

A Study On Fixed Point Theory With Applications

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An Introduction to Nonlinear Analysis and Fixed Point Theory
A Study On Fixed Point Theory With Applications
Fixed Point Theory
Fixed Point Theory in Metric Type Spaces
Recent Advances on Metric Fixed Point Theory
Elementary Fixed Point Theorems
Advances in Metric Fixed Point Theory and Applications
Seminar on Fixed Point Theory
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Fixed Point Theory and Its Applications
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A Study On Fixed Point Theory
On Fixed Point Theorems
Fixed points and topological degree in nonlinear analysis
An In-Depth Guide to Fixed-Point Theorems
Fixed Point Theorems and Applications
Fixed Point Theory for Lipschitzian-type Mappings with Applications
Fixed Point Theory and Trace for Bicategories
Metric Fixed Point Theory
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fixed point theory is an attractive and interesting subject with a large number of applications in various fields of mathematics and other branches of science the main intention of writing this book is as the topic of the book a study on fixed point theory and its applications implies is to give a rough idea of the basic types some important theorems and a few common applications of fixed point theory and also to enhance my career as a mathematician in the field of fixed point theory the book will serve good for the beginners in the field of fixed point in the similar manner as i was benefitted from the valuable contents provided in the book in writing this book the works of standard authors have been a great help and i am greatly indebted to them above all research papers and articles of eminent researchers and authors helped me a lot while completing this book any errors that may appear are of course my responsibility i warmly welcome any suggestion or correction from the valuable readers of this book ph suranjay singh

this book systematically introduces the theory of nonlinear analysis providing an

overview of topics such as geometry of banach spaces differential calculus in banach spaces monotone operators and fixed point theorems it also discusses degree theory nonlinear matrix equations control theory differential and integral equations and inclusions the book presents surjectivity theorems variational inequalities stochastic game theory and mathematical biology along with a large number of applications of these theories in various other disciplines nonlinear analysis is characterised by its applications in numerous interdisciplinary fields ranging from engineering to space science hydromechanics to astrophysics chemistry to biology theoretical mechanics to biomechanics and economics to stochastic game theory organised into ten chapters the book shows the elegance of the subject and its deep rooted concepts and techniques which provide the tools for developing more realistic and accurate models for a variety of phenomena encountered in diverse applied fields it is intended for graduate and undergraduate students of mathematics and engineering who are familiar with discrete mathematical structures differential and integral equations operator theory measure theory banach and hilbert spaces locally convex topological vector spaces and linear functional analysis

fixed point theory is an attractive and interesting subject with a large number of applications in various fields of mathematics and other branches of science the main intention of writing this book is as the topic of the book a study on fixed point theory with applications implies is to give a rough idea of the basic types some important theorems and a few common applications of fixed point theory and also to enhance my career as a mathematician in the field of fixed point theory the book will serve good for the beginners in the field of fixed point in the similar manner as i was benefitted from the valuable contents provided in the book in writing this book the works of standard authors have been a great help and i am greatly indebted to them above all research papers and articles of eminent researchers and authors and internet too were very useful while completing this book last but not the least the support my wife mrs h dayapati m sc math has been the pillar of my strength in my work all through i express my words of thanks to freeditorial publisher and library for taking the tough of distributing this book

written by a team of leading experts in the field this volume presents a self contained account of the theory techniques and results in metric type spaces in particular in g metric spaces that is the text approaches this important area of fixed point analysis beginning from the basic ideas of metric space topology the text is structured so that it leads the reader from preliminaries and historical notes on metric spaces in particular g metric spaces and on mappings to banach type contraction theorems in metric type spaces fixed point theory in partially ordered g metric spaces fixed point theory for expansive mappings in metric type spaces generalizations present results and techniques in a very general abstract setting and framework fixed point theory is one of the major research areas in nonlinear analysis this is partly due to the fact that in many real world problems fixed point theory is the basic mathematical tool used to establish the existence of solutions to problems which arise naturally in applications as a result fixed point theory is an important area of study in pure and applied mathematics and it is a flourishing area of research

this book provides a primary resource in basic fixed point theorems due to banach brouwer schauder and tarski and their applications key topics covered include sharkovsky s theorem on periodic points thron s results on the convergence of certain real iterates shield s common fixed theorem for a commuting family of analytic functions

and bergweiler s existence theorem on fixed points of the composition of certain meromorphic functions with transcendental entire functions generalizations of tarski s theorem by merrifield and stein and abian s proof of the equivalence of bourbaki zermelo fixed point theorem and the axiom of choice are described in the setting of posets a detailed treatment of ward s theory of partially ordered topological spaces culminates in sherrer fixed point theorem it elaborates manka s proof of the fixed point property of arcwise connected hereditarily unicoherent continua based on the connection he observed between set theory and fixed point theory via a certain partial order contraction principle is provided with two proofs one due to palais and the other due to barranga applications of the contraction principle include the proofs of algebraic weierstrass preparation theorem a cauchy kowalevsky theorem for partial differential equations and the central limit theorem it also provides a proof of the converse of the contraction principle due to jachymski a proof of fixed point theorem for continuous generalized contractions a proof of browder gohde kirk fixed point theorem a proof of stalling s generalization of brouwer s theorem examine caristi s fixed point theorem and highlights kakutani s theorems on common fixed points and their applications

this book collects papers on major topics in fixed point theory and its applications each chapter is accompanied by basic notions mathematical preliminaries and proofs of the main results the book discusses common fixed point theory convergence theorems split variational inclusion problems and fixed point problems for asymptotically nonexpansive semigroups fixed point property and almost fixed point property in digital spaces nonexpansive semigroups over $\text{cat } \mathbb{N}$ spaces measures of noncompactness integral equations the study of fixed points that are zeros of a given function best proximity point theory monotone mappings in modular function spaces fuzzy contractive mappings ordered hyperbolic metric spaces generalized contractions in b metric spaces multi tupled fixed points functional equations in dynamic programming and picard operators this book addresses the mathematical community working with methods and tools of nonlinear analysis it also serves as a reference source for examples and new approaches associated with fixed point theory and its applications for a wide audience including graduate students and researchers

fixed point theory touches on many areas of mathematics such as general topology algebraic topology nonlinear functional analysis and ordinary and partial differential equations and serves as a useful tool in applied mathematics this book represents the proceedings of an informal three day seminar held during the international congress of mathematicians in berkeley in 1986 bringing together topologists and analysts concerned with the study of fixed points of continuous functions the seminar provided a forum for presentation of recent developments in several different areas the topics covered include both topological fixed point theory from both the algebraic and geometric viewpoints the fixed point theory of nonlinear operators on normed linear spaces and its applications and the study of solutions of ordinary and partial differential equations by fixed point theory methods because the papers range from broad expositions to specialized research papers the book provides readers with a good overview of the subject as well as a more detailed look at some specialized recent advances

fixed point theory is an attractive and interesting subject with a large number of applications in various fields of mathematics and other branches of science fixed point theory is divided into three major types i topological fixed point theory ii metric fixed point theory iii order theoretic fixed point theory fixed point theory has become not only

a field with a huge development but also a very helpful means for solving various problems in different fields of mathematics fixed point theorems are used for proving the existence and uniqueness to differential integral and partial differential equations and variational inequalities etc above all they are also useful in the field of computer science image processing artificial intelligence decision making population dynamics operational research industrial engineering pattern recognition medicine group health underwriting management and many other fields only a few common selected applications are provided here

the topological methods based on fixed point theory and on local topological degree which have been developed by lera y schauder nirenberg cesari and others for the study of nonlinear differential equations are here described in detail beginning with elementary considerations the reader is not assumed to have any knowledge of topology beyond the theory of point sets in euclidean n space which ordinarily forms part of a course in advanced calculus the methods are first developed for euclidean n space and applied to the study of existence and stability of periodic and almost periodic solutions of systems of ordinary differential equations both quasi linear and with large nonlinearities then after being extended to infinite dimensional function spaces these methods are applied to integral equations partial differential equations and further problems concerning periodic solutions of ordinary differential equations

this book details fixed point theory a gripping and wide ranging field with applications in multifold areas of pure and applied mathematics the content comprises both theoretical and practical applications the evolution of the main theorems on the existence and uniqueness of fixed points of maps are presented applications covering topological properties a nonlinear stochastic integral equation of the hammetstein type the existence and uniqueness of a common solution of the system of urysohn integral equations and the existence of a unique solution for linear equations system are included in this selection since the included chapters range from broad elucidations to functional research papers the book provides readers with a satisfying analysis of the subject as well as a more comprehensive look at some functional recent advances

this book addresses fixed point theory a fascinating and far reaching field with applications in several areas of mathematics the content is divided into two main parts the first which is more theoretical develops the main abstract theorems on the existence and uniqueness of fixed points of maps in turn the second part focuses on applications covering a large variety of significant results ranging from ordinary differential equations in banach spaces to partial differential equations operator theory functional analysis measure theory and game theory a final section containing 50 problems many of which include helpful hints rounds out the coverage intended for master s and phd students in mathematics or more generally mathematically oriented subjects the book is designed to be largely self contained although some mathematical background is needed readers should be familiar with measure theory banach and hilbert spaces locally convex topological vector spaces and in general with linear functional analysis

in recent years the fixed point theory of lipschitzian type mappings has rapidly grown into an important field of study in both pure and applied mathematics it has become one of the most essential tools in nonlinear functional analysis this self contained book provides the first systematic presentation of lipschitzian type mappings in metric and banach spaces the first chapter covers some basic properties of metric and banach spaces geometric considerations of underlying spaces play a prominent role in

developing and understanding the theory the next two chapters provide background in terms of convexity smoothness and geometric coefficients of banach spaces including duality mappings and metric projection mappings this is followed by results on existence of fixed points approximation of fixed points by iterative methods and strong convergence theorems the final chapter explores several applicable problems arising in related fields this book can be used as a textbook and as a reference for graduate students researchers and applied mathematicians working in nonlinear functional analysis operator theory approximations by iteration theory convexity and related geometric topics and best approximation theory

there are refinements of the lefschetz number and the fixed point index that give a converse to the lefschetz fixed point theorem an important part of this theorem is the identification of these different invariants

this book collects chapters on contemporary topics on metric fixed point theory and its applications in science engineering fractals and behavioral sciences chapters contributed by renowned researchers from across the world this book includes several useful tools and techniques for the development of skills and expertise in the area the book presents the study of common fixed points in a generalized metric space and fixed point results with applications in various modular metric spaces new insight into parametric metric spaces as well as study of variational inequalities and variational control problems have been included

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Introduction

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