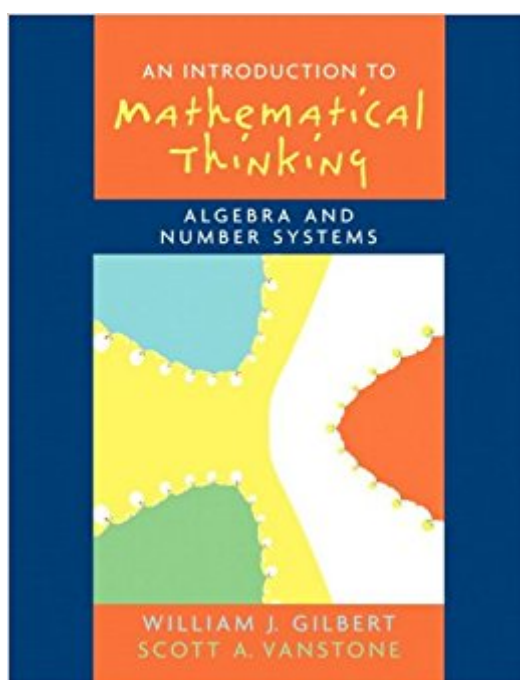


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# Introduction To Mathematical Thinking: Algebra And Number Systems



## Synopsis

Besides giving readers the techniques for solving polynomial equations and congruences, An Introduction to Mathematical Thinking provides preparation for understanding more advanced topics in Linear and Modern Algebra, as well as Calculus. This book introduces proofs and mathematical thinking while teaching basic algebraic skills involving number systems, including the integers and complex numbers. Ample questions at the end of each chapter provide opportunities for learning and practice; the Exercises are routine applications of the material in the chapter, while the Problems require more ingenuity, ranging from easy to nearly impossible. Topics covered in this comprehensive introduction range from logic and proofs, integers and diophantine equations, congruences, induction and binomial theorem, rational and real numbers, and functions and bijections to cryptography, complex numbers, and polynomial equations. With its comprehensive appendices, this book is an excellent desk reference for mathematicians and those involved in computer science.

## Book Information

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## Customer Reviews

I used a previous edition of this book in my first year university college, and it was really good. However, what I really hate is how this newer edition (which my wife later got for her math course) contains some errors which existed in the previous edition. Seriously, guys, stop bankrupting poor students and killing trees - new edition requires more than just reordering end-of-chapter problems and numbering chapters from 1 instead of zero.

If you need this book for a class then get it, otherwise don't waste your money. It is poorly written and there is much better information online by simply searching what you are trying to learn.

This is an amazing text. Very clearly written and has a wealth of knowledge. Perfect for an introductory course in abstract mathematics and proof writing.

book is terrible. It throws proof techniques AND new concepts at the student at the same time. So you are learning induction and the binomial theorem at the same time. Has almost no example in the back so you don't even know if you are studying properly. Other books similar to this focus on proof techniques first, using very easy concepts (such as proofs about whether or not certain numbers are odd or even). once the techniques are established (direct proof, indirect proof, contrapositive), then they introduce higher topics and have you apply the techniques. This book just throws it all at you at once. My class had almost 20 kids to start. after the first test it dropped to 8, and it's all because the book is worthless for practicing problems. I've taken topics past real analysis and abstract algebra, and this is by far the worst book i've ever encountered. this WILL discourage students. I just hope teachers read this review before applying it to their course.

The book is used and sold for 3 times and is in really bad condition. The price is too high for this book

This book provides a very brief introduction to mathematical reasoning. You will get a glimpse of this in the first chapter on logic and proofs where you will learn about propositional logic, conditional statements, sets and quantifiers. You will learn how to formulate conjectures and write some pretty descent proofs. This book contains several sections that are motivated from topics in number theory (diophantine equations, congruences and the Euclidean algorithm) before digressing into a separate chapter on basic mathematical notions from the principle of mathematical induction, recursion, and the binomial theorem to a quick look at real and rational numbers as building blocks for later sections...The subsequent chapters, however, are a jumbled up assortment of topics from various courses. There is a chapter on functions and bijections where you will learn about cardinality and permutations (linear algebra); a brief foray into cryptography with a section on public- and private-key cryptography and the RSA scheme (number theory); an overview of the complex plane and the properties of complex numbers with a look at De Moivre's Theorem (complex variables);

and finally, the fundamental theorem of algebra, which concludes with a look at equations over a finite field (abstract algebra). The inclusion of these topics does not necessarily make this book a comprehensive one, as you are barely scratching the surface with any of these topics. So let's be clear about one thing: this book has breadth, not depth. There is a lot of material to gain insight from, which does give the reader an idea of what is to come in later years. So I suppose you can make of this book what you will and take from it what you want. However, I think it could have been great had it not tried to cover so many broad topics.

An excellent introduction to the subject. Gilbert uses basic proof techniques to take the reader through some basic number theory as well as other interesting topics such as cryptography and complex numbers. A wonderful book all around with clear proofs and interesting problem sets.

Great book

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