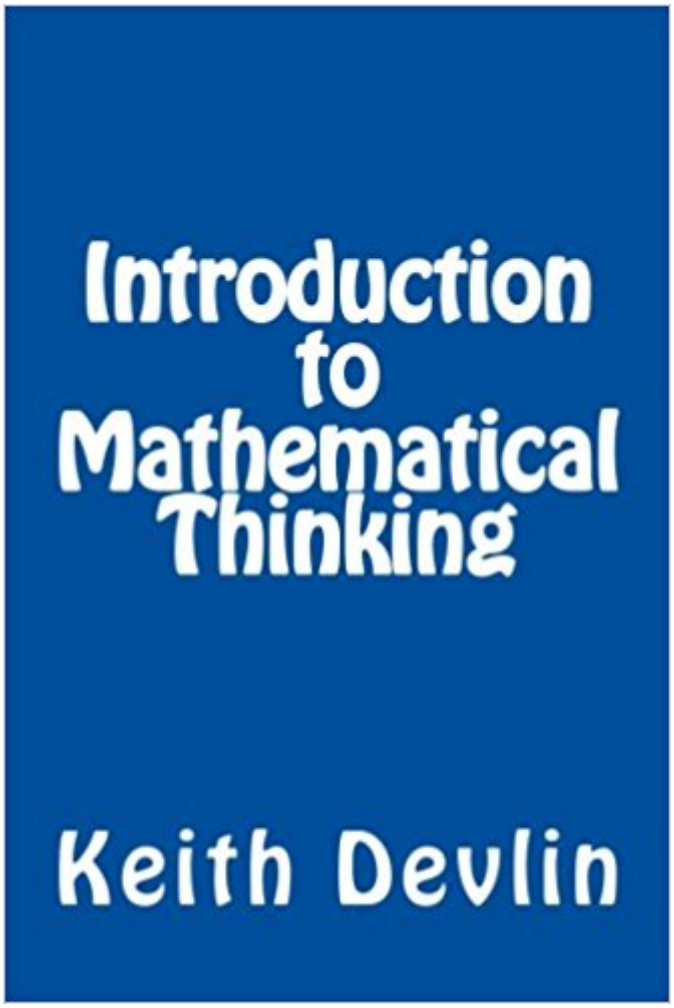
Introduction To Mathematical Thinking



Synopsis

In the twenty-first century, everyone can benefit from being able to think mathematically. This is not the same as â œdoing math.â • The latter usually involves the application of formulas, procedures, and symbolic manipulations; mathematical thinking is a powerful way of thinking about things in the world -- logically, analytically, quantitatively, and with precision. It is not a natural way of thinking, but it can be learned. Mathematicians, scientists, and engineers need to â œdo math,â • and it takes many years of college-level education to learn all that is required. Mathematical thinking is valuable to everyone, and can be mastered in about six weeks by anyone who has completed high school mathematics. Mathematical thinking does not have to be about mathematics at all, but parts of mathematics provide the ideal target domain to learn how to think that way, and that is the approach taken by this short but valuable book. The book is written primarily for first and second year students of science, technology, engineering, and mathematics (STEM) at colleges and universities, and for high school students intending to study a STEM subject at university. Many students encounter difficulty going from high school math to college-level mathematics. Even if they did well at math in school, most are knocked off course for a while by the shift in emphasis, from the K-12 focus on mastering procedures to the â œmathematical thinkingâ • characteristic of much university mathematics. Though the majority survive the transition, many do not. To help them make the shift, colleges and universities often have a â œtransition course.â • This book could serve as a textbook or a supplementary source for such a course. Because of the widespread applicability of mathematical thinking, however, the book has been kept short and written in an engaging style, to make it accessible to anyone who seeks to extend and improve their analytic thinking skills. Going beyond a basic grasp of analytic thinking that everyone can benefit from, the STEM student who truly masters mathematical thinking will find that college-level mathematics goes from being confusing, frustrating, and at times seemingly impossible, to making sense and being hard but doable. Dr. Keith Devlin is a professional mathematician at Stanford University and the author of 31 previous books and over 80 research papers. His books have earned him many awards, including the Pythagoras Prize, the Carl Sagan Award, and the Joint Policy Board for Mathematics Communications Award. He is known to millions of NPR listeners as â œthe Math Guyâ • on Weekend Edition with Scott Simon. He writes a popular monthly blog â œDevlinâ ™s Angleâ • for the Mathematical Association of America, another blog under the name â œprofkeithdevlinâ •, and also blogs on various topics for the Huffington Post.

Book Information

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Customer Reviews

Dr. Keith Devlin is a mathematician at Stanford University in California, where he is Executive Director of the university's H-STAR institute. He is a World Economic Forum Fellow and a Fellow of the American Association for the Advancement of Science. His current research is focused on the use of different media to teach and communicate mathematics to diverse audiences. He also works on the design of information/reasoning systems for intelligence analysis. Other research interests include: theory of information, models of reasoning, applications of mathematical techniques in the study of communication, and mathematical cognition. He has written 31 books and over 80 published research articles. His books have won a number of prizes, including the Pythagoras Prize, the Peano Prize, the Carl Sagan Award, and the Joint Policy Board for Mathematics Communications Award. In 2003, he was recognized by the California State Assembly for his "innovative work and longtime service in the field of mathematics and its relation to logic and linguistics." He is "the Math Guy" on National Public Radio.

Keith Devlin's classes are a revelation in disciplined thinking. Although I did not finish his class on Coursera it stoked my imagination and I am grateful to have the text to read on my own and galvanize the steps I picked up in the time I was in the class.All teachers should avail themselves to as many different learning styles as we might find.

Wow! If you want to understand the logic of mathematical thought and proofs, this is your book. The author thoroughly defines and uses the traditional symbols for logical combinators, quantifiers, and conditionals. He develops the very difficult concept of writing complete, effective proofs. It's a little

book on what at first appears to be a small subject. Don’t be fooled, though. This is a tough, comprehensive study.

I think the main advantage of studying mathematics, either as a degree program or just individual courses, is to develop logical thinking ability instead of learning about practical equations with direct applications. Devlin’s apparently agrees and sets out to make an overview of abstract logic in this book.I have a minor in math, but never got as far as the upper level (400 or senior undergrad level) math courses that mainly deal with theory and proofs, which is really what high level mathematics is all about. This book goes over some basic proofs so familiarize the reader with the type of logical, even "lawyer-like", thinking needed to develop proofs. It also gave me a healthy overview of symbolic logic and sets.I must admit that I skimmed over the exercises instead of performing them, so perhaps it is possible to get more out of this book if you were to work them all out. But hey, I’m reading for leisure, not course work. ;)

The examples and problems range from easy for advanced high school students to challenging for those who’ve completed an undergraduate degree in mathematics. This book is an excellent guide through the complexities of proof in mathematics.

Great product...thanks!

In his introduction, Keith Devlin reveals the source of the achievement gap between pre-college and college mathematics achievement: Students don’t know how to think mathematically. A worthwhile study for all high school students, their parents (at least read the introduction and chapter 1), and any others who want to improve their learning in mathematical thinking.

Remove the lie that math is only for smart people. Get more smarter and stuff by thinking mathematically! This book helps to do that

The author does say that this book is not for self study at home. He is correct when he says this. He states that this book is also for group study so that the answers can be discussed. This is difficult when you are a singular person. I am retired and just thought that I could brush up on mathematics and what kind of thinking can make it easier.This is not the book for that purpose and certainly not for me. Maybe it is a good book for those that are mathematically inclined; but i guess that that is

not me. For the right person (or rather group of people) it may be a 5 star book.The answers are also not included in the book. This also makes it very difficult for singular study.

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