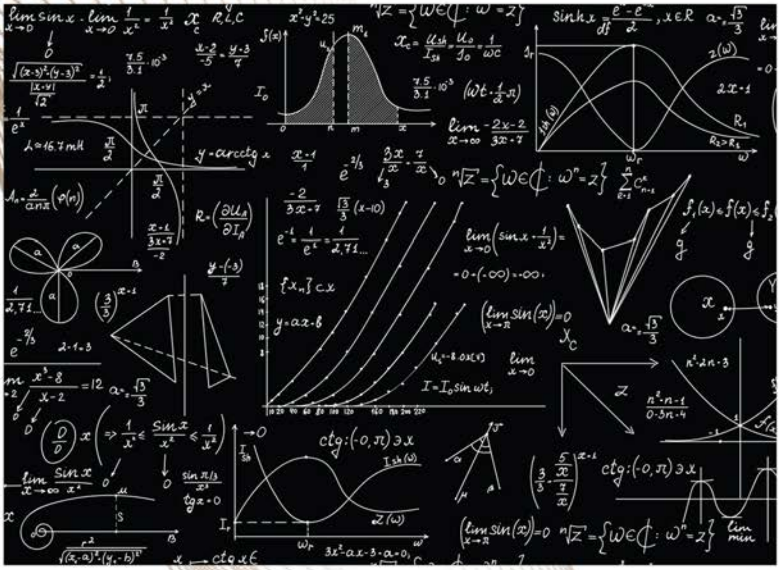
ADVANCES IN MATHEMATICAL ANALYSIS AND ITS APPLICATIONS



Edited by
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Advances in Mathematical Analysis and its Applications

Advances in Mathematical Analysis and its Applications is designed as a reference text and explores several important aspects of recent developments in the interdisciplinary applications of mathematical analysis (MA) and highlights how MA is now being employed in many areas of scientific research. It discusses theory and problems in real and complex analysis, functional analysis, approximation theory, operator theory, analytic inequalities, the Radon transform, nonlinear analysis, and various applications of interdisciplinary research; some topics are also devoted to specific applications such as the three-body problem, finite element analysis in fluid mechanics, algorithms for difference of monotone operators, a vibrational approach to a financial problem, and more.

- The book encompasses several contemporary topics in the field of mathematical analysis, their applications, and relevancies in other areas of research and study.
- It offers an understanding of research problems by presenting the necessary developments in reasonable details.
- The book also discusses applications and uses of operator theory, fixed-point theory, inequalities, bi-univalent functions, functional equations, and scalar-objective programming, and presents various associated problems and ways to solve such problems.
- Contains applications on wavelets analysis and COVID-19 to show that mathematical analysis has interdisciplinary as well as real-life applications.

The book is aimed primarily at advanced undergraduates and postgraduate students studying mathematical analysis and mathematics in general. Researchers will also find this book useful.

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Contents

Chapter 10

Applications of differential transform method on some functional differential equations

Anil Kumar

Giriraj Methi

Sanket Tikare

10.1 Introduction

The functional differential equations with proportional delay were first studied by Ockendon and Taylor [18] in their work of collecting electric current for the pantograph of an electric locomotive, hence named pantograph equations. The investigation of these equations is important since they find applications in economic activities involving production, planning and decision

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