

# Functions of Complex Variables

Suppose we had a function of a complex variable, say

$$w = f(z) = z^2.$$

Since  $z$  is a complex number,  $w$  will be a complex number. Since  $z$  has real and imaginary parts,  $w$  will have real and imaginary parts.

# Functions Of One Complex Variable

**Lars Valerian Ahlfors**



## **Functions Of One Complex Variable:**

Functions of One Complex Variable I John B. Conway, 1978-08-24 This book presents a basic introduction to complex analysis in both an interesting and a rigorous manner It contains enough material for a full year s course and the choice of material treated is reasonably standard and should be satisfactory for most first courses in complex analysis The approach to each topic appears to be carefully thought out both as to mathematical treatment and pedagogical presentation and the end result is a very satisfactory book MATHSCINET

**Functions of One Complex Variable I** John B. Conway, 2012-12-06 This book is intended as a textbook for a first course in the theory of functions of one complex variable for students who are mathematically mature enough to understand and execute E 8 arguments The actual pre requisites for reading this book are quite minimal not much more than a stiff course in basic calculus and a few facts about partial derivatives The topics from advanced calculus that are used e g Leibniz s rule for differ entiating under the integral sign are proved in detail Complex Variables is a subject which has something for all mathematicians In addition to having applications to other parts of analysis it can rightly claim to be an ancestor of many areas of mathematics e g homotopy theory manifolds This view of Complex Analysis as An Introduction to Mathe matics has influenced the writing and selection of subject matter for this book The other guiding principle followed is that all definitions theorems etc

Functions of One Complex Variable J. B. Conway, 1973-10-16

**Functions of One Complex Variable** J.B. Conway, 2012-12-06 This book is intended as a textbook for a first course in the theory of functions of one complex variable for students who are mathematically mature enough to understand and execute E I arguments The actual pre requisites for reading this book are quite minimal not much more than a stiff course in basic calculus and a few facts about partial derivatives The topics from advanced calculus that are used e g Leibniz s rule for differ entiating under the integral sign are proved in detail Complex Variables is a subject which has something for all mathematicians In addition to having applications to other parts of analysis it can rightly claim to be an ancestor of many areas of mathematics e g homotopy theory manifolds This view of Complex Analysis as An Introduction to Mathe matics has influenced the writing and selection of subject matter for this book The other guiding principle followed is that all definitions theorems etc

**Function Theory of One Complex Variable** Robert E. Greene, Steven G. Krantz, 1997-04-25 This volume connects complex analysis with calculus algebra geometry topology and analysis Exercises and illustrations are provided throughout the text Also included is information on Bergman Kernal and two boundary behaviour of conformal mappings

**Complex Analysis** Lars Valerian Ahlfors, 1966 *Elementary Theory of Analytic Functions of One Or Several Complex Variables* Henri Cartan, 1995-01-01 Basic treatment of the theory of analytic functions of a complex variable touching on analytic functions of several real or complex variables as well as the existence theorem for solutions of differential systems where data is analytic Also included is a theory of abstract complex manifolds of one complex dimension holomorphic functions Cauchy s integral more Exercises 1973 edition

Functions of One Complex Variable JB.

Conway,1978      **Functions of One Complex Variable II** John B. Conway,1996-06-13 This book discusses a variety of problems which are usually treated in a second course on the theory of functions of one complex variable the level being gauged for graduate students It treats several topics in geometric function theory as well as potential theory in the plane covering in particular conformal equivalence for simply connected regions conformal equivalence for finitely connected regions analytic covering maps de Branges proof of the Bieberbach conjecture harmonic functions Hardy spaces on the disk potential theory in the plane A knowledge of integration theory and functional analysis is assumed      **Topics in the Theory of Functions of One Complex Variable** Wolfgang Heinrich Johannes Fuchs,Lehigh University. Summer Institute for Graduate Students in Analysis,Alan Schumitzky,1964      **Functions of a Complex Variable** Phillip Franklin,2018-03-25 This outstanding and unusual introduction to functions of one complex variable is now being reissued after 60 years by Blue Collar Scholar Createspace as part of our long term goal of unearthing long out print quality textbooks in mathematics and making them available again to all students teachers and autodidacts of mathematics in inexpensive editions This book by legendary analyst teacher Phillip Franklin gives a complete and above all balanced first course in analytic function theory Where most introductory modern books on complex analysis usually take either a geometric approach via complex differentiability and conformal mappings or an analytic approach via local power series expansions of complex functions Franklin gives neither precedence Both aspects of the subject are woven together in equal measure in his presentation emphasizing the connections between them Chapter 1 describes the algebra and topology of the complex plane Chapter 2 introduces functions of one complex variable and their calculus limits differentiation and some applications to geometry and analysis such as the solution of the Laplace equation Chapter 3 extends power series approximations and their convergence properties to complex valued functions Chapter 4 discusses the so called elementary functions that form the building blocks of complex analysis the exponential the trigonometric functions hyperbolic functions and power functions Chapters 5 and 6 discuss the conformal mappings which completely characterize the deep interplay of plane geometry and analysis with the complex numbers Chapter 7 discusses integration in the complex plane and the Cauchy Goursat theorem which is the complex analogue of the fundamental theorem of calculus for path integrals in  $\mathbb{C}$  Chapter 8 discusses the Taylor series expansion in the complex plane and its many applications to analytic functions including Louisville's and Morera's theorems Chapter 9 discusses singularities the Laurent series and the coefficients of the local expansions which are the residues The final chapter describes many of the applications of residues in complex analysis The book builds incrementally in intricacy it begins with the simplest and most obvious properties of the complex plane and gradually increases in difficulty as one proceeds This is a very wise organizational approach born of many years teaching the subject to strong students in both pure and applied mathematics There are a host of excellent exercises which include many side lemmas and theorems that are not covered explicitly in the text and are quite diverse in level The result is the problem sets not only provide much needed

practice in both calculation and proof they expand the actual coverage of the book significantly This text can be used for either an intensive undergraduate course or a beginning graduate course for either mathematics students or students of the physical sciences Prerequisites for the book are minimal A working knowledge of calculus up to and including partial derivatives multiple and line integrals and a one semester rigorous analysis course on the real line where limits are defined and used carefully In addition BCS editor founder Karo Maestro has written a personal and entertaining new preface for the beginning student and instructor on the remarkable field this book is an introduction to He has also added a new recommended reading section guiding the student to further study Literately and clearly written with many pictures this is a superior inspiring and affordable first course on complex analysis that not only will be treasured by pure and applied mathematics students it will provide a rock solid foundation for further study

**Function Theory of One Complex Variable** Robert Everist Greene,2006

**Function Theory of One Complex Variable** Robert E. Greene,Steven G. Krantz,2025-11-24 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 firstyear 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

**Functions of a Complex Variable** Edgar Giraldus Phillips,1961

**Complex Variables: an Introduction to the Theory of Analytic Functions of One Complex Variable** Lars Valerian Ahlfors,1979

**Theory of Functions of a Complex Variable** Heinrich Burkhardt,1913

*Lectures Introductory to the Theory of Functions of Two Complex Variables* Andrew Russell Forsyth,1914

*Function of One Complex Variable* Shu Wen,Dongdong Wang,2005

**Complex Analysis** Lars V. Ahlfors,1953

**Complex Analysis** Lars Ahlfors,1979 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

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