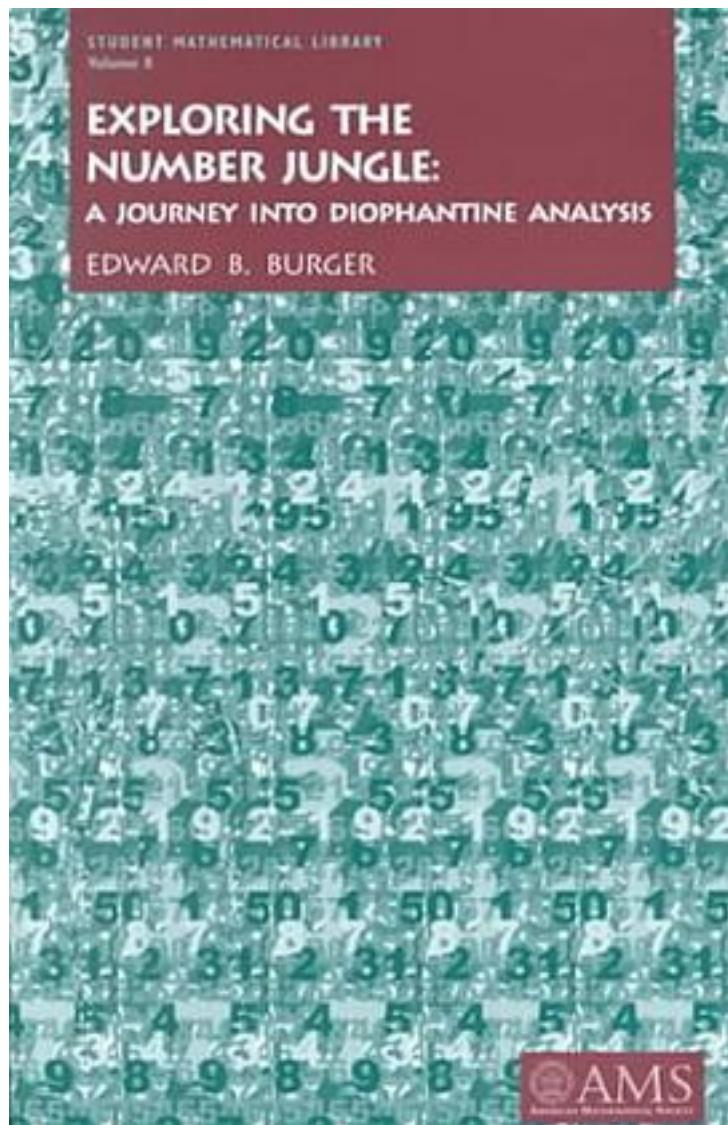


# Exploring the Number Jungle



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著者:Edward B. Burger

出版者:American Mathematical Society

出版时间:2000-07

装帧:Paperback

isbn:9780821826409

Welcome to diophantine analysis—an area of number theory in which we attempt to discover hidden treasures and truths within the jungle of numbers by exploring rational numbers. Diophantine analysis comprises two different but interconnected domains—diophantine approximation and diophantine equations. This highly readable book brings to life the fundamental ideas and theorems from diophantine approximation, geometry of numbers, diophantine geometry and p-adic analysis. Through an engaging style, readers participate in a journey through these areas of number theory.

Each mathematical theme is presented in a self-contained manner and is motivated by very basic notions. The reader becomes an active participant in the explorations, as each module includes a sequence of numbered questions to be answered and statements to be verified. Many hints and remarks are provided to be freely used and enjoyed. Each module then closes with a Big Picture Question that invites the reader to step back from all the technical details and take a panoramic view of how the ideas at hand fit into the larger mathematical landscape. This book enlists the reader to build intuition, develop ideas and prove results in a very user-friendly and enjoyable environment.

Little background is required and a familiarity with number theory is not expected. All that is needed for most of the material is an understanding of calculus and basic linear algebra together with the desire and ability to prove theorems. The minimal background requirement combined with the author's fresh approach and engaging style make this book enjoyable and accessible to second-year undergraduates, and even advanced high school students. The author's refreshing new spin on more traditional discovery approaches makes this book appealing to any mathematician and/or fan of number theory.

## 作者介绍:

Edward B. Burger: Williams College, Williamstown, MA

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