1. Record Nr. UNINA9910971001503321

Autore	Priestley H. A (Hilary A.)
Titolo	Introduction to complex analysis / / H.A. Priestley
Pubbl/distr/stampa	Oxford : , : Oxford University Press, , 2023
ISBN	1-383-02422-7 0-19-103720-6 0-19-158333-2
Edizione	[Second edition.]
Descrizione fisica	1 online resource (343 p.)
Collana	Oxford scholarship online
Disciplina	515.9
Soggetti	Mathematical analysis Functions of complex variables
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Previous edition: Oxford : Clarendon, 1990. Previously issued in print: 2003.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Cover; Contents; Notation and terminology; 1. The complex plane; Complex numbers; Algebra in the complex plane; Conjugation, modulus, and inequalities; Exercises; 2. Geometry in the complex plane; Lines and circles; The extended complex plane and the Riemann sphere; Mobius transformations; Exercises; 3. Topology and analysis in the complex plane; Open sets and closed sets in the complex plane; Convexity and connectedness; Limits and continuity; Exercises; 4. Paths; Introducing curves and paths; Properties of paths and contours; Exercises; 5. Holomorphic functions Differentiation and the Cauchy-Riemann equationsHolomorphic functions; Exercises; 6. Complex series and power series; Complex series; Power series; A proof of the Differentiation theorem for power series; Exercises; 7. A cornucopia of holomorphic functions; The exponential function; Complex trigonometric and hyperbolic functions; Zeros and periodicity; Argument, logarithms, and powers; Holomorphic branches of some simple multifunctions; Exercises; 8. Conformal mapping; Conformal mapping; Some standard conformal mappings; Mappings of regions by standard mappings; Building conformal mappings Exercises9. Multifunctions; Branch points and multibranches; Cuts and

holomorphic branches; Exercises; 10. Integration in the complex plane; Integration along paths; The Fundamental theorem of calculus; Exercises; 11. Cauchy's theorem: basic track; Cauchy's theorem; Deformation; Logarithms again; Exercises; 12. Cauchy's theorem: advanced track; Deformation and homotopy; Holomorphic functions in simply connected regions; Argument and index; Cauchy's theorem revisited; Exercises; 13. Cauchy's formulae; Cauchy's integral formula; Higher-order derivatives; Exercises
14. Power series representationIntegration of series in general and power series in particular; Taylor's theorem; Multiplication of power series; A primer on uniform convergence; Exercises; 15. Zeros of holomorphic functions; Characterizing zeros; The Identity theorem and the Uniqueness theorem; Counting zeros; Exercises; 16. Holomorphic functions: further theory; The Maximum modulus theorem; Holomorphic mappings; Exercises; 17. Singularities; Laurent's theorem; Singularities; Meromorphic functions; Exercises; 18. Cauchy's residue theorem; Residues and Cauchy's residue theorem
Calculation of residuesExercises; 19. A technical toolkit for contour integration; Evaluating real integrals by contour integration; Inequalities and limits; Estimation techniques; Improper and principal-value integrals; Exercises; 20. Applications of contour integration; Integrals of rational functions; Integrals of other functions with a finite number of poles; Integrals involving functions with infinitely many poles; Integrals involving multifunctions; Evaluation of definite integrals: overview (basic track); Summation of series; Further techniques; Exercises; 21. The Laplace transform
Basic properties and evaluation of Laplace transforms

Sommario/riassunto

This second edition of Priestley's well-known text is aimed at students taking an introductory core course in Complex Analysis, a classical and central area of mathematics. Graded exercises are presented throughout the text along with worked examples on the more elementary topics.