An Introduction To Complex Function Theory Undergraduate Texts In Mathematics

Complex Geometry
Complex Analysis
The Theory of Discrete Analytic Functions
An Introduction to Complex Analysis
Introduction to Complex Analysis
Complex Functions
Introduction to Circle Packing
An Introduction to Classical Complex Analysis
Introduction to Functions of a Complex Variable
An Introduction to Complex Analysis and Geometry
Introduction to Complex Analytic Geometry
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Function Classes on the Unit Disc
An Introduction to Classical Complex Analysis
An Introduction
Complex Variables and Analytic Functions: An Illustrated Introduction

NUNEZ GLORIA

Complex Geometry Walter de Gruyter
This book gives an introduction to the classical, well-known special functions which play a role in mathematical physics, especially in boundary value problems. Calculus and complex function theory form the basis of the book and numerous formulas are given. Particular attention is given to asymptomatic and numerical aspects of special functions, with numerous references to recent literature provided.
Complex Analysis Springer Science & Business Media
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.
The Theory of Discrete Analytic Functions CRC Press
An Introduction to Complex Function TheorySpringer Science & Business Media
An Introduction to Complex Analysis Cambridge University Press
After presenting a review of valuation theory and elementary p-adic analysis together with an application to the congruence zeta function, this book offers a detailed study of the p-adic properties of formal power series solutions of linear differential equations. In particular, the p-adic radii of convergence and the p-adic growth of coefficients are studied. Recent work of Christol, Bombieri, André, and Dwork is treated and augmented. The book concludes with Chudnovsky's theorem: the analytic continuation of a G -series is again a G -series. This book will be indispensable for those wishing to study the work of Bombieri and André on global relations and for the study of the arithmetic properties of solutions of ordinary differential equations.
Introduction to Complex Analysis An Introduction to Complex Function Theory
Complex analysis is a classic and central area of mathematics, which is studied and exploited in a range of important fields, from number theory to engineering. Introduction to Complex Analysis was first published in 1985, and for this much awaited second edition the text has been considerably expanded, while retaining the style of the original. More detailed presentation is given of elementary topics, to reflect the knowledge base of current students. Exercise sets have been substantially revised and enlarged, with carefully graded exercises at the end of each chapter. This is the latest addition to the growing list of Oxford undergraduate textbooks in mathematics, which includes: Biggs: Discrete Mathematics 2nd Edition, Cameron: Introduction to Algebra, Needham: Visual Complex Analysis, Kaye and Wilson: Linear Algebra, Acheson: Elementary Fluid Dynamics, Jordan and Smith: Nonlinear Ordinary Differential Equations, Smith: Numerical Solution of Partial Differential Equations, Wilson: Graphs, Colourings and the Four-Colour Theorem, Bishop: Neural Networks for Pattern Recognition, Gelman and Nolan: Teaching Statistics.
Complex Functions Princeton University Press
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.
Introduction to Circle Packing OUP Oxford
Like real analysis, complex analysis has generated methods indispensable to mathematics and its applications. Exploring the interactions between these two branches, this book uses the results of real analysis to lay the foundations of complex analysis and presents a unified structure of mathematical analysis as a whole. To set the groundwork and mitigate the difficulties newcomers often experience, An Introduction to Complex Analysis begins with a complete review of concepts and methods from real analysis, such as metric spaces and the Green-Gauss Integral Formula. The approach leads to brief, clear proofs of basic statements - a distinct advantage for those mainly interested in applications. Alternate approaches, such as Fichera's proof of the Goursat Theorem and Estermann's proof of the Cauchy's Integral Theorem, are also presented for comparison. Discussions include holomorphic functions, the Weierstrass Convergence Theorem, analytic continuation, isolated singularities, homotopy, Residue theory, conformal mappings, special functions and boundary value problems. More than 200 examples and 150 exercises illustrate the subject matter and make this book an ideal text for university courses on complex analysis, while the comprehensive compilation of theories and succinct proofs make this an excellent volume for reference.
An Introduction to Classical Complex Analysis Academic Press
A standard source of information of functions of one complex variable, this text has retained its wide popularity in this field by being consistently rigorous without becoming needlessly concerned with advanced or overspecialized material. Difficult

points have been clarified, the book has been reviewed for accuracy, and notations and terminology have been modernized. Chapter 2, Complex Functions, features a brief section on the change of length and area under conformal mapping, and much of Chapter 8, Global-Analytic Functions, has been rewritten in order to introduce readers to the terminology of germs and sheaves while still emphasizing that classical concepts are the backbone of the theory. Chapter 4, Complex Integration, now includes a new and simpler proof of the general form of Cauchy's theorem. There is a short section on the Riemann zeta function, showing the use of residues in a more exciting situation than in the computation of definite integrals.

Introduction to Functions of a Complex Variable World Scientific

Textbooks, even excellent ones, are a reflection of their times. Form and content of books depend on what the students know already, what they are expected to learn, how the subject matter is regarded in relation to other divisions of mathematics, and even how fashionable the subject matter is. It is thus not surprising that we no longer use such masterpieces as Hurwitz and Courant's Funktionentheorie or Jordan's Cours d'Analyse in our courses. The last two decades have seen a significant change in the techniques used in the theory of functions of one complex variable. The important role played by the inhomogeneous Cauchy-Riemann equation in the current research has led to the reunification, at least in their spirit, of complex analysis in one and in several variables. We say reunification since we think that Weierstrass, Poincare, and others (in contrast to many of our students) did not consider them to be entirely separate subjects. Indeed, not only complex analysis in several variables, but also number theory, harmonic analysis, and other branches of mathematics, both pure and applied, have required a reconsidera tion of analytic continuation, ordinary differential equations in the complex domain, asymptotic analysis, iteration of holomorphic functions, and many other subjects from the classic theory of functions of one complex variable. This ongoing reconsideration led us to think that a textbook incorporating some of these new perspectives and techniques had to be written.

An Introduction to Complex Analysis and Geometry SIAM

to Classical Complex Analysis Vol. 1 by Robert B. Burckel Kansas State University 1979 BIRKHAUSER VERLAG BASEL UND STUTTGART CIP-Kurztitelaufnahme der Deutschen Bibliothek Burckel, Robert B.: An introduction to classical complex analysis I by Robert B. Burckel. - Basel. Stuttgart: Birkhiiuser. Vol. I. - 1979. (Lehrbilcher und Monographien aus dem Gebiete der exakten Wissenschaften: Math. Reihe; Bd. 64) All Rights Reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of the Copyright owner. © Birkhiiuser Verlag Basel, 1979 North and South America Edition published by ACADEMIC PRESS. INC. III Fifth Avenue, New York, New York 10003 (Pure and Applied Mathematics, A Series of Monographs and Textbooks, Volume 82) ISBN-13: 978-3-0348-9376-3 e-ISBN-13: 978-3-0348-9374-9 DOI: 10.1007/978-3-0348-9374-9 Library of Congress Catalog Card Number 78-67403 5 Contents Volume I PREFACE 9 Chapter 0 PREREQUISITES AND PRELIMINARIES 13 § 1 Set Theory 13 § 2 Algebra 14 § 3 The Battlefield 14 § 4 Metric Spaces 15 § 5 Limsup and All That 18 § 6 Continuous Functions 20 § 7 Calculus 21 Chapter I CURVES, CONNECTEDNESS AND CONVEXITY 22 § 1 Elementary Results on Connectedness 22 § 2 Connectedness of Intervals, Curves and Convex Sets 23 § 3 The Basic Connectedness Lemma 28 § 4 Components and Compact Exhaustions 29 § 5 Connectivity of a Set 33 § 6 Extension Theorems 37 Notes to Chapter I 39

Introduction to Complex Analytic Geometry American Mathematical Soc.

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.

An Introduction to Complex Analysis Walter de Gruyter

The aim of this comparatively short textbook is a sufficiently full exposition of the fundamentals of the theory of functions of a complex variable to prepare the student for various applications. Several important applications in physics and engineering are considered in the book. This thorough presentation includes all theorems (with a few exceptions) presented with proofs. No previous exposure to complex numbers is assumed. The textbook can be used in one-semester or two-semester courses. In one respect this book is larger than usual, namely in the number of detailed solutions of typical problems. This, together with various problems, makes the book useful both for self- study and for the instructor as well. A specific point of the book is the inclusion of the Laplace transform. These two topics are closely related. Concepts in complex analysis are needed to formulate and prove basic theorems in Laplace transforms, such as the inverse Laplace transform formula. Methods of complex analysis provide solutions for problems involving Laplace transforms. Complex numbers lend clarity and completion to some areas of classical analysis. These numbers found important applications not only in the mathematical theory, but in the mathematical descriptions of processes in physics and engineering.

An Introduction to the Approximation of Functions CRC Press

This book is based on the teaching experience of the authors, and therefore some of the topics are presented in a new form. For instance, the multi-valued properties of the argument function are discussed in detail so that the beginner may readily grasp the elementary multi-valued analytic functions. The residue theorem is extended to the case where poles of analytic functions considered may occur on the boundary of a region ? which is very useful in applications but not seen in textbooks written in English.

Special Functions Elsevier

Mathematics of Computing -- Numerical Analysis.

An Introduction to Complex Analysis in Several Variables Springer Science & Business Media

Since the 1960s, there has been a flowering in higher-dimensional complex analysis. Both classical and new results in this area have found numerous applications in analysis, differential and algebraic geometry, and, in particular, contemporary mathematical physics. In many areas of modern mathematics, the mastery of the foundations of higher-dimensional complex analysis has become

necessary for any specialist. Intended as a first study of higher-dimensional complex analysis, this book covers the theory of holomorphic functions of several complex variables, holomorphic mappings, and submanifolds of complex Euclidean space.
An Introduction to G-functions McGraw-Hill Science Engineering
The study of complex variables is beautiful from a purely mathematical point of view, and very useful for solving a wide array of problems arising in applications. This introduction to complex variables, suitable as a text for a one-semester course, has been written for undergraduate students in applied mathematics, science, and engineering. Based on the authors' extensive teaching experience, it covers topics of keen interest to these students, including ordinary differential equations, as well as Fourier and Laplace transform methods for solving partial differential equations arising in physical applications. Many worked examples, applications, and exercises are included. With this foundation, students can progress beyond the standard course and explore a range of additional topics, including generalized Cauchy theorem, Painlevé equations, computational methods, and conformal mapping with circular arcs. Advanced topics are labeled with an asterisk and can be included in the syllabus or form the basis for challenging student projects.
Introduction and Applications Courier Corporation
Recent decades have seen profound changes in the way we understand complex analysis. This new work presents a much-needed modern treatment of the subject, incorporating the latest developments and providing a rigorous yet accessible introduction to the concepts and proofs of this fundamental branch of mathematics. With its thorough review of the prerequisites and well-balanced mix of theory and practice, this book will appeal both to readers interested in pursuing advanced topics as well as those wishing to explore the many applications of complex analysis to engineering and the physical sciences. * Reviews the necessary calculus, bringing readers quickly up to speed on the material * Illustrates the theory, techniques, and reasoning through the use of short proofs and many examples * Demystifies complex versus real differentiability for functions from the plane to the plane * Develops Cauchy's Theorem, presenting the powerful and easy-to-use winding-number version * Contains over 100 sophisticated graphics to provide helpful examples and reinforce important concepts
Complex Analysis John Wiley & Sons
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.
Complex Analysis World Scientific
This is a rigorous introduction to the theory of complex functions of one complex variable. The authors have made an effort to present some of the deeper and more interesting results, for example, Picard's theorems, Riemann mapping theorem, Runge's theorem in the first few chapters. However, the very basic theory is nevertheless given a thorough treatment so that readers should never feel lost. After the first five chapters, the order may be adapted to suit the course. Each chapter finishes with exercises.
Complex Variables Springer Science & Business Media
facts. An elementary acquaintance with topology, algebra, and analysis (in cluding the notion of a manifold) is sufficient as far as the understanding of this book is concerned. All the necessary properties and theorems have been gathered in the preliminary chapters -either with proofs or with references to standard and elementary textbooks. The first chapter of the book is devoted to a study of the rings Oa of holomorphic functions. The notions of analytic sets and germs are introduced in the second chapter. Its aim is to present elementary properties of these objects, also in connection with ideals of the rings Oa. The case of principal germs (§5) and one-dimensional germs (Puiseux theorem, §6) are treated separately. The main step towards understanding of the local structure of analytic sets is Ruckert's descriptive lemma proved in Chapter III. Among its conse quences is the important Hilbert Nullstellensatz (§4). In the fourth chapter, a study of local structure (normal triples, § 1) is followed by an exposition of the basic properties of analytic sets. The latter includes theorems on the set of singular points, irreducibility, and decom position into irreducible branches (§2). The role played by the ring 0 A of an analytic germ is shown (§4). Then, the Remmert-Stein theorem on re movable singularities is proved (§6). The last part of the chapter deals with analytically constructible sets (§7).

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