

# Handbook Of Number Theory Ii 1st Edition

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## **Number Theory and Its History** - Oystein Ore

2012-07-06

Unusually clear, accessible introduction covers counting, properties of numbers, prime numbers, Aliquot parts, Diophantine problems,

congruences, much more. Bibliography.

## **An Adventurer's Guide to Number Theory** - Richard

Friedberg 2012-07-06

This witty introduction to number theory deals with the properties of numbers and

numbers as abstract concepts. Topics include primes, divisibility, quadratic forms, and related theorems.

A Course in Number Theory - H. E. Rose 1995

The second edition of this undergraduate textbook is now available in paperback.

Covering up-to-date as well as established material, it is the only textbook which deals with all the main areas of number theory, taught in the third year of a mathematics course. Each chapter ends with a collection of problems, and hints and sketch solutions are provided at the end of the book, together with useful tables.

**Unsolved Problems in Number Theory** - Richard Guy  
2013-06-29

Second edition sold 2241 copies in N.A. and 1600 ROW. New edition contains 50 percent new material.

*A Classical Introduction to Modern Number Theory* - Kenneth Ireland 1990-09-07  
Bridging the gap between elementary number theory and the systematic study of advanced topics, A Classical

Introduction to Modern Number Theory is a well-developed and accessible text that requires only a familiarity with basic abstract algebra. Historical development is stressed throughout, along with wide-ranging coverage of significant results with comparatively elementary proofs, some of them new. An extensive bibliography and many challenging exercises are also included. This second edition has been corrected and contains two new chapters which provide a complete proof of the Mordell-Weil theorem for elliptic curves over the rational numbers, and an overview of recent progress on the arithmetic of elliptic curves.

*Probabilistic Number Theory II* - P.D.T.A. Elliott 2012-12-06

In this volume we study the value distribution of arithmetic functions, allowing unbounded renormalisations. The methods involve a synthesis of Probability and Number Theory; sums of independent infinitesimal random variables playing an important role. A central problem is to decide

when an additive arithmetic function  $f(n)$  admits a renormalisation by real functions  $a(x)$  and  $\zeta(x) > 0$  so that  $ax \sim 00$  the frequencies  $\nu(n; f(n) - a(x) : s; ; z \zeta(x))$  converge weakly; (see Notation). In contrast to volume one we allow  $\zeta(x)$  to become unbounded with  $x$ . In particular, we investigate to what extent one can simulate the behaviour of additive arithmetic functions by that of sums of suitably defined independent random variables. This fruitful point of view was introduced in a 1939 paper of Erdos and Kac. We obtain their (now classical) result in Chapter 12. Subsequent methods involve both Fourier analysis on the line, and the application of Dirichlet series. Many additional topics are considered. We mention only: a problem of Hardy and Ramanujan; local properties of additive arithmetic functions; the rate of convergence of certain arithmetic frequencies to the normal law; the arithmetic simulation of all stable laws. As in Volume I the historical

background of various results is discussed, forming an integral part of the text. In Chapters 12 and 19 these considerations are quite extensive, and an author often speaks for himself.

**Number Theory and Related Fields** - Jonathan M. Borwein  
2013-05-16

"Number Theory and Related Fields" collects contributions based on the proceedings of the "International Number Theory Conference in Memory of Alf van der Poorten," hosted by CARMA and held March 12-16th 2012 at the University of Newcastle, Australia. The purpose of the conference was to promote number theory research in Australia while commemorating the legacy of Alf van der Poorten, who had written over 170 papers on the topic of number theory and collaborated with dozens of researchers. The research articles and surveys presented in this book were written by some of the most distinguished mathematicians in the field of number theory, and articles will include related topics that focus on the various research

interests of Dr. van der Poorten.  
**Number Theory** - W.A. Coppel  
2006-02-02

This two-volume book is a modern introduction to the theory of numbers, emphasizing its connections with other branches of mathematics. Part A is accessible to first-year undergraduates and deals with elementary number theory. Part B is more advanced and gives the reader an idea of the scope of mathematics today. The connecting theme is the theory of numbers. By exploring its many connections with other branches a broad picture is obtained. The book contains a treasury of proofs, several of which are gems seldom seen in number theory books.

*Sequences, Groups, and Number Theory* - Valérie Berthé  
2018-04-09

This collaborative book presents recent trends on the study of sequences, including combinatorics on words and symbolic dynamics, and new interdisciplinary links to group theory and number theory.

Other chapters branch out from those areas into subfields of theoretical computer science, such as complexity theory and theory of automata. The book is built around four general themes: number theory and sequences, word combinatorics, normal numbers, and group theory. Those topics are rounded out by investigations into automatic and regular sequences, tilings and theory of computation, discrete dynamical systems, ergodic theory, numeration systems, automaton semigroups, and amenable groups. This volume is intended for use by graduate students or research mathematicians, as well as computer scientists who are working in automata theory and formal language theory. With its organization around unified themes, it would also be appropriate as a supplemental text for graduate level courses.

**Number Theory II** - Helmut Koch 1992

Volume 62 of the Encyclopedia presents the main structures and results of algebraic number theory with emphasis on

algebraic number fields and class field theory. Written for the nonspecialist, the author assumes a general understanding of modern algebra and elementary number theory. Only the general properties of algebraic number fields and relate.

**SCIENTIA MAGNA - International Book Series (vol. 13, no. 1)** - Huaning Liu  
Scientia Magna international book series are published in one or two volumes per year with more than 100 pages and over 1,000 copies.

**Number Theory** - Don Redmond 1996-04-23  
This text provides a detailed introduction to number theory, demonstrating how other areas of mathematics enter into the study of the properties of natural numbers. It contains problem sets within each section and at the end of each chapter to reinforce essential concepts, and includes up-to-date information on divisibility problems, polynomial congruence, the sums of squares and trigonometric sums.;Five or more copies may

be ordered by college or university bookstores at a special price, available on application.

**A Hilbert Space Problem Book** - P.R. Halmos 1982-11-08  
Written for the active reader with some background in the topic, this book presents problems in Hilbert space theory, with definitions, corollaries and historical remarks, hints, proofs, answers and constructions.

*Computational Number Theory and Modern Cryptography* - Song Y. Yan 2013-01-29  
The only book to provide a unified view of the interplay between computational number theory and cryptography  
Computational number theory and modern cryptography are two of the most important and fundamental research fields in information security. In this book, Song Y. Yang combines knowledge of these two critical fields, providing a unified view of the relationships between computational number theory and cryptography. The author takes an innovative approach, presenting mathematical ideas

first, thereupon treating cryptography as an immediate application of the mathematical concepts. The book also presents topics from number theory, which are relevant for applications in public-key cryptography, as well as modern topics, such as coding and lattice based cryptography for post-quantum cryptography. The author further covers the current research and applications for common cryptographic algorithms, describing the mathematical problems behind these applications in a manner accessible to computer scientists and engineers. Makes mathematical problems accessible to computer scientists and engineers by showing their immediate application Presents topics from number theory relevant for public-key cryptography applications Covers modern topics such as coding and lattice based cryptography for post-quantum cryptography Starts with the basics, then goes into applications and areas of active research Geared

at a global audience; classroom tested in North America, Europe, and Asia Includes exercises in every chapter Instructor resources available on the book's Companion Website Computational Number Theory and Modern Cryptography is ideal for graduate and advanced undergraduate students in computer science, communications engineering, cryptography and mathematics. Computer scientists, practicing cryptographers, and other professionals involved in various security schemes will also find this book to be a helpful reference.

**Handbook of Computational Group Theory** - Derek F. Holt  
2005-01-13

The origins of computation group theory (CGT) date back to the late 19th and early 20th centuries. Since then, the field has flourished, particularly during the past 30 to 40 years, and today it remains a lively and active branch of mathematics. The Handbook of Computational Group Theory offers the first complete

treatment of all the fundame  
Algebraic Number Theory -  
 Jürgen Neukirch 2013-03-14  
 This introduction to algebraic  
 number theory discusses the  
 classical concepts from the  
 viewpoint of Arakelov theory.  
 The treatment of class theory is  
 particularly rich in illustrating  
 complements, offering hints for  
 further study, and providing  
 concrete examples. It is the  
 most up-to-date, systematic,  
 and theoretically  
 comprehensive textbook on  
 algebraic number field theory  
 available.

*Handbook of Teichmüller  
 Theory* - Athanase  
 Papadopoulos 2007

The subject of this handbook is  
 Teichmüller theory in a wide  
 sense, namely the theory of  
 geometric structures on  
 surfaces and their moduli  
 spaces. This includes the study  
 of vector bundles on these  
 moduli spaces, the study of  
 mapping class groups, the  
 relation with  $3g-3$ -manifolds, the  
 relation with symmetric spaces  
 and arithmetic groups, the  
 representation theory of  
 fundamental groups, and

applications to physics. Thus  
 the handbook is a place where  
 several fields of mathematics  
 interact: Riemann surfaces,  
 hyperbolic geometry, partial  
 differential equations, several  
 complex variables, algebraic  
 geometry, algebraic topology,  
 combinatorial topology, low-  
 dimensional topology,  
 theoretical physics, and others.  
 This confluence of ideas toward  
 a unique subject is a  
 manifestation of the unity and  
 harmony of mathematics. This  
 volume contains surveys on the  
 fundamental theory as well as  
 surveys on applications to and  
 relations with the fields  
 mentioned above. It is written  
 by leading experts in these  
 fields. Some of the surveys  
 contain classical material, while  
 others present the latest  
 developments of the theory as  
 well as open problems. This  
 volume is divided into the  
 following four sections: The  
 metric and the analytic theory  
 The group theory The algebraic  
 topology of mapping class  
 groups and moduli spaces  
 Teichmüller theory and  
 mathematical physics This

handbook is addressed to graduate students and researchers in all the fields mentioned.

### **Circuits and Systems for Security and Privacy -**

Farhana Sheikh 2017-12-19

Circuits and Systems for Security and Privacy begins by introducing the basic theoretical concepts and arithmetic used in algorithms for security and cryptography, and by reviewing the fundamental building blocks of cryptographic systems. It then analyzes the advantages and disadvantages of real-world implementations that not only optimize power, area, and throughput but also resist side-channel attacks. Merging the perspectives of experts from industry and academia, the book provides valuable insight and necessary background for the design of security-aware circuits and systems as well as efficient accelerators used in security applications.

Combinatorial and Additive Number Theory II - Melvyn B. Nathanson 2018-01-13

Based on talks from the 2015

and 2016 Combinatorial and Additive Number Theory (CANT) workshops at the City University of New York, these proceedings offer 19 peer-reviewed and edited papers on current topics in number theory. Held every year since 2003, the workshop series surveys state-of-the-art open problems in combinatorial and additive number theory and related parts of mathematics. Sumsets, partitions, convex polytopes and discrete geometry, Ramsey theory, primality testing, and cryptography are among the topics featured in this volume. Each contribution is dedicated to a specific topic that reflects the latest results by experts in the field. Researchers and graduate students interested in the current progress in number theory will find this selection of articles relevant and compelling.

*A Classical Introduction to Modern Number Theory* - K. Ireland 2013-03-09

This book is a revised and greatly expanded version of our book Elements of Number



Theory published in 1972. As with the first book the primary audience we envisage consists of upper level undergraduate mathematics majors and graduate students. We have assumed some familiarity with the material in a standard undergraduate course in abstract algebra. A large portion of Chapters 1-11 can be read even without such background with the aid of a small amount of supplementary reading. The later chapters assume some knowledge of Galois theory, and in Chapters 16 and 18 an acquaintance with the theory of complex variables is necessary. Number theory is an ancient subject and its content is vast. Any introductory book must, of necessity, make a very limited selection from the fascinating array of possible topics. Our focus is on topics which point in the direction of algebraic number theory and arithmetic algebraic geometry. By a careful selection of subject matter we have found it possible to exposit some rather advanced material without

requiring very much in the way of technical background. Most of this material is classical in the sense that it was discovered during the nineteenth century and earlier, but it is also modern because it is intimately related to important research going on at the present time. Number Theory - Henri Cohen 2007-05-23

This book deals with several aspects of what is now called "explicit number theory." The central theme is the solution of Diophantine equations, i.e., equations or systems of polynomial equations which must be solved in integers, rational numbers or more generally in algebraic numbers. This theme, in particular, is the central motivation for the modern theory of arithmetic algebraic geometry. In this text, this is considered through three of its most basic aspects. The local aspect, global aspect, and the third aspect is the theory of zeta and L-functions. This last aspect can be considered as a unifying theme for the whole subject.

## **Introduction to Number**

**Theory** - Anthony Vazzana  
2007-10-30

One of the oldest branches of mathematics, number theory is a vast field devoted to studying the properties of whole numbers. Offering a flexible format for a one- or two-semester course, Introduction to Number Theory uses worked examples, numerous exercises, and two popular software packages to describe a diverse array of number theory topics. [Book Catalog of the Library and Information Services Division: Shelf List catalog](#) - Environmental Science Information Center. Library and Information Services Division 1977

**Handbook of Number Theory II** - Dragoslav S. Mitrinović 2004

This handbook focuses on some important topics from Number Theory and Discrete Mathematics. These include the sum of divisors function with the many old and new issues on Perfect numbers; Euler's totient and its many facets; the Möbius function along with its

generalizations, extensions, and applications; the arithmetic functions related to the divisors or the digits of a number; the Stirling, Bell, Bernoulli, Euler and Eulerian numbers, with connections to various fields of pure or applied mathematics. Each chapter is a survey and can be viewed as an encyclopedia of the considered field, underlining the interconnections of Number Theory with Combinatorics, Numerical mathematics, Algebra, or Probability Theory. This reference work will be useful to specialists in number theory and discrete mathematics as well as mathematicians or scientists who need access to some of these results in other fields of research.

**Problems in Algebraic Number Theory** - M. Ram Murty 2010-11-19

The problems are systematically arranged to reveal the evolution of concepts and ideas of the subject. Includes various levels of problems - some are easy and straightforward, while others

are more challenging All problems are elegantly solved  
*Number Theory* - Henri Cohen  
2008-12-17

This book deals with several aspects of what is now called "explicit number theory." The central theme is the solution of Diophantine equations, i.e., equations or systems of polynomial equations which must be solved in integers, rational numbers or more generally in algebraic numbers. This theme, in particular, is the central motivation for the modern theory of arithmetic algebraic geometry. In this text, this is considered through three of its most basic aspects. The local aspect, global aspect, and the third aspect is the theory of zeta and L-functions. This last aspect can be considered as a unifying theme for the whole subject.

**A Comprehensive Course in Number Theory** - Alan Baker  
2012-08-23

Developed from the author's popular text, *A Concise Introduction to the Theory of Numbers*, this book provides a comprehensive initiation to all

the major branches of number theory. Beginning with the rudiments of the subject, the author proceeds to more advanced topics, including elements of cryptography and primality testing, an account of number fields in the classical vein including properties of their units, ideals and ideal classes, aspects of analytic number theory including studies of the Riemann zeta-function, the prime-number theorem and primes in arithmetical progressions, a description of the Hardy-Littlewood and sieve methods from respectively additive and multiplicative number theory and an exposition of the arithmetic of elliptic curves. The book includes many worked examples, exercises and further reading. Its wider coverage and versatility make this book suitable for courses extending from the elementary to beginning graduate studies.

**Elementary Number Theory**  
- Gove Effinger 2021-09-09  
*Elementary Number Theory*,  
Gove Effinger, Gary L. Mullen

This text is intended to be used as an undergraduate introduction to the theory of numbers. The authors have been immersed in this area of mathematics for many years and hope that this text will inspire students (and instructors) to study, understand, and come to love this truly beautiful subject. Each chapter, after an introduction, develops a new topic clearly broken out in sections which include theoretical material together with numerous examples, each worked out in considerable detail. At the end of each chapter, after a summary of the topic, there are a number of solved problems, also worked out in detail, followed by a set of supplementary problems. These latter problems give students a chance to test their own understanding of the material; solutions to some but not all of them complete the chapter. The first eight chapters discuss some standard material in elementary number theory. The remaining chapters discuss topics which might be

considered a bit more advanced. The text closes with a chapter on Open Problems in Number Theory. Students (and of course instructors) are strongly encouraged to study this chapter carefully and fully realize that not all mathematical issues and problems have been resolved! There is still much to be learned and many questions to be answered in mathematics in general and in number theory in particular.

#### Number Theory Through Inquiry

- David C. Marshall 2007

This innovative textbook leads students on a carefully guided discovery of introductory number theory. The book has two equally significant goals. The first is to help students develop mathematical thinking skills, particularly theorem-proving skills. The other goal is to help students understand some of the wonderfully rich ideas in the mathematical study of numbers. This book is appropriate for a proof transitions course, for independent study, or for a course designed as an

introduction to abstract mathematics. It is designed to be used with an instructional technique variously called guided discovery or Modified Moore Method or Inquiry Based Learning (IBL). Instructors' materials explain the instructional method, which gives students a totally different experience compared to a standard lecture course. Students develop an attitude of personal reliance and a sense that they can think effectively about difficult problems; goals that are fundamental to the educational enterprise within and beyond mathematics.

Basic Number Theory. - Andre Weil 2013-12-14  
 The first part of this volume is based on a course taught at Princeton University in 1961-62; at that time, an excellent set of notes was prepared by David Cantor, and it was originally my intention to make these notes available to the mathematical public with only quite minor changes. Then, among some old papers of mine, I

accidentally came across a long-forgotten manuscript by Chevalley, of pre-war vintage (forgotten, that is to say, both by me and by its author) which, to my taste at least, seemed to have aged very well. It contained a brief but essentially complete account of the main features of classfield theory, both local and global; and it soon became obvious that the usefulness of the intended volume would be greatly enhanced if I included such a treatment of this topic. It had to be expanded, in accordance with my own plans, but its outline could be preserved without much change. In fact, I have adhered to it rather closely at some critical points.

*Advances in Ultrametric Analysis* - Khodr Shamseddine 2013

This volume contains papers based on lectures given at the 12th International Conference on p-adic Functional Analysis, which was held at the University of Manitoba on July 2-6, 2012. The articles included in this book feature recent developments in various areas

of non-archimedean analysis: branched values and zeros of the derivative of a  $p$ -adic meromorphic function,  $p$ -adic meromorphic functions  $f \in P^{\times}(f)$ ,  $g \in P^{\times}(g)$  sharing a small function, properties of composition of analytic functions, partial fractional differentiability, morphisms between ultrametric Banach algebras of continuous functions and maximal ideals of finite dimension, the  $p$ -adic  $q$ -distributions, Banach spaces over fields with an infinite rank valuation, Grobman-Hartman theorems for diffeomorphisms of Banach spaces over valued fields, integral representations of continuous linear maps on  $p$ -adic spaces of continuous functions, non-Archimedean operator algebras, generalized Keller spaces over valued fields, proper multiplications on the completion of a totally ordered abelian group, the Grothendieck approximation theory in non-Archimedean functional analysis, generalized power series spaces, measure

theory and the study of power series and analytic functions on the Levi-Civita fields. Through a combination of new research articles and survey papers, this book provides the reader with an overview of current developments and techniques in non-archimedean analysis as well as a broad knowledge of some of the sub-areas of this exciting and fast-developing research area.

**Algebraic Number Theory** - Serge Lang 2013-06-29

This is a second edition of Lang's well-known textbook. It covers all of the basic material of classical algebraic number theory, giving the student the background necessary for the study of further topics in algebraic number theory, such as cyclotomic fields, or modular forms. "Lang's books are always of great value for the graduate student and the research mathematician. This updated edition of Algebraic number theory is no exception."—  
**MATHEMATICAL REVIEWS**  
Handbook of Tilting Theory - Lidia Angeleri Hügel 2007-01-04

A handbook of key articles providing both an introduction and reference for newcomers and experts alike.

### **Applied Number Theory -**

Harald Niederreiter 2015-09-01

This textbook effectively builds a bridge from basic number theory to recent advances in applied number theory. It presents the first unified account of the four major areas of application where number theory plays a fundamental role, namely cryptography, coding theory, quasi-Monte Carlo methods, and pseudorandom number generation, allowing the authors to delineate the manifold links and interrelations between these areas. Number theory, which Carl-Friedrich Gauss famously dubbed the queen of mathematics, has always been considered a very beautiful field of mathematics, producing lovely results and elegant proofs. While only very few real-life applications were known in the past, today number theory can be found in everyday life: in supermarket bar code scanners, in our cars'

GPS systems, in online banking, etc. Starting with a brief introductory course on number theory in Chapter 1, which makes the book more accessible for undergraduates, the authors describe the four main application areas in Chapters 2-5 and offer a glimpse of advanced results that are presented without proofs and require more advanced mathematical skills. In the last chapter they review several further applications of number theory, ranging from check-digit systems to quantum computation and the organization of raster-graphics memory. Upper-level undergraduates, graduates and researchers in the field of number theory will find this book to be a valuable resource. Number Theory - George E. Andrews 1994-10-12 Written by a distinguished mathematician and teacher, this undergraduate text uses a combinatorial approach to accommodate both math majors and liberal arts students. In addition to covering the basics of number

theory, it offers an outstanding introduction to partitions, plus chapters on multiplicativity-divisibility, quadratic congruences, additivity, and more.

### **Handbook of Number**

#### **Theory I - József Sándor**

2005-11-17

This handbook covers a wealth of topics from number theory, special attention being given to estimates and inequalities. As a rule, the most important results are presented, together with their refinements, extensions or generalisations. These may be applied to other aspects of number theory, or to a wide range of mathematical disciplines. Cross-references provide new insight into fundamental research.

Audience: This is an indispensable reference work for specialists in number theory and other mathematicians who need access to some of these results in their own fields of research.

### **Algebra and Number Theory**

- Martyn R. Dixon 2011-07-15

Explore the main algebraic structures and number systems

that play a central role across the field of mathematics. Algebra and number theory are two powerful branches of modern mathematics at the forefront of current mathematical research, and each plays an increasingly significant role in different branches of mathematics, from geometry and topology to computing and communications. Based on the authors' extensive experience within the field, Algebra and Number Theory has an innovative approach that integrates three disciplines—linear algebra, abstract algebra, and number theory—into one comprehensive and fluid presentation, facilitating a deeper understanding of the topic and improving readers' retention of the main concepts. The book begins with an introduction to the elements of set theory. Next, the authors discuss matrices, determinants, and elements of field theory, including preliminary information related to integers and complex numbers.



Subsequent chapters explore key ideas relating to linear algebra such as vector spaces, linear mapping, and bilinear forms. The book explores the development of the main ideas of algebraic structures and concludes with applications of algebraic ideas to number theory. Interesting applications are provided throughout to demonstrate the relevance of the discussed concepts. In addition, chapter exercises allow readers to test their comprehension of the presented material. Algebra and Number Theory is an excellent book for courses on linear algebra, abstract algebra, and number theory at the upper-undergraduate level. It is also a valuable reference for researchers working in different fields of mathematics, computer science, and engineering as well as for individuals preparing for a career in mathematics education.

**Number Theory** - Kazuya Kato  
2000

This is the third of three related volumes on number theory.

(The first two volumes were also published in the Iwanami Series in Modern Mathematics, as volumes 186 and 240.) The two main topics of this book are Iwasawa theory and modular forms. The presentation of the theory of modular forms starts with several beautiful relations discovered by Ramanujan and leads to a discussion of several important ingredients, including the zeta-regularized products, Kronecker's limit formula, and the Selberg trace formula. The presentation of Iwasawa theory focuses on the Iwasawa main conjecture, which establishes far-reaching relations between a  $p$ -adic analytic zeta function and a determinant defined from a Galois action on some ideal class groups. This book also contains a short exposition on the arithmetic of elliptic curves and the proof of Fermat's last theorem by Wiles. Together with the first two volumes, this book is a good resource for anyone learning or teaching modern algebraic number theory.

**The Theory of Numbers** -  
Andrew Adler 1995

Excursions in Number Theory -

Charles Stanley Ogilvy

1988-01-01

Challenging, accessible mathematical adventures involving prime numbers, number patterns, irrationals and iterations, calculating prodigies, and more. No special

training is needed, just high school mathematics and an inquisitive mind. "A splendidly written, well selected and presented collection. I recommend the book unreservedly to all readers." — Martin Gardner.