



Algebra: Form and Function

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DESCRIPTION

Algebra is fundamental to the working of modern society, yet its origins are as old as the beginnings of civilization. Algebraic equations describe the laws of science, the principles of engineering, and the rules of business. The power of algebra lies in its efficient symbolic representation of complex ideas, and this also presents the main difficulty in learning it. It is easy to forget the underlying structure of algebra and rely instead on a surface knowledge of algebraic manipulations.

NEW TO EDITION

In response to reviewer comments and suggestions, we have made the following changes since the preliminary edition.

- Added four new chapters on summation notation, sequences and series, matrices, and probability and statistics.
- Split the initial chapter reviewing basic skills into three shorter chapters on rules and the reasons for them, placed throughout the book.
- Added Focus on Practice sections at the end of the chapters on linear, power, and quadratic functions. These sections provide practice solving linear, power, and quadratic equations.
- Added material on radical expressions to Chapter 6, the chapter on the exponent rules.

- Added material on solving inequalities, and absolute value equations and inequalities, to Chapter 3, the chapter on rules for equations.
 - Added more exercises and problems throughout
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FEATURES

A Balanced Approach: Form, Function, and Fluency

Form follows function. The form of a wing follows from the function of flight. Similarly, the form of an algebraic expression or equation reflects its function. To use algebra in later courses, students need not only manipulative skill, but fluency in the language of algebra, including an ability to recognize algebraic form and an understanding of the purpose of different forms.

Restoring Meaning to Expressions and Equations

After introducing each type of function—linear, power, quadratic, exponential, polynomial—the text encourages students to pause and examine the basic forms of expressions for that function, see how they are constructed, and consider the different properties of the function that the different forms reveal. Students also study the types of equations that arise from each function.

Maintaining Manipulative Skills: Review and Practice

Acquiring the skills to perform basic algebraic manipulations is as important as recognizing algebraic forms. Algebra: Form and Function provides sections reviewing the rules of algebra, and the reasons for them, throughout the book, numerous exercises to reinforce skills in each chapter, and a section of drill problems on solving equations at the end of the chapters on linear, power, and quadratic functions.

Students with Varying Backgrounds

Algebra: Form and Function is thought-provoking for well-prepared students while still accessible to students with weaker backgrounds, making it understandable to students of all ability levels. By emphasizing the basic ideas of algebra, the book provides a conceptual basis to help students master the material. After completing this course, students will be well-prepared for Precalculus, Calculus, and other subsequent courses in mathematics

and other disciplines.

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