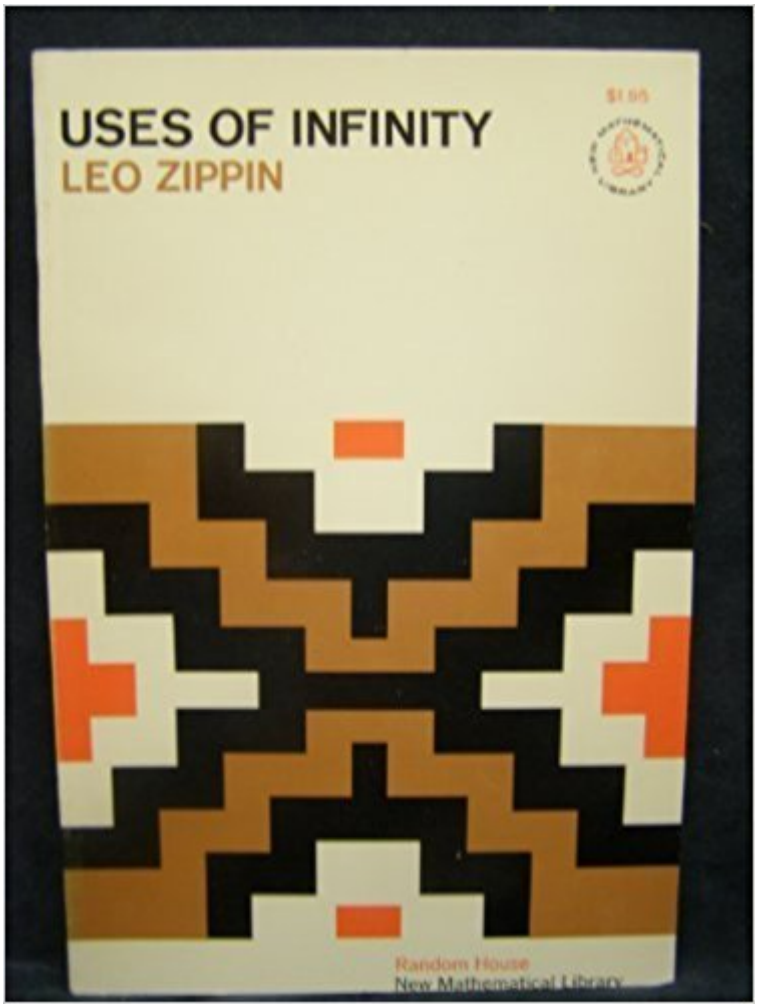
Uses Of Infinity (New Mathematical Library)



Synopsis

This intriguing, accessible work leads readers to an excellent grasp of the fundamental notions of infinity used in the calculus and in virtually all other mathematical disciplines. Each chapter's teachings are supplemented by challenging problems, with solutions at the end of the book. 83 text figures. 1962 edition. --This text refers to the Hardcover edition.

Book Information

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Customer Reviews

Zippin's engaging text examines how infinity arises in mathematics. It requires only a solid grounding in high school mathematics and a willingness to think. However, it will most profitably be read by those who are familiar with calculus.After a brief overview, Zippin begins within the natural numbers. He shows how inductive reasoning is used to search for patterns that can be used to prove results about infinite sequences and series. He examines limits of sequences and series from a geometric point of view. In particular, he considers geometric series and the Fibonacci sequence, using the latter to explore the properties of the golden rectangle. He concludes the text by discussing recursive definition, proofs by mathematical induction, and the pigeon hole principle.I found the material intriguing and the exposition generally clear. However, there were places where I felt that definitions were imprecise. His proof that the square root of 2 is irrational, while elegant, is harder to generalize than other proofs of that result. Zippin uses numerous examples to illustrate the results that he proves.Zippin's decision to examine limits from a geometric standpoint provides an interesting alternative to the analytical approach taken in calculus courses. It also helps the reader understand his arguments in his chapter on how the golden rectangle is related to the golden mean

and the Fibonacci numbers.The exericses, for which answers are provided in the back of the text, are thought-provoking and some are quite challenging. I found reading his solutions instructive.Zippin provides a now dated (the text was published in 1962) bibliography so that the reader can explore the topics he discusses further. The reader may wish to consult the textsÃ Â Invitation to Number Theory (New Mathematical Library)Ã Â by Oystein Ore andÃ Â Numbers: Rational and Irrational (New Mathematical Library)Ã Â by Ivan Niven while reading this text.

This book was my first introduction to the infinite. Although it is easy enough for undergraduate study, all will find Zippin's book scintillating and fascinating. A great read for anyone interested in this subject!