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Number systems. An introduction to algebra and analysis.

Pure and Applied Undergraduate Texts 23. Providence, RI: American Mathematical Society (AMS) (ISBN 978-1-4704-2018-5/hbk). viii, 144 p. (2015).

This book is intended to provide an introduction to the five basic number systems of mathematics, namely natural numbers, integers, rational numbers, real numbers, and complex numbers. After a presentation of the Peano theory, the author is concerned with some basic methods like mathematical induction and recursion theory. Next, there are given the properties of integer numbers, rings and ordered integral domains. The presentation of rational numbers includes material on ordered fields and convergence of sequences in these fields. Cauchy and Dedekind completeness properties of the field of real numbers play a central role in this volume. A key feature of this book is an elementary proof of the fundamental theorem of algebra, which is given in relationship with the properties of complex numbers. Useful problems are given at the end of any of the five chapters of this volume. As a conclusion, this is a nicely written book to share with colleagues and students, a wonderful addition to our personal, school and university libraries.

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Classification: F15

Keywords: natural number; real number; complex number; Dedekind completeness properties