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Concepts Of Modern Mathematics (Dover Books On Mathematics)





Synopsis

Some years ago, "new math" took the country's classrooms by storm. Based on the abstract, general style of mathematical exposition favored by research mathematicians, its goal was to teach students not just to manipulate numbers and formulas, but to grasp the underlying mathematical concepts. The result, at least at first, was a great deal of confusion among teachers, students, and parents. Since then, the negative aspects of "new math" have been eliminated and its positive elements assimilated into classroom instruction. In this charming volume, a noted English mathematician uses humor and anecdote to illuminate the concepts underlying "new math": groups, sets, subsets, topology, Boolean algebra, and more. According to Professor Stewart, an understanding of these concepts offers the best route to grasping the true nature of mathematics, in particular the power, beauty, and utility of pure mathematics. No advanced mathematical background is needed (a smattering of algebra, geometry, and trigonometry is helpful) to follow the author's lucid and thought-provoking discussions of such topics as functions, symmetry, axiomatics, counting, topology, hyperspace, linear algebra, real analysis, probability, computers, applications of modern mathematics, and much more.By the time readers have finished this book, they'll have a much clearer grasp of how modern mathematicians look at figures, functions, and formulas and how a firm grasp of the ideas underlying "new math" leads toward a genuine comprehension of the nature of mathematics itself.

Book Information

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Customer Reviews

This book is by far the best book on mathematics I have ever read. It teaches the concepts in an intuitive, exciting way, and yet it is able to remain fun and engaging throughout. Technical material is tackled, in depth, without there seeming to be any work done. There are no exercises to be done, you simply follow Stewart along for a tour through modern mathematics. Ian Stewart's writing is flawless and almost turns this book into a thriller. I read this book in one night- I could not put it down! I stayed up until 4 in the morning reading and rereading passages; it is truly a masterpiece. The chapters are as follows: Chapter 1- Mathematics in General: Here Stewart describes certain aspects of mathematics, and discusses their purpose and implications. He talks about abstractness and generality, intuition vs. formalism, and pure vs. applied mathematics. He tells the reader the importance of understanding WHY a theorem is true, not simply that it is. He ends with a collection of anecdotes. Chapter 2- Motion without Motion: This is an example of thinking a bit outside the box. The chapter is devoted to overturning Euclid's proof that the base angles are congruent, and making a new one based on rigid motions. It doesn't sound too engaging, but, somehow, Stewart manages to make it guite exciting!Chapter 3- Short Cuts in the Higher Arithmetic: A basic introduction to number theory- prime numbers, moduli, congruences, etc. The informal tone makes this the easiest and most understandable read on number theory I've yet encountered. Chapter 4-The Language of Sets: Throughout the rest of the book, Stewart uses the language of set theory, so he introduces that here in an easy to understand way (using some imagery like bags of items, etc).

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