

# 《初等数论及其应用》

## 图书基本信息

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# 《初等数论及其应用》

## 前言

My goal in writing this text has been to write an accessible and inviting introduction to number theory. Foremost, I wanted to create an effective tool for teaching and learning. I hoped to capture the richness and beauty of the subject and its unexpected usefulness. Number theory is both classical and modern, and, at the same time, both pure and applied. In this text, I have strived to capture these contrasting aspects of number theory. I have worked hard to integrate these aspects into one cohesive text. This book is ideal for an undergraduate number theory course at any level. No formal prerequisites beyond college algebra are needed for most of the material, other than some level of mathematical maturity. This book is also designed to be a source book for elementary number theory; it can serve as a useful supplement for computer science courses and as a primer for those interested in new developments in number theory and cryptography. Because it is comprehensive, it is designed to serve both as a textbook and as a lifetime reference for elementary number theory and its wide-ranging applications. This edition celebrates the silver anniversary of this book. Over the past 25 years, close to 100,000 students worldwide have studied number theory from previous editions. Each successive edition of this book has benefited from feedback and suggestions from many instructors, students, and reviewers. This new edition follows the same basic approach as all previous editions, but with many improvements and enhancements. I invite instructors unfamiliar with this book, or who have not looked at a recent edition, to carefully examine the sixth edition. I have confidence that you will appreciate the rich exercise sets, the fascinating biographical and historical notes, the up-to-date coverage, careful and rigorous proofs, the many helpful examples, the rich applications, the support for computational engines such as Maple and Mathematica, and the many resources available on the Web.

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## 内容概要

《初等数论及其应用(英文版)(第6版)》是数论课程的经典教材，自出版以来，深受读者好评，被美国加州大学伯克利分校、伊利诺伊大学、得克萨斯大学等数百所名校采用。

《初等数论及其应用(英文版)(第6版)》以经典理论与现代应用相结合的方式介绍了初等数论的基本概念和方法，内容包括整除、同余、二次剩余、原根以及整数的阶的讨论和计算。

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## 作者简介

Kenneth H. Rosen, 1972年获密歇根大学数学学士学位, 1976年获麻省理工学院数学博士学位, 1982年加入贝尔实验室, 现为AT & T实验室特别成员, 国际知名的计算机数学专家。Rosen博士对数论领域与数学建模领域颇有研究, 并写过很多经典论文及专著。他的经典著作《离散数学及其应

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## 章节摘录

插图：Experimentation and exploration play a key role in the study of number theory. The results in this book were found by mathematicians who often examined large amounts of numerical evidence, looking for patterns and making conjectures. They worked diligently to prove their conjectures; some of these were proved and became theorems, others were rejected when counterexamples were found, and still others remain unresolved. As you study number theory, I recommend that you examine many examples, look for patterns, and formulate your own conjectures. You can examine small examples by hand, much as the founders of number theory did, but unlike these pioneers, you can also take advantage of today's vast computing power and computational engines. Working through examples, either by hand or with the aid of computers, will help you to learn the subject—and you may even find some new results of your own !

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## 精彩短评

- 1、我有个习惯，豆瓣上不记录教材。但这本书是个例外：在书的扉页，还记录着我歪歪斜斜的铅笔字：“2010年5月，购于当当网”。当时看了很少的一部分，觉得自己看不懂，于是半途放弃。而从我重拾这本书，再到学完我建议部分，只用了1个多月。不想做一件事，可以收集上百条借口；想做一件事，只需要一个理由就可以了。多么的巧合，这本购于毕业季的书，仿佛故意留给我机会去审视自己一样：静下心来去做自己能做的，想做的，总会有收获。  
我斗志昂扬地想：真好。
- 2、Rosen的书，木话说，好书！我从第4版买到第6版
- 3、很多著作的水平因译者水平而异，还是看原版来得明了，收藏了。
- 4、内容详实，逻辑清晰，比国内的教材更充实易懂，适合数学爱好者
- 5、书的内容不错，就是书的纸张不好。
- 6、收到书和以前一样快，但是还没读
- 7、解释详细，例子、习题、应用实例都很多很好，有不少数学历史。值得一读的数论入门书。
- 8、我的最爱 收藏了
- 9、数论其实在密码学或者另外一些工程上都能看到一些身影（比如众所周知的中国余数定理在好多地方都能见到）。书的内容也很全面。是数学爱好者必收的书，然后喜欢研究程序算法的大概也能从中吸取很多营养~
- 10、今天刚收到这本书，无论是从纸张还是内容都让人感觉很舒服
- 11、感觉这本书比北大潘老师写的要温暖些，推理上更亲切些。当然潘老师的书早已作为初等数论的典范教材为大家所熟知。两本书结合来看，效果更好。

## 章节试读

### 1、《初等数论及其应用》的笔记-第6页

根号2是无理数的证明,这个方法很有意思.

### 2、《初等数论及其应用》的笔记-第8页

The fractional part of a real number  $x$ , denoted  $\{x\}$ , is the difference between  $x$  and the largest integer less than or equal to  $x$ , namely  $[x]$ . that is,  $\{x\} = x - [x]$ .  
实数的小数部分 = 实数 - 实数的最大整数.

### 3、《初等数论及其应用》的笔记-第9页

Pigeon Hole Principle: if  $k+1$  or more object are placed into  $k$  boxes, then at least one box contains two or more of the objects.

鸽巢原理(又称抽屉原理): 如果 $k+1$ 个或者更多数量的物体被放到 $k$ 个盒子里, 那么至少存在一个盒子里面有2个或更多物体.

验证: 假设没有盒子包含的数量大于1, 那么所有盒子装下的物体数最大是 $k$ . 这个矛盾显示假设不成立, 那么至少存在一个盒子里面有2个或更多物体.

逻辑上有错误吗?



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