
The New Integral Transform Elzaki Transform

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 Handbook of Differential Equations
 Nonlinear Analysis
 Integral Transforms and Engineering
 The Optimal Homotopy Asymptotic Method
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 4th International Conference on Artificial Intelligence and Applied Mathematics in Engineering
 Linear and Nonlinear Integral Equations
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 Transform Methods for Solving Partial Differential Equations
 Fractional Calculus and Fractional Differential Equations
 Partial Differential Equations and Solitary Waves Theory
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POLLARD CHACE

The Laplace Transform Elsevier
 Modern businesses face a pressing challenge in navigating the complex landscape of cloud computing, 5G, and artificial intelligence (AI) integration. Despite these technologies' transformative potential, businesses often need help with bandwidth, latency, connection density, and cost constraints. This hinders the widespread adoption of cloud computing, limiting its impact on various industries. *Driving Transformative Technology Trends With Cloud Computing* offers a comprehensive solution for academic scholars seeking to understand and leverage the potential of cloud computing, 5G, and AI integration. By exploring topics such as green cloud computing, edge computing, cloud cryptography, and more, scholars can gain valuable insights into the synergistic effects of these technologies. This book provides a roadmap for leveraging the power of cloud computing and its integration with 5G and AI to drive innovation and growth in academia and beyond. By offering practical insights and

strategies, this book equips scholars with the knowledge and tools needed to navigate the complexities of modern technology integration and drive meaningful change in their respective fields.

Handbook of Differential Equations World Scientific

Classic text offers exceptionally precise coverage of partial differentiation, vectors, differential geometry, Stieltjes integral, infinite series, gamma function, Fourier series, Laplace transform, much more. Includes exercises and selected answers.

Nonlinear Analysis IGI Global

Commences with the historical development of fractional calculus, its mathematical theory—particularly the Riemann-Liouville version. Numerous examples and theoretical applications of the theory are presented. Features topics associated with fractional differential equations. Discusses Weyl fractional calculus and some of its uses. Includes selected physical problems which lead to fractional differential or integral equations.

Integral Transforms and Engineering Springer Nature

This book provides a broad overview of the latest developments in fractional calculus and fractional differential equations (FDEs)

with an aim to motivate the readers to venture into these areas. It also presents original research describing the fractional operators of variable order, fractional-order delay differential equations, chaos and related phenomena in detail. Selected results on the stability of solutions of nonlinear dynamical systems of the non-commensurate fractional order have also been included. Furthermore, artificial neural network and fractional differential equations are elaborated on; and new transform methods (for example, Sumudu methods) and how they can be employed to solve fractional partial differential equations are discussed. The book covers the latest research on a variety of topics, including: comparison of various numerical methods for solving FDEs, the Adomian decomposition method and its applications to fractional versions of the classical Poisson processes, variable-order fractional operators, fractional variational principles, fractional delay differential equations, fractional-order dynamical systems and stability analysis, inequalities and comparison theorems in FDEs, artificial neural network approximation for fractional operators, and new transform methods for solving partial FDEs. Given its scope and level of detail, the book will be an invaluable asset for researchers working in these areas.

The Optimal Homotopy Asymptotic Method Springer Science & Business Media

This book emphasizes in detail the applicability of the Optimal Homotopy Asymptotic Method to various engineering problems. It is a continuation of the book "Nonlinear Dynamical Systems in Engineering: Some Approximate Approaches", published at Springer in 2011 and it contains a great amount of practical models from various fields of engineering such as classical and fluid mechanics, thermodynamics, nonlinear oscillations, electrical machines and so on. The main structure of the book consists of 5 chapters. The first chapter is introductory while the second chapter is devoted to a short history of the development of homotopy methods, including the basic ideas of the Optimal Homotopy Asymptotic Method. The last three chapters, from Chapter 3 to Chapter 5, are introducing three distinct alternatives of the Optimal Homotopy Asymptotic Method with illustrative applications to nonlinear dynamical systems. The third chapter deals with the first alternative of our approach with two iterations. Five applications are presented from fluid mechanics and nonlinear oscillations. The Chapter 4 presents the Optimal Homotopy Asymptotic Method with a single iteration and solving the linear equation on the first approximation. Here are treated 32 models from different fields of engineering such as fluid mechanics, thermodynamics, nonlinear damped and undamped oscillations, electrical machines and even from physics and biology. The last chapter is devoted to the Optimal Homotopy Asymptotic Method with a single iteration but without solving the equation in the first approximation.

Operational Calculus of Some Integral Transforms Springer
Fractional Dynamics and Control provides a comprehensive overview of recent advances in the areas of nonlinear dynamics, vibration and control with analytical, numerical, and experimental results. This book provides an overview of recent discoveries in fractional control, delves into fractional variational principles and differential equations, and applies advanced techniques in fractional calculus to solving complicated mathematical and physical problems. Finally, this book also discusses the role that fractional order modeling can play in complex systems for engineering and science.

4th International Conference on Artificial Intelligence and Applied Mathematics in Engineering S. Chand Publishing
Transform methods provide a bridge between the commonly used method of separation of variables and numerical techniques

for solving linear partial differential equations. While in some ways similar to separation of variables, transform methods can be effective for a wider class of problems. Even when the inverse of the transform cannot be found ana

Linear and Nonlinear Integral Equations Springer

With the aim to better understand nature, mathematical tools are being used nowadays in many different fields. The concept of integral transforms, in particular, has been found to be a useful mathematical tool for solving a variety of problems not only in mathematics, but also in various other branches of science, engineering, and technology. *Integral Transforms and Engineering: Theory, Methods, and Applications* presents a mathematical analysis of integral transforms and their applications. The book illustrates the possibility of obtaining transfer functions using different integral transforms, especially when mapping any function into the frequency domain. Various differential operators, models, and applications are included such as classical derivative, Caputo derivative, Caputo-Fabrizio derivative, and Atangana-Baleanu derivative. This book is a useful reference for practitioners, engineers, researchers, and graduate students in mathematics, applied sciences, engineering, and technology fields.

Integral Equations Springer Nature

This book contains new and useful materials concerning fuzzy fractional differential and integral operators and their relationship. As the title of the book suggests, the fuzzy subject matter is one of the most important tools discussed. Therefore, it begins by providing a brief but important and new description of fuzzy sets and the computational calculus they require. Fuzzy fractals and fractional operators have a broad range of applications in the engineering, medical and economic sciences. Although these operators have been addressed briefly in previous papers, this book represents the first comprehensive collection of all relevant explanations. Most of the real problems in the biological and engineering sciences involve dynamic models, which are defined by fuzzy fractional operators in the form of fuzzy fractional initial value problems. Another important goal of this book is to solve these systems and analyze their solutions both theoretically and numerically. Given the content covered, the book will benefit all researchers and students in the mathematical and computer sciences, but also the engineering sciences.

Fractional Differential Equations Academic Press

Linear and Nonlinear Integral Equations: Methods and Applications is a self-contained book divided into two parts. Part I offers a comprehensive and systematic treatment of linear integral equations of the first and second kinds. The text brings together newly developed methods to reinforce and complement the existing procedures for solving linear integral equations. The Volterra integral and integro-differential equations, the Fredholm integral and integro-differential equations, the Volterra-Fredholm integral equations, singular and weakly singular integral equations, and systems of these equations, are handled in this part by using many different computational schemes. Selected worked-through examples and exercises will guide readers through the text. Part II provides an extensive exposition on the nonlinear integral equations and their varied applications, presenting in an accessible manner a systematic treatment of ill-posed Fredholm problems, bifurcation points, and singular points. Selected applications are also investigated by using the powerful Padé approximants. This book is intended for scholars and researchers in the fields of physics, applied mathematics and engineering. It can also be used as a text for advanced undergraduate and graduate students in applied mathematics, science and engineering, and related fields. Dr. Abdul-Majid

Wazwaz is a Professor of Mathematics at Saint Xavier University in Chicago, Illinois, USA.

[The Radon Transform](#) Springer Nature

For Engineering students & also useful for competitive Examination.

Transform Methods for Solving Partial Differential Equations Springer Science & Business Media

Fractional Differential Equations: Theoretical Aspects and Applications presents the latest mathematical and conceptual developments in the field of Fractional Calculus and explores the scope of applications in research science and computational modelling. Fractional derivatives arise as a generalization of integer order derivatives and have a long history: their origin can be found in the work of G. W. Leibniz and L. Euler. Shortly after being introduced, the new theory turned out to be very attractive for many famous mathematicians and scientists, including P. S. Laplace, B. Riemann, J. Liouville, N. H. Abel, and J. B. J. Fourier, due to the numerous possibilities it offered for applications. Fractional Calculus, the field of mathematics dealing with operators of differentiation and integration of arbitrary real or even complex order, extends many of the modelling capabilities of conventional calculus and integer-order differential equations and finds its application in various scientific areas, such as physics, mechanics, engineering, economics, finance, biology, and chemistry, among others. However, many aspects from the theoretical and practical point of view have still to be developed in relation with models based on fractional operators. Efficient analytical and numerical methods have been developed but still need particular attention. Fractional Differential Equations: Theoretical Aspects and Applications delves into these methods and applied computational modelling techniques, including analysis of equations involving fractional derivatives, fractional derivatives and the wave equation, analysis of FDE on groups, direct and inverse problems, functional inequalities, and computational methods for FDEs in physics and engineering. Other modelling techniques and applications explored by the authors include general fractional derivatives involving the special functions in analysis, fractional derivatives with respect to another function in analysis, new fractional operators in real-world applications, fractional order dynamical systems, hidden attractors in complex systems, nonlinear dynamics and chaos in engineering applications, quantum chaos, and self-excited attractors. - Provides the most recent and up-to-date developments in the theory and scientific applications Fractional Differential Equations - Includes transportable computer source codes for readers in MATLAB, with code descriptions as it relates to the mathematical modelling and applications - Provides readers with a comprehensive foundational reference for this key topic in computational modeling, which is a mathematical underpinning for most areas of scientific and engineering research

[Fractional Calculus and Fractional Differential Equations](#) Gulf Professional Publishing

Contents: Fixed Point Theory and Nonlinear Problems (Th Rassias)Global Linearization Iterative Methods and Nonlinear Partial Differential Equations III (M Altman)On Generalized Power Series and Generalized Operational Calculus and Its Application (M Al-Bassam)Multiple Solutions to Parametrized Nonlinear Differential Systems from Nielsen Fixed Point Theory (R Brown)The topology of Ind-Affine Sets (P Cherenack)Almost Approximately Polynomial Functions (P Cholewa)Cohomology Classes and Foliated Manifolds (M Craioveanu & M Puta)Bifurcation and Nonlinear Instability in Applied Mathematics (L Debnath)The Stability of Weakly Additive Functional (H Drljevic)Index Theory for G-Bundle Pairs with Applications to

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Keywords:Nonlinear Analysis;Nonlinear Partial Differential Equations III;Polynomial Functions;Cohomology Classes;Foliated Manifolds;Topological Dynamical Systems;Minimal Surfaces;Differentiable Operators;Nonlinear Equations

Partial Differential Equations and Solitary Waves Theory Springer Nature

Fractional calculus is a collection of relatively little-known mathematical results concerning generalizations of differentiation and integration to noninteger orders. While these results have been accumulated over centuries in various branches of mathematics, they have until recently found little appreciation or application in physics and other mathematically oriented sciences. This situation is beginning to change, and there are now a growing number of research areas in physics which employ fractional calculus. This volume provides an introduction to fractional calculus for physicists, and collects easily accessible review articles surveying those areas of physics in which applications of fractional calculus have recently become prominent.

Recent Trends in Computational Fluid Dynamics, 2nd Edition CRC Press

"Partial Differential Equations and Solitary Waves Theory" is a self-contained book divided into two parts: Part I is a coherent survey bringing together newly developed methods for solving PDEs. While some traditional techniques are presented, this part does not require thorough understanding of abstract theories or compact concepts. Well-selected worked examples and exercises shall guide the reader through the text. Part II provides an extensive exposition of the solitary waves theory. This part handles nonlinear evolution equations by methods such as Hirota's bilinear method or the tanh-coth method. A self-contained treatment is presented to discuss complete integrability of a wide class of nonlinear equations. This part presents in an accessible manner a systematic presentation of solitons, multi-soliton solutions, kinks, peakons, cuspons, and compactons. While the whole book can be used as a text for advanced undergraduate and graduate students in applied mathematics, physics and engineering, Part II will be most useful for graduate students and researchers in mathematics, engineering, and other related fields. Dr. Abdul-Majid Wazwaz is a Professor of Mathematics at Saint Xavier University, Chicago, Illinois, USA.

Higher Engineering Mathematics Springer

Linear and non-linear integral equations of the first and second kinds have many applications in engineering and real life problems. Thus, we try to find efficient and accurate methods to solve these problems. The aim of this editorial is to overview the content of the Special Issue "Integral Equations: Theories, Approximations and Applications". This Special Issue collects innovative contributions addressing the top challenges in integral equations, integro-differential equations, multi-dimensional problems, and ill-posed and singular problems with modern

applications. It covers linear and non-linear integral equations of the first and second kinds, singular and ill-posed kernels, system of integral equations, high-dimensional problems, and especially new numerical, analytical, and semi-analytical methods for solving the problems mentioned by focusing on modern applications.

An Introduction to the Fractional Calculus and Fractional Differential Equations Frontiers Media SA

This text describes the statistical behavior of complex systems and shows how the fractional calculus can be used to model the behavior. The discussion emphasizes physical phenomena whose evolution is best described using the fractional calculus, such as

systems with long-range spatial interactions or long-time memory. The book gives general strategies for understanding wave propagation through random media, the nonlinear response of complex materials, and the fluctuations of heat transport in heterogeneous materials.

Fractional Differential Equations Elsevier

Publisher's note: This is a 2nd edition due to an article retraction.

Fractional Dynamics and Control Springer Science & Business Media

Stochastic Systems

Analytical Methods in Nonlinear Oscillations Academic Press

Riccati Differential Equations

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