



Algebra and Trigonometry

SEVENTH EDITION



ROBERT F. BLITZER

A Brief Guide to Getting the Most from This Book

1 Read the Book

Feature	Description	Benefit
Section-Opening Scenarios	Every section opens with a scenario presenting a unique application of algebra or trigonometry in your life outside the classroom.	Realizing that algebra and trigonometry are everywhere will help motivate your learning. (See page 136.)
EXAMPLE	Examples are clearly written and provide step-by-step solutions. No steps are omitted, and each step is thoroughly explained to the right of the mathematics.	The blue annotations will help you understand the solutions by providing the reason why every algebraic or trigonometric step is true. (See page 138.)
Applications Using Real-World Data	Interesting applications from nearly every discipline, supported by up-to-date real-world data, are included in every section.	Ever wondered how you'll use algebra and trigonometry? This feature will show you how they can solve real problems. (See pages 294–296.)
> GREAT QUESTION!	Answers to students' questions offer suggestions for problem solving, point out common errors to avoid, and provide informal hints and suggestions.	By seeing common mistakes, you'll be able to avoid them. This feature should help you not to feel anxious or threatened when asking questions in class. (See page 139.)
BRIEF REVIEW	Brief Reviews cover skills you already learned but may have forgotten.	Having these refresher boxes easily accessible will help ease anxiety about skills you may have forgotten. (See page 508.)
BLITZER BONUS	These enrichment essays provide historical, interdisciplinary, and otherwise interesting connections to the algebra or trigonometry under study.	Yet even more proof that math is an interesting and dynamic discipline! (See page 195.)
Explanatory Voice Balloons	Voice balloons help to demystify algebra and trigonometry. They translate math into plain English, clarify problemsolving procedures, and present alternative ways of understanding.	Does math ever look foreign to you? This feature often translates math into everyday English. (See page 193.)
WHAT YOU'LL LEARN Learning Objective	Every section begins with a list of objectives. Each objective is restated in the margin where the objective is covered.	The objectives focus your reading by emphasizing what is most important and where to find it. (See page 178.)
> TECHNOLOGY	The screens displayed in the technology boxes show how graphing utilities verify and visualize algebraic or trigonometric results.	Even if you are not using a graphing utility in the course, this feature will help you understand different approaches to problem solving. (See page 140.)

Algebra and Trigonometry, Global Edition

Table of Contents

Cover

A Brief Guide to Getting the Most from This Book

- 1 Read the Book
- 2 Work the Problems
- 3 Review for Quizzes and Tests

Title Page

Copyright

Contents

Preface

To the Student

Pearsons Commitment to Diversity, Equity, and Inclusion

Applications Index

Chapter P. Fundamental Concepts of Algebra

- P.1 Algebraic Expressions, Mathematical Models, and Real Numbers
- P.2 Exponents and Scientific Notation
- P.3 Radicals and Rational Exponents
- P.4 Polynomials

Mid-Chapter Check Point

- P.5 Factoring Polynomials
- P.6 Rational Expressions

Summary, Review, and Test

Review Exercises

Chapter P Test

Chapter 1. Equations and Inequalities

- 1.1 Graphs and Graphing Utilities
- 1.2 Linear Equations and Rational Equations
- 1.3 Models and Applications
- 1.4 Complex Numbers



1.5 Quadratic Equations

Mid-Chapter Check Point

1.6 Other Types of Equations

1.7 Linear Inequalities and Absolute Value Inequalities

Summary, Review, and Test

Review Exercises

Chapter 1 Test

Chapter 2. Functions and Graphs

- 2.1 Basics of Functions and Their Graphs
- 2.2 More on Functions and Their Graphs
- 2.3 Linear Functions and Slope
- 2.4 More on Slope

Mid-Chapter Check Point

- 2.5 Transformations of Functions
- 2.6 Combinations of Functions; Composite Functions
- 2.7 Inverse Functions
- 2.8 Distance and Midpoint Formulas; Circles

Summary, Review, and Test

Review Exercises

Chapter 2 Test

Cumulative Review Exercises (Chapters 12)

Chapter 3. Polynomial and Rational Functions

- 3.1 Quadratic Functions
- 3.2 Polynomial Functions and Their Graphs
- 3.3 Dividing Polynomials; Remainder and Factor Theorems
- 3.4 Zeros of Polynomial Functions

Mid-Chapter Check Point

- 3.5 Rational Functions and Their Graphs
- 3.6 Polynomial and Rational Inequalities
- 3.7 Modeling Using Variation

Summary, Review, and Test

Review Exercises

Chapter 3 Test



Cumulative Review Exercises (Chapters 13)

Chapter 4. Exponential and Logarithmic Functions

- 4.1 Exponential Functions
- 4.2 Logarithmic Functions
- 4.3 Properties of Logarithms

Mid-Chapter Check Point

- 4.4 Exponential and Logarithmic Equations
- 4.5 Exponential Growth and Decay; Modeling Data

Summary, Review, and Test

Review Exercises

Chapter 4 Test

Cumulative Review Exercises (Chapters 14)

Chapter 5. Trigonometric Functions

- 5.1 Angles and Radian Measure
- 5.2 Right Triangle Trigonometry
- 5.3 Trigonometric Functions of Any Angle
- 5.4 Trigonometric Functions of Real Numbers; Periodic Functions

Mid-Chapter Check Point

- 5.5 Graphs of Sine and Cosine Functions
- 5.6 Graphs of Other Trigonometric Functions
- 5.7 Inverse Trigonometric Functions
- 5.8 Applications of Trigonometric Functions

Summary, Review, and Test

Review Exercises

Chapter 5 Test

Cumulative Review Exercises (Chapters 15)

Chapter 6. Analytic Trigonometry

- 6.1 Verifying Trigonometric Identities
- 6.2 Sum and Difference Formulas
- 6.3 Double-Angle, Power-Reducing, and Half-Angle Formulas

Mid-Chapter Check Point

- 6.4 Product-to-Sum and Sum-to-Product Formulas
- 6.5 Trigonometric Equations



Summary, Review, and Test

Review Exercises

Chapter 6 Test

Cumulative Review Exercises (Chapters 16)

Chapter 7. Additional Topics in Trigonometry

- 7.1 The Law of Sines
- 7.2 The Law of Cosines
- 7.3 Polar Coordinates
- 7.4 Graphs of Polar Equations

Mid-Chapter Check Point

- 7.5 Complex Numbers in Polar Form; DeMoivres Theorem
- 7.6 Vectors
- 7.7 The Dot Product

Summary, Review, and Test

Review Exercises

Chapter 7 Test

Cumulative Review Exercises (Chapters 17)

Chapter 8. Systems of Equations and Inequalities

- 8.1 Systems of Linear Equations in Two Variables
- 8.2 Systems of Linear Equations in Three Variables
- 8.3 Partial Fractions
- 8.4 Systems of Nonlinear Equations in Two Variables

Mid-Chapter Check Point

- 8.5 Systems of Inequalities
- 8.6 Linear Programming

Summary, Review, and Test

Review Exercises

Chapter 8 Test

Cumulative Review Exercises (Chapters 18)

Chapter 9. Matrices and Determinants

- 9.1 Matrix Solutions to Linear Systems
- 9.2 Inconsistent and Dependent Systems and Their Applications
- 9.3 Matrix Operations and Their Applications



Mid-Chapter Check Point

9.4 Multiplicative Inverses of Matrices and Matrix Equations

9.5 Determinants and Cramers Rule

Summary, Review, and Test

Review Exercises

Chapter 9 Test

Cumulative Review Exercises (Chapters 19)

Chapter 10. Conic Sections and Analytic Geometry

10.1 The Ellipse

10.2 The Hyperbola

10.3 The Parabola

Mid-Chapter Check Point

10.4 Rotation of Axes

10.5 Parametric Equations

10.6 Conic Sections in Polar Coordinates

Summary, Review, and Test

Review Exercises

Chapter 10 Test

Cumulative Review Exercises (Chapters 110)

Chapter 11. Sequences, Induction, and Probability

11.1 Sequences and Summation Notation

11.2 Arithmetic Sequences

11.3 Geometric Sequences and Series

Mid-Chapter Check Point

11.4 Mathematical Induction

11.5 The Binomial Theorem

11.6 Counting Principles, Permutations, and Combinations

11.7 Probability

Summary, Review, and Test

Review Exercises

Chapter 11 Test

Cumulative Review Exercises (Chapters 111)

Appendix: Where Did That Come From? Selected Proofs



Answers to Selected Exercises Subject Index

Α

В

С

D

Ε

F

G

Н

•

J

Κ

L

Μ

Ν

Ο

Р

Q

R

S

Т

U

٧

W

Χ

Υ

Ζ

Credits

Definitions, Rules, and Formulas