

1. Record Nr.	UNINA9910300246403321
Autore	Zorich V. A
Titolo	Mathematical Analysis I / / by V. A. Zorich
Pubbl/distr/stampa	Berlin, Heidelberg : , : Springer Berlin Heidelberg : , : Imprint : Springer, , 2015
ISBN	3-662-48792-6
Edizione	[2nd ed. 2015.]
Descrizione fisica	1 online resource (XX, 616 p. 66 illus. in color.)
Collana	Universitext, , 0172-5939
Disciplina	515
Soggetti	Mathematical analysis Analysis (Mathematics) Mathematical physics Analysis Theoretical, Mathematical and Computational Physics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Bibliographic Level Mode of Issuance: Monograph
Nota di contenuto	1 Some General Mathematical Concepts and Notation -- 2 The Real Numbers -- 3 Limits -- 4 Continuous Functions -- 5 Differential Calculus -- 6 Integration -- 7 Functions of Several Variables -- 8 Differential Calculus in Several Variables -- Some Problems from the Midterm Examinations -- Examination Topics -- Appendices -- References -- Subject Index -- Name Index.
Sommario/riassunto	VLADIMIR A. ZORICH is professor of mathematics at Moscow State University. His areas of specialization are analysis, conformal geometry, quasiconformal mappings, and mathematical aspects of thermodynamics. He solved the problem of global homeomorphism for space quasiconformal mappings. He holds a patent in the technology of mechanical engineering, and he is also known by his book Mathematical Analysis of Problems in the Natural Sciences . This second English edition of a very popular two-volume work presents a thorough first course in analysis, leading from real numbers to such advanced topics as differential forms on manifolds; asymptotic methods; Fourier, Laplace, and Legendre transforms; elliptic functions; and distributions. Especially notable in this course are the clearly expressed orientation toward the natural sciences and the informal exploration of the essence

and the roots of the basic concepts and theorems of calculus. Clarity of exposition is matched by a wealth of instructive exercises, problems, and fresh applications to areas seldom touched on in textbooks on real analysis. The main difference between the second and first English editions is the addition of a series of appendices to each volume. There are six of them in the first volume and five in the second. The subjects of these appendices are diverse. They are meant to be useful to both students (in mathematics and physics) and teachers, who may be motivated by different goals. Some of the appendices are surveys, both prospective and retrospective. The final survey establishes important conceptual connections between analysis and other parts of mathematics. The first volume constitutes a complete course in one-variable calculus along with the multivariable differential calculus elucidated in an up-to-date, clear manner, with a pleasant geometric and natural sciences flavor. "...Complete logical rigor of discussion...is combined with simplicity and completeness as well as with the development of the habit to work with real problems from natural sciences." From a review by A.N. Kolmogorov of the first Russian edition of this course "...We see here not only a mathematical pattern, but also the way it works in the solution of nontrivial questions outside mathematics. ...The course is unusually rich in ideas and shows clearly the power of the ideas and methods of modern mathematics in the study of particular problems....In my opinion, this course is the best of the existing modern courses of analysis." From a review by V.I. Arnold.
