

# Differential Equations and Their Applications

Second Edition

Zafar Ahsan



# <u>Differential Equations And Their Applications By Zafar</u> <u>Ahsan</u>

**ZAFAR AHSAAN** 

#### **Differential Equations And Their Applications By Zafar Ahsan:**

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DIFFERENTIAL EQUATIONS AND THEIR APPLICATIONS ZAFAR AHSAN, 2016-07-01 Primarily intended for the undergraduate students of mathematics physics and engineering this text gives in depth coverage of differential equations and the methods for solving them The book begins with the definitions the physical and geometric origins of differential equations and the methods for solving the first order differential equations. Then it goes on to give the applications of these equations to such areas as biology medical sciences electrical engineering and economics. The text also discusses systematically and logically higher order differential equations and their applications to telecommunications civil engineering cardiology and detection of diabetes as also the methods of solving simultaneous differential equations and their applications Besides the book provides a detailed discussion on Laplace transforms and their applications partial differential equations and their applications to vibration of stretched string heat flow transmission lines etc and calculus of variations and its applications The book which is a happy fusion of theory and application would also be useful to postgraduate students NEW TO THIS EDITION New sections on a Equations reducible to linear partial differential equations b General method for solving the second order non linear partial differential equations Monge's Method c Lagrange's equations of motion Number of solved examples in Chapters 5 7 8 9 and 10 INTRODUCTION TO THEORY OF ORDINARY DIFFERENTIAL **EQUATION** DHARMAIAH, V., 2012-09-19 This systematically organized text on the theory of differential equations deals with the basic concepts and the methods of solving ordinary differential equations Various existence theorems properties of uniqueness oscillation and stability theories have all been explained with suitable examples to enhance students understanding of the subject The book also discusses in sufficient detail the qualitative the quantitative and the approximation techniques linear equations with variable and constants coefficients regular singular points and homogeneous equations with analytic coefficients Finally it explains Riccati equation boundary value problems the Sturm Liouville problem

Green's function the Picard's theorem and the Sturm Picone theorem. The text is supported by a number of worked out examples to make the concepts clear and it also provides a number of exercises help students test their knowledge and improve their skills in solving differential equations. The book is intended to serve as a text for the postgraduate students of mathematics and applied mathematics It will also be useful to the candidates preparing to sit for the competitive examinations such as NET and GATE Recent Advances in Differential Equations and its Applications (DEAPP-2017) Dr. K.S. Lakshmi ,Dr. J. Sathya Priya ,Dr. Sujatha Seshadri ,Dr. R. Om Gayathri,2017-08-10 Differential Equations serve as mathematical models for virtually any natural or physical phenomena in science and technology and has applications even in diverse fields such as economics medicine ecology etc The seminar was organized to throw light on the recent advances in the applications of differential equations and to provide a platform for sharing the knowledge with experts in the field with young students and researchers The Researchers and educators in the field of differential equations were invited to attend and share their rich experience As for everything else so for a mathematical theory beauty can be perceived but not Advanced Calculus DEVI PRASAD, 2009 This concise and systematically organized textbook is meant for the undergraduate students of engineering for their courses in Engineering Mathematics Besides it is also useful for undergraduate and postgraduate students of mathematics This book is divided into nine chapters the initial chapters provide revision of fundamental concepts of functions limits and continuity to help students grasp the idea of the derivations treated in the subsequent chapters Rules for finding derivatives Taylor's and Maclaurin's theorems and different types of indeterminate forms are thoroughly explained Further the book covers the convergence and divergence of the series tangents and normals curvatures to the curves maxima and minima of functions of more than one variables and directional derivatives. The text also deals with volume integrals and concludes with a detailed discussion on the line integrals and surface integrals using divergence and Stokes theorems **TEXTBOOK OF DIFFERENTIAL CALCULUS, Third Edition** AKHTAR, AHSAN, AHSAN, SABIHA, 2020-10-01 Calculus is a powerful mathematical tool with applications in almost every branch of science and engineering This subject is therefore considered to occupy the central position in mathematics The third edition of Textbook of Differential Calculus is thoroughly revised as per the latest syllabi of various Indian universities for undergraduate courses in mathematics and engineering The text is designed with rich collection of solved examples and problems to motivate students Calculus is best understood via geometry A major section of the text is devoted to topics on geometrical applications of calculus that includes treatment of topics such as tangents and normal to curves curvature asymptotes maxima and minima of functions KEY FEATURES A large number of solved examples section end questions and theorems help to build an intuitive understanding of mathematics Questions have been selected from previous years examination papers Multiple choice questions with answers at the end of the book help students to prepare for competitive examinations NEW TO THE THIRD EDITION Provides several new examples in the existing chapters Includes a new chapter

on Jacobians Chapter 6 TEXTBOOK OF MATRIX ALGEBRA, THIRD EDITION BISWAS, SUDDHENDU, 2012-08-07 Intended as a text for postgraduate and undergraduate honours students of Statistics Mathematics Operations Research as well as students in various branches of Engineering this student friendly book gives an indepth analysis of Matrix Algebra and all the major topics related to it Divided into 12 chapters the book begins with a discussion on Elements of Matrix Theory and Some Special Matrices Then it goes on to give a detailed discussion on Scalar Function and Inverse of a Matrix Rank of a Matrix Generalized Inverse of a Matrix and Quadric Forms and Inequalities The book concludes by giving Some Applications of Algebra of Matrices Matrices in the Infinite Dimensional Vector Space and Computational Tracts in Matrices KEY FEATURES Gives a large number of both solved and unsolved problems of Elementary Matrix Provides an exhaustive treatment of Generalized Inverse Matrix with many applications in Statistics Devotes one chapter exclusively to application of Matrices Provides one full chapter on Matrices in the Infinite Dimensional Vector Space which will be quite useful for postgraduate students Gives an Appendix on R Software which will be extremely useful for students of Statistics Provides Question Bank which will greatly benefit both undergraduate and postgraduate students This book which beautifully blends both theory and applications of Matrix Algebra should prove to be an invaluable text for the students **Ordinary Differential Equations** Bhamra, **TENSORS** AHSAN, ZAFAR, 2015-05-21 The principal aim of analysis of tensors is to investigate those relations which remain valid when we change from one coordinate system to another This book on Tensors requires only a knowledge of elementary calculus differential equations and classical mechanics as pre requisites It provides the readers with all the information about the tensors along with the derivation of all the tensorial relations equations in a simple manner The book also deals in detail with topics of importance to the study of special and general relativity and the geometry of differentiable manifolds with a crystal clear exposition. The concepts dealt within the book are well supported by a number of solved examples A carefully selected set of unsolved problems is also given at the end of each chapter and the answers and hints for the solution of these problems are given at the end of the book The applications of tensors to the fields of differential geometry relativity cosmology and electromagnetism is another attraction of the present book This book is intended to serve as text for postgraduate students of mathematics physics and engineering It is ideally suited for both students and teachers who are engaged in research in General Theory of Relativity and Differential Geometry The Indian National Bibliography, 2018-10

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