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Titolo	Explorations in complex functions // Richard Beals and Roderick S. C. Wong
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ISBN	3-030-54533-4
Edizione	[1st ed. 2020.]
Descrizione fisica	1 online resource (XVI, 353 p. 30 illus., 29 illus. in color.)
Collana	Graduate Texts in Mathematics, , 0072-5285 ; ; 287
Disciplina	515
Soggetti	Functions of complex variables Mathematical analysis Functions, Special
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Basics -- Linear Fractional Transformations -- Hyperbolic geometry -- Harmonic Functions -- Conformal maps and the Riemann mapping theorem -- The Schwarzian derivative -- Riemann surfaces and algebraic curves -- Entire functions -- Value distribution theory -- The gamma and beta functions -- The Riemann zeta function -- L-functions and primes -- The Riemann hypothesis -- Elliptic functions and theta functions -- Jacobi elliptic functions -- Weierstrass elliptic functions -- Automorphic functions and Picard's theorem -- Integral transforms -- Theorems of Phragmén–Lindelöf and Paley–Wiener -- Theorems of Wiener and Lévy; the Wiener–Hopf method -- Tauberian theorems -- Asymptotics and the method of steepest descent -- Complex interpolation and the Riesz–Thorin theorem.
Sommario/riassunto	This textbook explores a selection of topics in complex analysis. From core material in the mainstream of complex analysis itself, to tools that are widely used in other areas of mathematics, this versatile compilation offers a selection of many different paths. Readers interested in complex analysis will appreciate the unique combination of topics and connections collected in this book. Beginning with a review of the main tools of complex analysis, harmonic analysis, and functional analysis, the authors go on to present multiple different,

self-contained avenues to proceed. Chapters on linear fractional transformations, harmonic functions, and elliptic functions offer pathways to hyperbolic geometry, automorphic functions, and an intuitive introduction to the Schwarzian derivative. The gamma, beta, and zeta functions lead into L-functions, while a chapter on entire functions opens pathways to the Riemann hypothesis and Nevanlinna theory. Cauchy transforms give rise to Hilbert and Fourier transforms, with an emphasis on the connection to complex analysis. Valuable additional topics include Riemann surfaces, steepest descent, tauberian theorems, and the Wiener–Hopf method. Showcasing an array of accessible excursions, *Explorations in Complex Functions* is an ideal companion for graduate students and researchers in analysis and number theory. Instructors will appreciate the many options for constructing a second course in complex analysis that builds on a first course prerequisite; exercises complement the results throughout.

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