senior-level undergraduate or first-year graduate students of mathematics.

Numerical Solution Of Ordinary And Partial Differential Equations, The (3rd Edition) Nova Science Publishers

Skillfully organized introductory text examines origin of differential equations, then defines basic terms and outlines the general solution of a differential

equation. Subsequent sections deal with integrating factors; dilution and accretion problems; linearization of first order systems; Laplace Transforms; Newton's Interpolation Formulas, more.

Ordinary and Partial Differential Equations : Proceedings of the Conference Held at Dundee, Scotland, 26-19 March, 1974 SIAM

Disease in the prey population increases the risk of prey outcomes in predation or to be harvested. In this book, an eco-epidemiological model consisting of predator-prey model with SIS disease in the prey population is proposed and analysed. Furthermore, the authors discuss a mathematical S-E-I-L (Susceptible-Latently infected-Infected-Lost of sight) model for the spread of a directly transmitted infectious disease in an age-structured population; examine how starting from the classical Chebyshev ordinary differential equation (ODE), a generic realisation of its Lie algebra of point symmetries $sl(3;R)$ is obtained in terms of the Chebyshev polynomials of first and second kind; and give a comparative summary of different recent contributions to the theme of the linear stability and nonlinear dynamics of solitary waves in the nonlinear Dirac equation in the form of the Gross-Neveu model.

Differential Equations and Group Methods for Scientists and Engineers CRC Press

This text explores the essentials of partial differential equations as applied to engineering and the physical sciences. Discusses ordinary differential equations, integral curves and surfaces of vector fields, the Cauchy-Kovalevsky theory, more. Problems and answers. Introduction to Numerical Ordinary and Partial Differential Equations Using MATLAB Springer Science & Business

Media

This book has been designed for Undergraduate (Honours) and Postgraduate students of various Indian Universities. A set of objective problems has been provided at the end of each chapter which will be useful to the aspirants of competitive examinations *The Numerical Solution of Ordinary and Partial Differential Equations* CRC Press

Differential Equations and Group Methods for Scientists and Engineers presents a basic introduction to the technically complex area of invariant one-parameter Lie group methods and their use in solving differential equations. The book features discussions on ordinary differential equations (first, second, and higher order) in addition to partial differential equations (linear and nonlinear). Each chapter contains worked examples with several problems at the end; answers to these problems and hints on how to solve them are found at the back of the book. Students and professionals in mathematics, science, and engineering will find this book indispensable for developing a fundamental understanding of how to use invariant one-parameter group methods to solve differential equations.

Ordinary Differential Equations

World Scientific

"Ordinary and Partial Differential Equations" is a comprehensive treatise on the subject with the book divided in three parts for ease of understanding. The book is replete with up to date examples and questions. The three parts divide the book so there is progression of thought and constancy - The first part viz. Elementary Differential Equations covers fundamental topics such as Equations of the First Order & Degree and Exact Differential Equations and Equations of Special Forms and Linear

Differential Equations of the Second Order; "Advanced Ordinary Differential Equations and Special Functions" (Part II) covers important topics such as Fourier Series, Bessel Functions and Orthogonal Set of Functions and Sturm-Liouville Problem among others. The third part "Partial Differential Equations" deals aptly with topics such as Linear and Non-Linear Partial Differential Equations of Order One, Riemann Method and Monge's Method.

Conference on the Theory of Ordinary and Partial Differential Equations PHI Learning Pvt. Ltd.

This book provides a set of ODE/PDE integration routines in the six most widely used computer languages, enabling scientists and engineers to apply ODE/PDE analysis toward solving complex problems. This text concisely reviews integration algorithms, then analyzes the widely used Runge-Kutta method. It first presents a complete code before discussin

Basic Partial Differential Equations

S. Chand Publishing

Partial Differential Equations: Analytical Methods and Applications covers all the basic topics of a Partial Differential Equations (PDE) course for undergraduate students or a beginners' course for graduate students. It provides qualitative physical explanation of mathematical results while maintaining the expected level of it rigor. This text introduces and promotes practice of necessary problem-solving skills. The presentation is concise and friendly to the reader. The "teaching-by-examples" approach provides numerous carefully chosen examples that guide step-by-step learning of concepts and techniques. Fourier series, Sturm-Liouville problem, Fourier transform, and Laplace transform are included. The

book's level of presentation and structure is well suited for use in engineering, physics and applied mathematics courses. Highlights: Offers a complete first course on PDEs The text's flexible structure promotes varied syllabi for courses Written with a teach-by-example approach which offers numerous examples and applications Includes additional topics such as the Sturm-Liouville problem, Fourier and Laplace transforms, and special functions The text's graphical material makes excellent use of modern software packages Features numerous examples and applications which are suitable for readers studying the subject remotely or independently

A Treatise on Ordinary and Partial Differential Equations S. Chand

Publishing

This book presents methods for the computational solution of differential equations, both ordinary and partial, time-dependent and steady-state. Finite difference methods are introduced and analyzed in the first four chapters, and finite element methods are studied in chapter five. A very general-purpose and widely-used finite element program, PDE2D, which implements many of the methods studied in the earlier chapters, is presented and documented in Appendix A. The book contains the relevant theory and error analysis for most of the methods studied, but also emphasizes the practical aspects involved in implementing the methods. Students using this book will actually see and write programs (FORTRAN or MATLAB) for solving ordinary and partial differential equations, using both finite differences and finite elements. In addition, they will be able to solve very difficult partial differential equations using the software PDE2D, presented in

Appendix A. PDE2D solves very general steady-state, time-dependent and eigenvalue PDE systems, in 1D intervals, general 2D regions, and a wide range of simple 3D regions. The Windows version of PDE2D comes free with every purchase of this book. More information at www.pde2d.com/contact.

Ordinary and Partial Differential Equations, 19th Edition CRC Press

Among the topics covered in this classic treatment are linear differential equations; solution in an infinite form; solution by definite integrals; algebraic theory; Sturmian theory and its later developments; much more. "Highly recommended" — Electronics Industries.

Ordinary and Partial Differential Equations Springer

This well-acclaimed book, now in its twentieth edition, continues to offer an in-depth presentation of the fundamental concepts and their applications of ordinary and partial differential equations providing systematic solution techniques. The book provides step-by-step proofs of theorems to enhance students' problem-solving skill and includes plenty of carefully chosen solved examples to illustrate the concepts discussed.

Ordinary and Partial Differential Equations Elsevier

Methods of solution for partial differential equations (PDEs) used in mathematics, science, and engineering are clarified in this self-contained source. The reader will learn how to use PDEs to predict system behaviour from an initial state of the system and from external influences, and enhance the success of endeavours involving reasonably smooth, predictable changes of measurable quantities. This text enables the reader to not only find solutions of many PDEs, but also to interpret and use

these solutions. It offers 6000 exercises ranging from routine to challenging. The palatable, motivated proofs enhance understanding and retention of the material. Topics not usually found in books at this level include but examined in this text: the application of linear and nonlinear first-order PDEs to the evolution of population densities and to traffic shocks convergence of numerical solutions of PDEs and implementation on a computer convergence of Laplace series on spheres quantum mechanics of the hydrogen atom solving PDEs on manifolds The text requires some knowledge of calculus but none on differential equations or linear algebra.

Notes on Diffy Qs Springer

Stochastic Partial Differential Equations analyzes mathematical models of time-dependent physical phenomena on microscopic, macroscopic and mesoscopic levels. It provides a rigorous derivation of each level from the preceding one and examines the resulting mesoscopic equations in detail. Coverage first describes the transition from the microscopic equations to the mesoscopic equations. It then covers a general system for the positions of the large particles.

Introduction to Partial Differential Equations with Applications Academic Press

Differential equations arise in a variety of contexts, some purely theoretical and some of practical interest. As you read this textbook, you will find that the qualitative and quantitative study of differential equations incorporates an elegant blend of linear algebra and advanced calculus. This book is intended for an advanced undergraduate course in differential equations. The reader should have already completed courses in linear algebra, multivariable calculus,

and introductory differential equations.

Ordinary and Partial Differential Equations Courier Corporation

The statement which expresses the equality of two expressions is known as an equation. A differential equation is a kind of mathematical equation that shows the connection between a function and its derivatives. Functions represent the physical quantities and derivatives show their rates of change. The differential equation seeks to define the relationship between the two. It can be classified into various types such as ordinary differential equations and partial differential equations. Ordinary differential equation contains one or

more than one function of an independent variable. It is related to the derivatives of these functions. Partial differential equations contain unknown multi-variable functions as well as their partial derivatives. These are generally used to formulate problems which contain functions of several variables. The topics included in this book on ordinary and partial differential equations are of utmost significance and bound to provide incredible insights to readers. It presents researches and studies performed by experts across the globe. This book is appropriate for students seeking detailed information in this area as well as for experts.