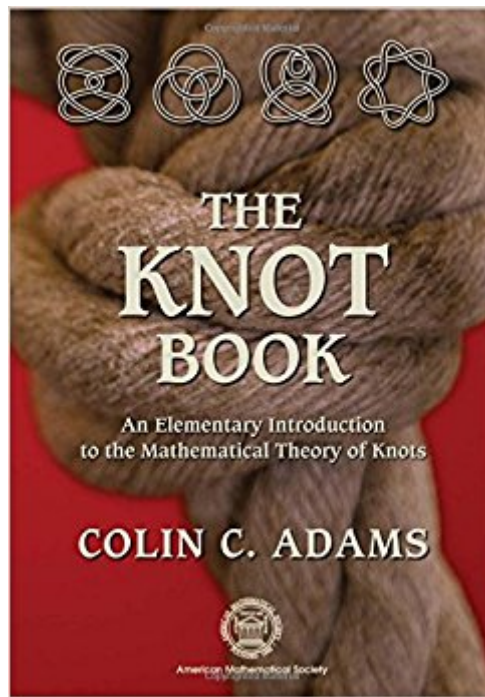


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The Knot Book



Synopsis

Knots are familiar objects. We use them to moor our boats, to wrap our packages, to tie our shoes. Yet the mathematical theory of knots quickly leads to deep results in topology and geometry. "The Knot Book" is an introduction to this rich theory, starting with our familiar understanding of knots and a bit of college algebra and finishing with exciting topics of current research. "The Knot Book" is also about the excitement of doing mathematics. Colin Adams engages the reader with fascinating examples, superb figures, and thought-provoking ideas. He also presents the remarkable applications of knot theory to modern chemistry, biology, and physics. This is a compelling book that will comfortably escort you into the marvelous world of knot theory. Whether you are a mathematics student, someone working in a related field, or an amateur mathematician, you will find much of interest in "The Knot Book". Colin Adams received the Mathematical Association of America (MAA) Award for Distinguished Teaching and has been an MAA Polya Lecturer and a Sigma Xi Distinguished Lecturer. Other key books of interest available from the "AMS" are "Knots and Links" and "The Shoelace Book: A Mathematical Guide to the Best (and Worst) Ways to Lace your Shoes".

Book Information

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Customer Reviews

Knot theory has been a branch of mathematics that has been around for over a century, and now is finding applications in many areas, some of these being electrical circuit analysis, genetics, dynamical systems, and cryptography. This book, written for the layman or the beginning student of mathematics, is an excellent overview of what is known (and not known) in knot theory. Because of the pictorial nature of the subject, knot theory is an excellent way to get people interested in

mathematics. Knot theory now is an established branch of mathematics, and it involves the use of tools from topology, analysis, and algebra. The problem of distinguishing one knot from another is one of the major questions in knot theory, and its partial resolution has been assisted by concepts from physics, namely statistical mechanics and quantum field theory. The author discusses the knot recognition problem, and other unsolved problems in the book, and he points out that in knot theory the unsolved problems can be approached by someone with very little background in advanced mathematical techniques. The author does an excellent job of introducing these problems and letting the reader experience, in his words, the joy of doing mathematics. Chapter 1 is an introduction to the basic terminology of knot theory, and the author gives examples of the most popular elementary knots. He points out the historical origins of the theory, one of these being the attempt by Lord Kelvin to explain the origins of the elements, interestingly. The basic operations on knots are defined, such as composition and factoring, and the famous Reidemeister moves. The proof that planar isotopies and Reidemeister moves suffices to map one projection of a knot to another is omitted.

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