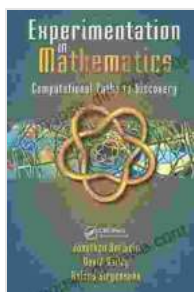


Experimentation in Mathematics: Computational Paths to Discovery

Mathematics is a field that is often thought of as being static and unchanging. However, in recent years, there has been a growing movement towards using computational methods to discover new mathematical knowledge. This book provides a comprehensive overview of the latest developments in this exciting new area.



Experimentation in Mathematics: Computational Paths to Discovery by Jonathan M. Borwein

★★★★☆ 4.8 out of 5

Language : English

File size : 20054 KB

Screen Reader : Supported

Print length : 372 pages

X-Ray for textbooks : Enabled



The book is written by a team of leading researchers in the field of experimental mathematics. In the first chapter, they provide a gentle to the basic concepts of experimentation in mathematics. They then go on to discuss the different types of computational methods that can be used for mathematical discovery.

The remaining chapters of the book are divided into three parts. The first part explores the use of computational methods to discover new mathematical objects. The second part discusses the use of computational

methods to prove mathematical theorems. The third part explores the use of computational methods to solve mathematical problems.

The Use of Computational Methods to Discover New Mathematical Objects

The first part of the book explores the use of computational methods to discover new mathematical objects. In Chapter 2, the authors discuss the use of computer algebra systems to find new algebraic structures. In Chapter 3, they discuss the use of numerical methods to find new solutions to differential equations. In Chapter 4, they discuss the use of geometric methods to find new shapes and surfaces.

The Use of Computational Methods to Prove Mathematical Theorems

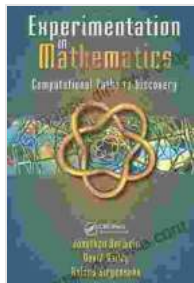
The second part of the book discusses the use of computational methods to prove mathematical theorems. In Chapter 5, the authors discuss the use of computer-assisted proofs. In Chapter 6, they discuss the use of automated theorem provers. In Chapter 7, they discuss the use of interactive theorem provers.

The Use of Computational Methods to Solve Mathematical Problems

The third part of the book explores the use of computational methods to solve mathematical problems. In Chapter 8, the authors discuss the use of numerical methods to solve ordinary differential equations. In Chapter 9, they discuss the use of numerical methods to solve partial differential equations. In Chapter 10, they discuss the use of numerical methods to solve integral equations.

Experimentation in Mathematics: Computational Paths to Discovery is a groundbreaking book that provides a comprehensive overview of the latest

developments in the exciting new field of experimental mathematics. The book is written by a team of leading researchers in the field, and it is sure to be a valuable resource for anyone interested in this exciting new area.



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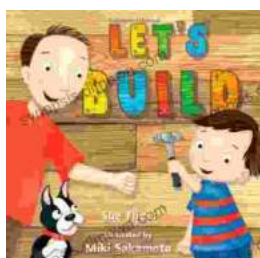
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