

Blitzer



ALGEBRA AND
TRIGONOMETRY

6th Edition

CONTENTS

Preface vii
Acknowledgments x
Dynamic Resources xii
To the Student xv
About the Author xvi
Applications Index xvii

Mid-Chapter Check Point 171

1.6 Other Types of Equations 173

1.7 Linear Inequalities and Absolute Value Inequalities 189

Summary, Review, and Test 206

Review Exercises 209

Chapter 1 Test 213

P Prerequisites: Fundamental Concepts of Algebra 1

P.1 Algebraic Expressions, Mathematical Models, and Real Numbers 2

P.2 Exponents and Scientific Notation 20

P.3 Radicals and Rational Exponents 35

P.4 Polynomials 51

Mid-Chapter Check Point 63

P.5 Factoring Polynomials 64

P.6 Rational Expressions 76

Summary, Review, and Test 89

Review Exercises 90

Chapter P Test 92

1 Equations and Inequalities 93

1.1 Graphs and Graphing Utilities 94

1.2 Linear Equations and Rational Equations 106

1.3 Models and Applications 124

1.4 Complex Numbers 139

1.5 Quadratic Equations 148





2 Functions and Graphs 215

- 2.1 Basics of Functions and Their Graphs 216
- 2.2 More on Functions and Their Graphs 235
- 2.3 Linear Functions and Slope 255
- 2.4 More on Slope 271

Mid-Chapter Check Point 281

- 2.5 Transformations of Functions 282
- 2.6 Combinations of Functions; Composite Functions 298
- 2.7 Inverse Functions 313
- 2.8 Distance and Midpoint Formulas; Circles 325

Summary, Review, and Test 334

Review Exercises 337

Chapter 2 Test 341

Cumulative Review Exercises (Chapters 1–2) 343

3 Polynomial and Rational Functions 345

- 3.1 Quadratic Functions 346
- 3.2 Polynomial Functions and Their Graphs 364
- 3.3 Dividing Polynomials; Remainder and Factor Theorems 382
- 3.4 Zeros of Polynomial Functions 395

Mid-Chapter Check Point 410

- 3.5 Rational Functions and Their Graphs 411
- 3.6 Polynomial and Rational Inequalities 431
- 3.7 Modeling Using Variation 444

Summary, Review, and Test 454

Review Exercises 456

Chapter 3 Test 460

Cumulative Review Exercises (Chapters 1–3) 461

4 Exponential and Logarithmic Functions 463

4.1 Exponential Functions 464

4.2 Logarithmic Functions 478

4.3 Properties of Logarithms 493

Mid-Chapter Check Point 503

4.4 Exponential and Logarithmic Equations 504

4.5 Exponential Growth and Decay; Modeling Data 519

Summary, Review, and Test 533

Review Exercises 535

Chapter 4 Test 539

Cumulative Review Exercises (Chapters 1–4) 540



5 Trigonometric Functions 541

- 5.1 Angles and Radian Measure 542
- 5.2 Right Triangle Trigonometry 559
- 5.3 Trigonometric Functions of Any Angle 576
- 5.4 Trigonometric Functions of Real Numbers; Periodic Functions 589
- Mid-Chapter Check Point 597
- 5.5 Graphs of Sine and Cosine Functions 599
- 5.6 Graphs of Other Trigonometric Functions 620
- 5.7 Inverse Trigonometric Functions 633
- 5.8 Applications of Trigonometric Functions 649
- Summary, Review, and Test 660
- Review Exercises 663
- Chapter 5 Test 666
- Cumulative Review Exercises (Chapters 1–5) 667

6 Analytic Trigonometry 669

- 6.1 Verifying Trigonometric Identities 670
- 6.2 Sum and Difference Formulas 681
- 6.3 Double-Angle, Power-Reducing, and Half-Angle Formulas 692
- Mid-Chapter Check Point 703
- 6.4 Product-to-Sum and Sum-to-Product Formulas 704
- 6.5 Trigonometric Equations 713
- Summary, Review, and Test 726
- Review Exercises 727
- Chapter 6 Test 729
- Cumulative Review Exercises (Chapters 1–6) 729

7 Additional Topics in Trigonometry 731

- 7.1 The Law of Sines 732
- 7.2 The Law of Cosines 744
- 7.3 Polar Coordinates 753
- 7.4 Graphs of Polar Equations 765
- Mid-Chapter Check Point 776
- 7.5 Complex Numbers in Polar Form; DeMoivre's Theorem 777
- 7.6 Vectors 790
- 7.7 The Dot Product 805
- Summary, Review, and Test 815
- Review Exercises 818
- Chapter 7 Test 820
- Cumulative Review Exercises (Chapters 1–7) 821



8 Systems of Equations and Inequalities 823

- 8.1 Systems of Linear Equations in Two Variables 824
- 8.2 Systems of Linear Equations in Three Variables 843
- 8.3 Partial Fractions 851
- 8.4 Systems of Nonlinear Equations in Two Variables 862

Mid-Chapter Check Point 872

- 8.5 Systems of Inequalities 873
- 8.6 Linear Programming 885

Summary, Review, and Test 893

Review Exercises 895

Chapter 8 Test 898

Cumulative Review Exercises (Chapters 1–8) 898

9 Matrices and Determinants 901

- 9.1 Matrix Solutions to Linear Systems 902
- 9.2 Inconsistent and Dependent Systems and Their Applications 916
- 9.3 Matrix Operations and Their Applications 925

Mid-Chapter Check Point 940

- 9.4 Multiplicative Inverses of Matrices and Matrix Equations 941
- 9.5 Determinants and Cramer's Rule 955

Summary, Review, and Test 968

Review Exercises 969

Chapter 9 Test 971

Cumulative Review Exercises (Chapters 1–9) 972

10 Conic Sections and Analytic Geometry 973

- 10.1 The Ellipse 974
 - 10.2 The Hyperbola 989
 - 10.3 The Parabola 1005
- Mid-Chapter Check Point** 1019
- 10.4 Rotation of Axes 1021
 - 10.5 Parametric Equations 1032
 - 10.6 Conic Sections in Polar Coordinates 1042

Summary, Review, and Test 1052

Review Exercises 1055

Chapter 10 Test 1057

Cumulative Review Exercises (Chapters 1–10) 1058

11 Sequences, Induction, and Probability 1059

- 11.1 Sequences and Summation Notation 1060
 - 11.2 Arithmetic Sequences 1071
 - 11.3 Geometric Sequences and Series 1082
- Mid-Chapter Check Point** 1097
- 11.4 Mathematical Induction 1098
 - 11.5 The Binomial Theorem 1107
 - 11.6 Counting Principles, Permutations, and Combinations 1115
 - 11.7 Probability 1126

Summary, Review, and Test 1141

Review Exercises 1143

Chapter 11 Test 1146

Cumulative Review Exercises (Chapters 1–11) 1147

Appendix: Where Did That Come From? Selected Proofs 1149

Answers to Selected Exercises AA1

Subject Index I1

Photo Credits C1

