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A First Course In Discrete Dynamical Systems (Universitext)

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A FIRST COURSE IN DISCRETE DYNAMICAL SYSTEMS

SECOND EDITION

Springer
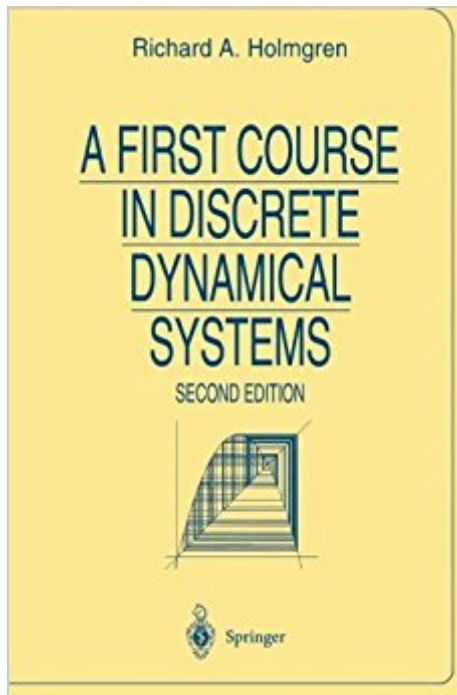
Synopsis

Given the ease with which computers can do iteration it is now possible for almost anyone to generate beautiful images whose roots lie in discrete dynamical systems. Images of Mandelbrot and Julia sets abound in publications both mathematical and not. The mathematics behind the pictures are beautiful in their own right and are the subject of this text. Mathematica programs that illustrate the dynamics are included in an appendix.

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Customer Reviews

A discrete dynamical system can be characterized as an iterated function. Given the efficiency with which computers can do iteration, it is now possible for anyone with access to a personal computer to generate beautiful images whose roots lie in discrete dynamical systems. Images of Mandelbrot and Julia sets abound in publications both mathematical and not. The mathematics behind the pictures is beautiful in its own right and is the subject of this text. The level of presentation is suitable for advanced undergraduates who have completed a year of college-level calculus. Concepts from calculus are reviewed as necessary. Mathematica programs that illustrate the dynamics and that will aid the student in doing the exercises are included in the Appendix. In this second edition, the topics covered are rearranged to make the text more flexible. In particular, the material on symbolic dynamics is now optional, and the book can easily be used for a single-semester course dealing exclusively with functions of a single real variable. Alternatively, the

basic properties of dynamical systems can be introduced using functions of a real variable, and then the reader can skip directly to the material on the dynamics of complex functions. Additional changes include the simplification of several proofs, a thorough review and expansion of the exercises, and substantial improvement in the efficiency of the Mathematica programs.

An excellent short motivational reading / introductory course material. Starts ground up and uses very simple hands-on examples to demonstrate the fascinating behavior of non-linear dynamic systems (chaos, fractals, etc). Covers most of the basic methodology.The book also has a lot of excellent exercises for reinforcing the material, for different difficulty levels.

This is an excellent book for teaching for mathematics students. Besides the standard material it contains a chapter about some numerical methods as dynamical systems. I strongly propose that a third updated edition is made.

A First Course in Discrete Dynamical Systems (Universitext) [Differential Equations, Dynamical Systems, and an Introduction to Chaos [DIFFERENTIAL EQUATIONS, DYNAMICAL SYSTEMS, AND AN INTRODUCTION TO CHAOS BY Hirsch, Morris W. (Author) Mar-26-2012] By Hirsch, Morris W. (Author) [2012) [Paperback] Dynamical Systems: An Introduction (Universitext) A First Course In Chaotic Dynamical Systems: Theory And Experiment (Studies in Nonlinearity) Problems from the Discrete to the Continuous: Probability, Number Theory, Graph Theory, and Combinatorics (Universitext) Differential Equations and Dynamical Systems (Texts in Applied Mathematics) Ordinary Differential Equations: From Calculus to Dynamical Systems (Maa Textbooks) Introduction to Differential Equations with Dynamical Systems Dynamical Systems (Dover Books on Mathematics) Differential Equations, Dynamical Systems, and an Introduction to Chaos, Third Edition Introduction to Dynamical Systems Chaos: An Introduction to Dynamical Systems (Textbooks in Mathematical Sciences) Fractal Geometry and Dynamical Systems in Pure and Applied Mathematics I: Fractals in Pure Mathematics (Contemporary Mathematics) Lectures on Fractal Geometry and Dynamical Systems (Student Mathematical Library) Extremes and Recurrence in Dynamical Systems (Pure and Applied Mathematics: A Wiley Series of Texts, Monographs and Tracts) Differential Equations, Dynamical Systems, and an Introduction to Chaos Differential Equations, Dynamical Systems, and an Introduction to Chaos, Second Edition (Pure and Applied Mathematics) In the Wake of Chaos: Unpredictable Order in Dynamical Systems (Science and Its Conceptual Foundations series) Chaos in Dynamical Systems Dynamical Systems: A

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