Functions of a Complex Variable

By Hemant Kumar Pathak, Ravi Agarwal, Yeol Je Cho

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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.

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Editorial Review

About the Author

Hemant Kumar Pathak is a professor and head of the School of Studies in Mathematics and the Director of the Center for Basic Sciences at Pt. Ravishankar Shukla University. Dr. Pathak is the author of nearly 50 textbooks for undergraduate and post-graduate students and the author or co-author of nearly 250 publications. Dr. Pathak is an editorial board member of the *American Journal of Computational and Applied Mathematics* and the *Journal of Calculus of Variations* as well as a reviewer for the American Mathematical Society. His research interests include nonlinear analysis, general topology, Banach frames, and integration theory.

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