To the Instructor

The authors are indebted to the faculty at those institutions that have adopted and have steadfastly continued to use the earlier editions of this text. Your letters and comments are genuinely appreciated and will always receive a prompt response.

Objectives of This Text

This fourth edition of *Algebra for College Students* maintains our objective of providing a textbook designed for *use by the student.* We have adopted an informal, supportive style to encourage the student to read the book and to develop confidence under its guidance. We introduce concepts first by example with accompanying diagrams and illustrations that bolster the "reasonableness" of the resulting rules. We immediately reinforce every new mathematical technique or result with fully worked-out examples and captions clarifying their purpose. After each example, the student is presented with the opportunity to tackle a parallel problem, called a **Progress Check**, with the answer following it in the text.

This edition emphasizes applied problems. Numerous practical applications accompany the methods for solving linear equations and inequalities (see Chapter 2). In addition, Chapter 3 is devoted exclusively to the solution of word problems through the creation of a "model." The student is invited to participate in the process of translating words to algebraic expressions via a model or chart that greatly simplifies the process.

New in This Edition

Although the structure of earlier editions has been retained, we have made significant additions and improvements in this edition.

- Completely new chapter openers with motivational applications and references to many websites of mathematical interest.
- Brand new chapter projects at the end of each chapter.
- Many new exercises, most of which emphasize the use of graphing calculators.
- New explanatory material for graphing calculator use.

Pedagogic Devices

We have continued to employ those pedagogic devices that instructors have found useful in the earlier editions.

Split Screens

Many algebraic procedures are described with the aid of a "split screen" that displays simultaneously both the steps of an algorithm and a worked-out example.

✔ Progress Checks
A problem (with answers) accompanies every numbered example in the text to enable the student to test his or her understanding of the material just described.

Warnings
To help eliminate misconceptions and prevent bad mathematics habits, we have inserted numerous **Warnings** that point out the incorrect practices most commonly found in homework and exam papers.

Vignettes

In each chapter we have inserted one or more vignettes, elements that are independent of the text yet are often related to the mathematical concepts. The vignettes are intended to catch the attention of the student and heighten interest in the material. (We hope they will provide interesting reading for the instructor as well.)


Exercises

Abundant, carefully graded exercises provide practice in the mechanical and conceptual aspects of algebra. Exercises requiring the use of a calculator or graphing calculator are indicated by the calculator icons shown to the left. Exercises of a more challenging nature

are indicated by a *. Answers to odd-numbered exercises, review exercises, and progress tests appear in an appendix at the back of the book. Answers to even-numbered exercises appear in the *Instructor's Manual.* The *Instructor's Manual*, which includes an extensive *Test Bank*, is available to the instructor upon request.

End-of-Chapter Material

Every chapter contains a summary that includes the following:

Terms and Symbols with appropriate page references

Key Ideas for Review to stress the concepts

Review Exercises to provide additional practice

Progress Tests to provide self-evaluation and reinforcement

Chapter Projects

This edition has added chapter openers and related projects at the end of each chapter. These emphasize additional applications and demonstrate the widening relevance of algebra in many areas. Some feature a "look ahead" to topics of future courses, like polynomial curve fitting or Calculus applications. Students may be excited by the career possibilities suggested by some of these sections. Instructors may wish to review the projects first; they provide one possible means of selecting which material and which exercises to emphasize. Some of the projects include essay components; the increasing importance of communication skills in scientific careers and upper-level courses seems to make this new emphasis advisable. Projects could be modified or expanded to involve students working in groups. Significant opportunities for Internet research and graphing calculator exploration are also offered.

Answers

The answers to all **Review Exercises** and **Progress Tests** appear in the back of the book.

Solutions

Worked-out solutions to selected **Review Exercises** appear in a separate section at the back of the book. The solved problems provide one more level of reassurance to the student using the **Review Exercises** in preparation for the **Progress Tests**. In addition, a *Student Solution Manual* containing fully worked-out solutions to selected exercises will be made available to the bookstore.

A Note on the Use of Calculators

Some of the new exercises in this edition call for the use of a graphing calculator. It is recommended that all students have one, and read the manual in order to become proficient in its use. Many instructors view graphing calculators as essential tools for

students of algebra, and their use becomes even more pronounced in more advanced courses. The aid they provide in visualization, rapid evaluation of functions, using graphs to discover unsuspected relationships between concepts, and offering new approaches and a greater variety of problem-solving methods, more than balances the additional challenge in becoming skilled and comfortable with them.

Many models of graphing calculator are now available, and most offer the additional benefit of links which can be used to share programs and applications between students, from instructor to student, or from the Internet.

Supplementary Material

Student Solutions Manual by Jorge Cossio

Instructor's Manual with Tests by Gail Edinger

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