

# An Introduction To Complex Function Theory Undergraduate Texts In Mathematics

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**Complex Analysis** - Lars Valerian Ahlfors 2021

"The back-up contains a draft of the title page, copyright page, toc, and preface. DO NOT INCLUDE THIS IN THE CIP RECORD"--

**Functions of a Complex Variable and Some of Their Applications** - B. A. Fuchs 2014-08-01

Functions of a Complex Variable and Some of Their Applications, Volume 1, discusses the fundamental ideas of the theory of functions of a complex variable. The book is the result of a complete rewriting and revision of a translation of the second (1957) Russian edition. Numerous changes and additions have been made, both in the text and in the solutions of the Exercises. The book begins with a review of arithmetical operations with complex numbers. Separate chapters discuss the fundamentals of complex analysis; the concept of conformal transformations; the most important of the elementary functions; and the complex potential for a plane vector field and the application of the simplest methods of function theory to the analysis of such a field. Subsequent chapters cover the fundamental apparatus of the theory of regular functions, i.e. basic integral theorems and expansions in series; the general concept of an analytic function; applications of the theory of residues; and polygonal domain mapping. This book is intended for undergraduate and postgraduate students of higher technical institutes and for engineers wishing to increase their knowledge of theory.

Theory of Complex Functions - Reinhold Remmert 2012-12-06

A lively and vivid look at the material from function theory, including the residue calculus, supported by examples and practice exercises throughout. There is also ample discussion of the historical evolution of the theory, biographical sketches of important contributors, and citations - in the original language with their English translation - from their classical works. Yet the book is far from being a mere history of function theory, and even experts will find a few new or long forgotten gems here. Destined to accompany students making their way into this classical area of mathematics, the book offers quick access to the essential results for exam preparation. Teachers and interested mathematicians in finance, industry and science will profit from reading this again and again, and will refer back to it with pleasure.

*Applied Complex Variables* - John W. Dettman 2012-05-07

Fundamentals of analytic function theory — plus lucid exposition of 5 important applications: potential theory, ordinary differential equations, Fourier transforms, Laplace transforms, and asymptotic expansions. Includes 66 figures.

*Complex Function Theory* - Donald Sarason 2007-12-20

Complex Function Theory is a concise and rigorous introduction to the theory of functions of a complex variable. Written in a classical style, it is in the spirit of the books by Ahlfors and by Saks and Zygmund. Being designed for a one-semester course, it is much shorter than many of the standard texts. Sarason covers the basic material through Cauchy's theorem and applications, plus the Riemann mapping theorem. It is suitable for either an introductory graduate course or an undergraduate course for students with adequate preparation. The first edition was published with the title Notes on Complex Function Theory.

**Functions of a Complex Variable** - Hemant Kumar Pathak 2015-10-14

Functions of a Complex Variable provides all the material for a course on the theory of functions of a complex variable at the senior undergraduate and beginning graduate level. Also suitable for self-study, the

book covers every topic essential to training students in complex analysis. It also incorporates special topics to enhance students' understanding of the subject, laying the foundation for future studies in analysis, linear algebra, numerical analysis, geometry, number theory, physics, thermodynamics, or electrical engineering. After introducing the basic concepts of complex numbers and their geometrical representation, the text describes analytic functions, power series and elementary functions, the conformal representation of an analytic function, special transformations, and complex integration. It next discusses zeros of an analytic function, classification of singularities, and singularity at the point of infinity; residue theory, principle of argument, Rouché's theorem, and the location of zeros of complex polynomial equations; and calculus of residues, emphasizing the techniques of definite integrals by contour integration. The authors then explain uniform convergence of sequences and series involving Parseval, Schwarz, and Poisson formulas. They also present harmonic functions and mappings, inverse mappings, and univalent functions as well as analytic continuation.

**Hidden Harmony—Geometric Fantasies** - Umberto Bottazzini 2013-06-21

This book is a history of complex function theory from its origins to 1914, when the essential features of the modern theory were in place. It is the first history of mathematics devoted to complex function theory, and it draws on a wide range of published and unpublished sources. In addition to an extensive and detailed coverage of the three founders of the subject - Cauchy, Riemann, and Weierstrass - it looks at the contributions of authors from d'Alembert to Hilbert, and Laplace to Weyl. Particular chapters examine the rise and importance of elliptic function theory, differential equations in the complex domain, geometric function theory, and the early years of complex function theory in several variables. Unique emphasis has been devoted to the creation of a textbook tradition in complex analysis by considering some seventy textbooks in nine different languages. The book is not a mere sequence of disembodied results and theories, but offers a comprehensive picture of the broad cultural and social context in which the main actors lived and worked by paying attention to the rise of mathematical schools and of contrasting national traditions. The book is unrivaled for its breadth and depth, both in the core theory and its implications for other fields of mathematics. It documents the motivations for the early ideas and their gradual refinement into a rigorous theory.

Complex Variables and Analytic Functions: An Illustrated Introduction - Bengt Fornberg 2019-12-23

At almost all academic institutions worldwide, complex variables and analytic functions are utilized in courses on applied mathematics, physics, engineering, and other related subjects. For most students, formulas alone do not provide a sufficient introduction to this widely taught material, yet illustrations of functions are sparse in current books on the topic. This is the first primary introductory textbook on complex variables and analytic functions to make extensive use of functional illustrations. Aiming to reach undergraduate students entering the world of complex variables and analytic functions, this book utilizes graphics to visually build on familiar cases and illustrate how these same functions extend beyond the real axis. It covers several important topics that are omitted in nearly all recent texts, including techniques for analytic continuation and discussions of elliptic functions and of Wiener-Hopf methods. It also presents current advances in research, highlighting the subject's active and fascinating frontier. The primary audience for this textbook is undergraduate students taking an introductory course on complex variables

and analytic functions. It is also geared toward graduate students taking a second semester course on these topics, engineers and physicists who use complex variables in their work, and students and researchers at any level who want a reference book on the subject.

Complex Functions - Gareth A. Jones 1987-03-19

An elementary account of many aspects of classical complex function theory, including Mobius transformations, elliptic functions, Riemann surfaces, Fuchsian groups and modular functions. The book is based on lectures given to advanced undergraduate students and is well suited as a textbook for a second course in complex function theory.

Complex Variables - Joseph L. Taylor 2011

"The text covers a broad spectrum between basic and advanced complex variables on the one hand and between theoretical and applied or computational material on the other hand. With careful selection of the emphasis put on the various sections, examples, and exercises, the book can be used in a one- or two-semester course for undergraduate mathematics majors, a one-semester course for engineering or physics majors, or a one-semester course for first-year mathematics graduate students. It has been tested in all three settings at the University of Utah. The exposition is clear, concise, and lively. There is a clean and modern approach to Cauchy's theorems and Taylor series expansions, with rigorous proofs but no long and tedious arguments. This is followed by the rich harvest of easy consequences of the existence of power series expansions. Through the central portion of the text, there is a careful and extensive treatment of residue theory and its application to computation of integrals, conformal mapping and its applications to applied problems, analytic continuation, and the proofs of the Picard theorems. Chapter 8 covers material on infinite products and zeroes of entire functions. This leads to the final chapter which is devoted to the Riemann zeta function, the Riemann Hypothesis, and a proof of the Prime Number Theorem." -- Publisher.

**Complex Analysis** - Friedrich Haslinger 2017-11-20

In this textbook, a concise approach to complex analysis of one and several variables is presented. After an introduction of Cauchy's integral theorem general versions of Runge's approximation theorem and Mittag-Leffler's theorem are discussed. The first part ends with an analytic characterization of simply connected domains. The second part is concerned with functional analytic methods: Fréchet and Hilbert spaces of holomorphic functions, the Bergman kernel, and unbounded operators on Hilbert spaces to tackle the theory of several variables, in particular the inhomogeneous Cauchy-Riemann equations and the  $\bar{\partial}$ -Neumann operator. Contents Complex numbers and functions Cauchy's Theorem and Cauchy's formula Analytic continuation Construction and approximation of holomorphic functions Harmonic functions Several complex variables Bergman spaces The canonical solution operator to Nuclear Fréchet spaces of holomorphic functions The  $\bar{\partial}$ -complex The twisted  $\bar{\partial}$ -complex and Schrödinger operators

Visual Complex Analysis - Tristan Needham 1997

This radical approach to complex analysis replaces the standard calculational arguments with new geometric ones. Using several hundred diagrams this is a new visual approach to the topic.

**Introduction to Functions of a Complex Variable** - J. H. Curtiss 2020-09-30

This book includes information on elementary general topology, the Cauchy Integral Theorem and concepts of homology and homotopy in their application to the Cauchy theory. It is intended for an introductory course in complex analysis at the first-year graduate and advanced undergraduate level.

**Complex Analysis** - Eberhard Freitag 2006-01-17

All needed notions are developed within the book: with the exception of fundamentals which are presented in introductory lectures, no other knowledge is assumed Provides a more in-depth introduction to the subject than other existing books in this area Over 400 exercises including hints for solutions are included

**All the Mathematics You Missed** - Thomas A. Garrity 2004

Complex Analysis and Differential Equations - Luis Barreira 2012-04-23

This text provides an accessible, self-contained and rigorous introduction to complex analysis and differential equations. Topics covered include holomorphic functions, Fourier series, ordinary and partial differential equations. The text is divided into two parts: part one focuses on complex analysis and part two on differential equations. Each part can be read independently, so in essence this text offers two books in

one. In the second part of the book, some emphasis is given to the application of complex analysis to differential equations. Half of the book consists of approximately 200 worked out problems, carefully prepared for each part of theory, plus 200 exercises of variable levels of difficulty. Tailored to any course giving the first introduction to complex analysis or differential equations, this text assumes only a basic knowledge of linear algebra and differential and integral calculus. Moreover, the large number of examples, worked out problems and exercises makes this the ideal book for independent study.

**The Real and the Complex: A History of Analysis in the 19th Century** - Jeremy Gray 2015-10-14

This book contains a history of real and complex analysis in the nineteenth century, from the work of Lagrange and Fourier to the origins of set theory and the modern foundations of analysis. It studies the works of many contributors including Gauss, Cauchy, Riemann, and Weierstrass. This book is unique owing to the treatment of real and complex analysis as overlapping, inter-related subjects, in keeping with how they were seen at the time. It is suitable as a course in the history of mathematics for students who have studied an introductory course in analysis, and will enrich any course in undergraduate real or complex analysis.

*An Introduction to Complex Analysis* - Ravi P. Agarwal 2011-07-01

This textbook introduces the subject of complex analysis to advanced undergraduate and graduate students in a clear and concise manner. Key features of this textbook: effectively organizes the subject into easily manageable sections in the form of 50 class-tested lectures, uses detailed examples to drive the presentation, includes numerous exercise sets that encourage pursuing extensions of the material, each with an "Answers or Hints" section, covers an array of advanced topics which allow for flexibility in developing the subject beyond the basics, provides a concise history of complex numbers. An Introduction to Complex Analysis will be valuable to students in mathematics, engineering and other applied sciences. Prerequisites include a course in calculus.

**All the Math You Missed** - Thomas A. Garrity 2021-07-01

Beginning graduate students in mathematical sciences and related areas in physical and computer sciences and engineering are expected to be familiar with a daunting breadth of mathematics, but few have such a background. This bestselling book helps students fill in the gaps in their knowledge. Thomas A. Garrity explains the basic points and a few key results of all the most important undergraduate topics in mathematics, emphasizing the intuitions behind the subject. The explanations are accompanied by numerous examples, exercises and suggestions for further reading that allow the reader to test and develop their understanding of these core topics. Featuring four new chapters and many other improvements, this second edition of All the Math You Missed is an essential resource for advanced undergraduates and beginning graduate students who need to learn some serious mathematics quickly.

**An Introduction to Complex Analysis and Geometry** - John P. D'Angelo 2010

Provides the reader with a deep appreciation of complex analysis and how this subject fits into mathematics. The first four chapters provide an introduction to complex analysis with many elementary and unusual applications. Chapters 5 to 7 develop the Cauchy theory and include some striking applications to calculus. Chapter 8 glimpses several appealing topics, simultaneously unifying the book and opening the door to further study.

**An Introduction to Complex Analysis in Several Variables** - L. Hormander 1973-02-12

An Introduction to Complex Analysis in Several Variables

*Complex Analysis* - Theodore W. Gamelin 2013-11-01

An introduction to complex analysis for students with some knowledge of complex numbers from high school. It contains sixteen chapters, the first eleven of which are aimed at an upper division undergraduate audience. The remaining five chapters are designed to complete the coverage of all background necessary for passing PhD qualifying exams in complex analysis. Topics studied include Julia sets and the Mandelbrot set, Dirichlet series and the prime number theorem, and the uniformization theorem for Riemann surfaces, with emphasis placed on the three geometries: spherical, euclidean, and hyperbolic. Throughout, exercises range from the very simple to the challenging. The book is based on lectures given by the author at several universities, including UCLA, Brown University, La Plata, Buenos Aires, and the Universidad Autonoma de Valencia, Spain.

**Elementary Theory of Analytic Functions of One or Several Complex Variables** - Henri Cartan 2013-04-22

Basic treatment includes existence theorem for solutions of differential systems where data is analytic, holomorphic functions, Cauchy's integral, Taylor and Laurent expansions, more. Exercises. 1973 edition.

From Holomorphic Functions to Complex Manifolds - Klaus Fritzsche 2012-12-06

This introduction to the theory of complex manifolds covers the most important branches and methods in complex analysis of several variables while completely avoiding abstract concepts involving sheaves, coherence, and higher-dimensional cohomology. Only elementary methods such as power series, holomorphic vector bundles, and one-dimensional cocycles are used. Each chapter contains a variety of examples and exercises.

An Introduction to Complex Function Theory - Bruce P. Palka 1991

This book provides a rigorous yet elementary introduction to the theory of analytic functions of a single complex variable. While presupposing in its readership a degree of mathematical maturity, it insists on no formal prerequisites beyond a sound knowledge of calculus. Starting from basic definitions, the text slowly and carefully develops the ideas of complex analysis to the point where such landmarks of the subject as Cauchy's theorem, the Riemann mapping theorem, and the theorem of Mittag-Leffler can be treated without sidestepping any issues of rigor. The emphasis throughout is a geometric one, most pronounced in the extensive chapter dealing with conformal mapping, which amounts essentially to a "short course" in that important area of complex function theory. Each chapter concludes with a wide selection of exercises, ranging from straightforward computations to problems of a more conceptual and thought-provoking nature.

**Explorations in Complex Analysis** - Michael A. Brilleslyper 2012-12-31

Research topics in the book include complex dynamics, minimal surfaces, fluid flows, harmonic, conformal, and polygonal mappings, and discrete complex analysis via circle packing. The nature of this book is different from many mathematics texts: the focus is on student-driven and technology-enhanced investigation. Interlaced in the reading for each chapter are examples, exercises, explorations, and projects, nearly all linked explicitly with computer applets for visualization and hands-on manipulation.

**Complex Analysis through Examples and Exercises** - E. Pap 2013-03-09

The book *Complex Analysis through Examples and Exercises* has come out from the lectures and exercises that the author held mostly for mathematician and physicists. The book is an attempt to present the rather involved subject of complex analysis through an active approach by the reader. Thus this book is a complex combination of theory and examples. Complex analysis is involved in all branches of mathematics. It often happens that the complex analysis is the shortest path for solving a problem in real circumstances. We are using the (Cauchy) integral approach and the (Weierstrass) power series approach. In the theory of complex analysis, on the hand one has an interplay of several mathematical disciplines, while on the other various methods, tools, and approaches. In view of that, the exposition of new notions and methods in our book is taken step by step. A minimal amount of expository theory is included at the beginning of each section, the Preliminaries, with maximum effort placed on well selected examples and exercises capturing the essence of the material. Actually, I have divided the problems into two classes called Examples and Exercises (some of them often also contain proofs of the statements from the Preliminaries). The examples contain complete solutions and serve as a model for solving similar problems given in the exercises. The readers are left to find the solution in the exercises; the answers, and, occasionally, some hints, are still given.

*Notes on Complex Function Theory* - Donald Sarason 1994

**Function Theory of Several Complex Variables** - Steven George Krantz 2001

Emphasizing integral formulas, the geometric theory of pseudoconvexity, estimates, partial differential equations, approximation theory, inner functions, invariant metrics, and mapping theory, this title is intended for the student with a background in real and complex variable theory, harmonic analysis, and differential equations.

**Applied Pseudoanalytic Function Theory** - Vladislav V. Kravchenko 2009-07-21

Pseudoanalytic function theory generalizes and preserves many crucial features of complex analytic function theory. The Cauchy-Riemann system is replaced by a much more general first-order system with variable coefficients which turns out to be closely related to important equations of mathematical physics. This relation supplies powerful tools for studying and solving Schrödinger, Dirac, Maxwell, Klein-Gordon and other equations with the aid of complex-analytic methods. The book is dedicated to these recent developments in pseudoanalytic function theory and their applications as well as to multidimensional generalizations. It is directed to undergraduates, graduate students and researchers interested in complex-analytic methods, solution techniques for equations of mathematical physics, partial and ordinary differential equations.

*Visual Complex Functions* - Elias Wegert 2012-08-30

This book provides a systematic introduction to functions of one complex variable. Its novel feature is the consistent use of special color representations – so-called phase portraits – which visualize functions as images on their domains. Reading *Visual Complex Functions* requires no prerequisites except some basic knowledge of real calculus and plane geometry. The text is self-contained and covers all the main topics usually treated in a first course on complex analysis. With separate chapters on various construction principles, conformal mappings and Riemann surfaces it goes somewhat beyond a standard programme and leads the reader to more advanced themes. In a second storyline, running parallel to the course outlined above, one learns how properties of complex functions are reflected in and can be read off from phase portraits. The book contains more than 200 of these pictorial representations which endow individual faces to analytic functions. Phase portraits enhance the intuitive understanding of concepts in complex analysis and are expected to be useful tools for anybody working with special functions – even experienced researchers may be inspired by the pictures to new and challenging questions. *Visual Complex Functions* may also serve as a companion to other texts or as a reference work for advanced readers who wish to know more about phase portraits.

**Classical Topics in Complex Function Theory** - Reinhold Remmert 2013-03-14

An ideal text for an advanced course in the theory of complex functions, this book leads readers to experience function theory personally and to participate in the work of the creative mathematician. The author includes numerous glimpses of the function theory of several complex variables, which illustrate how autonomous this discipline has become. In addition to standard topics, readers will find Eisenstein's proof of Euler's product formula for the sine function; Wielandt's uniqueness theorem for the gamma function; Stirling's formula; Issacs theorem; Bessel's proof that all domains in  $\mathbb{C}$  are domains of holomorphy; Wedderburn's lemma and the ideal theory of rings of holomorphic functions; Estermann's proofs of the overconvergence theorem and Bloch's theorem; a holomorphic imbedding of the unit disc in  $\mathbb{C}^3$ ; and Gauss's expert opinion on Riemann's dissertation. Remmert elegantly presents the material in short clear sections, with compact proofs and historical comments interwoven throughout the text. The abundance of examples, exercises, and historical remarks, as well as the extensive bibliography, combine to make an invaluable source for students and teachers alike.

**Algebraic Numbers and Algebraic Functions** - P.M. Cohn 1991-09-01

This book is an introduction to the theory of algebraic numbers and algebraic functions of one variable. The basic development is the same for both using E Artin's elegant approach, via valuations. Number Theory is pursued as far as the unit theorem and the finiteness of the class number. In function theory the aim is the Abel-Jacobi theorem describing the divisor class group, with occasional geometrical asides to help understanding. Assuming only an undergraduate course in algebra, plus a little acquaintance with topology and complex function theory, the book serves as an introduction to more technical works in algebraic number theory, function theory or algebraic geometry by an exposition of the central themes in the subject.

*Complex Variables with Applications* - Saminathan Ponnusamy 2007-05-26

Explores the interrelations between real and complex numbers by adopting both generalization and specialization methods to move between them, while simultaneously examining their analytic and geometric characteristics. Engaging exposition with discussions, remarks, questions, and exercises to motivate understanding and critical thinking skills. Includes numerous examples and applications relevant to science and engineering students.

Complex Analysis - Joseph Bak 2010-08-02

This unusual and lively textbook offers a clear and intuitive approach to the classical and beautiful theory of complex variables. With very little dependence on advanced concepts from several-variable calculus and topology, the text focuses on the authentic complex-variable ideas and techniques. Accessible to students at their early stages of mathematical study, this full first year course in complex analysis offers new and interesting motivations for classical results and introduces related topics stressing motivation and technique. Numerous illustrations, examples, and now 300 exercises, enrich the text. Students who master this textbook will emerge with an excellent grounding in complex analysis, and a solid understanding of its wide applicability.

Function Theory of One Complex Variable - Robert Everist Greene 2006

Complex analysis is one of the most central subjects in mathematics. It is compelling and rich in its own right, but it is also remarkably useful in a wide variety of other mathematical subjects, both pure and applied. This book is different from others in that it treats complex variables as a direct development from multivariable real calculus. As each new idea is introduced, it is related to the corresponding idea from real analysis and calculus. The text is rich with examples and exercises that illustrate this point. The authors have systematically separated the analysis from the topology, as can be seen in their proof of the Cauchy theorem. The book concludes with several chapters on special topics, including full treatments of special functions, the prime number theorem, and the Bergman kernel. The authors also treat  $H^p$  spaces and Painlevé's theorem on smoothness to the boundary for conformal maps. This book is a text for a first-year graduate course in complex analysis. It is an engaging and modern introduction to the subject, reflecting the authors' expertise both as mathematicians and as expositors.

**Complex Analysis** - Eberhard Freitag 2009-04-28

All needed notions are developed within the book: with the exception of fundamentals which are presented in introductory lectures, no other knowledge is assumed. Provides a more in-depth introduction to the subject than other existing books in this area. Over 400 exercises including hints for solutions are included.

**Complex Analysis** - Serge Lang 2013-06-29

The present book is meant as a text for a course on complex analysis at the advanced undergraduate level, or first-year graduate level. Somewhat more material has been included than can be covered at leisure in one term, to give opportunities for the instructor to exercise his taste, and lead the course in whatever direction strikes his fancy at the time. A large number of routine exercises are included for the more standard portions, and a few harder exercises of striking theoretical interest are also included, but may be omitted in courses addressed to less advanced students. In some sense, I think the classical German prewar texts were the best (Hurwitz-Courant, Knopp, Bieberbach, etc.) and I would recommend to anyone to look through them. More recent texts have emphasized connections with real analysis, which is important, but at the cost of exhibiting succinctly and clearly what is peculiar about complex analysis: the power series expansion, the uniqueness of analytic continuation, and the calculus of residues. The systematic elementary development of formal and convergent power series was standard fare in the German texts, but only Cartan, in the more recent books, includes this material, which I think is quite essential, e. g., for

differential equations. I have written a short text, exhibiting these features, making it applicable to a wide variety of tastes. The book essentially decomposes into two parts.

**Complex Made Simple** - David C. Ullrich 2008

Perhaps uniquely among mathematical topics, complex analysis presents the student with the opportunity to learn a thoroughly developed subject that is rich in both theory and applications. Even in an introductory course, the theorems and techniques can have elegant formulations. But for any of these profound results, the student is often left asking: What does it really mean? Where does it come from? In *Complex Made Simple*, David Ullrich shows the student how to think like an analyst. In many cases, results are discovered or derived, with an explanation of how the students might have found the theorem on their own. Ullrich explains why a proof works. He will also, sometimes, explain why a tempting idea does not work. *Complex Made Simple* looks at the Dirichlet problem for harmonic functions twice: once using the Poisson integral for the unit disk and again in an informal section on Brownian motion, where the reader can understand intuitively how the Dirichlet problem works for general domains. Ullrich also takes considerable care to discuss the modular group, modular function, and covering maps, which become important ingredients in his modern treatment of the often-overlooked original proof of the Big Picard Theorem. This book is suitable for a first-year course in complex analysis. The exposition is aimed directly at the students, with plenty of details included. The prerequisite is a good course in advanced calculus or undergraduate analysis.

**Complex Analysis** - Elias M. Stein 2010-04-22

With this second volume, we enter the intriguing world of complex analysis. From the first theorems on, the elegance and sweep of the results is evident. The starting point is the simple idea of extending a function initially given for real values of the argument to one that is defined when the argument is complex. From there, one proceeds to the main properties of holomorphic functions, whose proofs are generally short and quite illuminating: the Cauchy theorems, residues, analytic continuation, the argument principle. With this background, the reader is ready to learn a wealth of additional material connecting the subject with other areas of mathematics: the Fourier transform treated by contour integration, the zeta function and the prime number theorem, and an introduction to elliptic functions culminating in their application to combinatorics and number theory. Thoroughly developing a subject with many ramifications, while striking a careful balance between conceptual insights and the technical underpinnings of rigorous analysis, *Complex Analysis* will be welcomed by students of mathematics, physics, engineering and other sciences. The Princeton Lectures in Analysis represents a sustained effort to introduce the core areas of mathematical analysis while also illustrating the organic unity between them. Numerous examples and applications throughout its four planned volumes, of which *Complex Analysis* is the second, highlight the far-reaching consequences of certain ideas in analysis to other fields of mathematics and a variety of sciences. Stein and Shakarchi move from an introduction addressing Fourier series and integrals to in-depth considerations of complex analysis; measure and integration theory, and Hilbert spaces; and, finally, further topics such as functional analysis, distributions and elements of probability theory.