		PREFACE XI TO THE STUDENT XIX PROLOGUE: PRINCIPLES OF PROBLEM SOLVING P1	
CH	APTER P	Prerequisites	4
		Chapter Overview 1	
	P.1	Real Numbers and Their Properties 2	
	P.2	The Real Number Line and Order 8	
	P.3	Integer Exponents 14	
	P.4	Rational Exponents and Radicals 22	
	P.5	Algebraic Expressions 28	
	P.6	Factoring 33	
	P.7	Rational Expressions 40	
		Chapter P Review 49	
		Chapter P Test 52	
		FOCUS ON MODELING Modeling the Real World with Algebra 53	
C H	APTER 1	EQUATIONS AND INEQUALITIES	59
		Chapter Overview 59	
	1.1	Basic Equations 60	
	1.2	Modeling with Equations 68	
	1.3	Quadratic Equations 80	
	1.4	Complex Numbers 90	
	1.5	Other Types of Equations 95	
	1.6	Inequalities 104	
	1.7	Absolute Value Equations and Inequalities 113	
		Chapter 1 Review 117	
		Chapter 1 Test 119	
		FOCUS ON MODELING Making the Best Decisions 120	

CHAPTER 2	COORDINATES AND GRAPHS	125
2.1 2.2 2.3 2.4 2.5	Chapter Overview 125 The Coordinate Plane 126 Graphs of Equations in Two Variables 132 Graphing Calculators: Solving Equations and Inequalities Graphically 140 Lines 149 Making Models Using Variations 162 Chapter 2 Review 167 Chapter 2 Test 170 FOCUS ON MODELING Fitting Lines to Data 171	
	Cumulative Review Test: Chapters 1 and 2 181	403
CHAPTER 3	FUNCTIONS	183
	Chapter Overview 183	
3.1	What Is a Function? 184	
3.2	Graphs of Functions 194	
3.3 3.4	Getting Information from the Graph of a Function 205 Average Rate of Change of a Function 214	
3.5	Transformations of Functions 221	
3.6	Combining Functions 232	
3.7	One-to-One Functions and Their Inverses 241	
	Chapter 3 Review 249	
	Chapter 3 Test 253	
	FOCUS ON MODELING Modeling with Functions 255	
CHAPTER 4	POLYNOMIAL AND RATIONAL FUNCTIONS	265
	Chapter Overview 265	
4.1	Quadratic Functions and Models 266	
4.2	Polynomial Functions and Their Graphs 274	
4.3 4.4	Dividing Polynomials 288	
4.5	Real Zeros of Polynomials 295 Complex Zeros and the Fundamental Theorem of Algebra 306	
4.6	Rational Functions 314	
	Chapter 4 Review 329	
	Chapter 4 Test 332	
=	FOCUS ON MODELING Fitting Polynomial Curves to Data 333	
CHAPTER 5	EXPONENTIAL AND LOGARITHMIC FUNCTIONS	339
	Chapter Overview 339	
5.1	Exponential Functions 340	
5.2	The Natural Exponential Function 348	
5.3	Logarithmic Functions 353	

5.4	Laws of Logarithms 363	
5.5	Exponential and Logarithmic Equations 369	
5.6	Modeling with Exponential and Logarithmic Functions 378	
	Chapter 5 Review 391	
	Chapter 5 Test 394	
	FOCUS ON MODELING Fitting Exponential and Power Curves to Data 395	
	Cumulative Review Test: Chapters 3, 4, and 5 405	
CHAPTER 6	TRIGONOMETRIC FUNCTIONS: RIGHT TRIANGLE APPROACH	407
	Chapter Overview 407	
6.1	Angle Measure 408	
6.2	Trigonometry of Right Triangles 417	
6.3	Trigonometric Functions of Angles 425	
6.4	Inverse Trigonometric Functions and Right Triangles 436	
6.5	The Law of Sines 443	
6.6	The Law of Cosines 450	
	Chapter 6 Review 457	
	Chapter 6 Test 461	
	FOCUS ON MODELING Surveying 463	
CHAPTER 7	TRIGONOMETRIC FUNCTIONS: UNIT CIRCLE APPROACH	467
	Chapter Overview 467	
7.1	The Unit Circle 468	
7.2	Trigonometric Functions of Real Numbers 475	
7.3	Trigonometric Graphs 484	
7.4	More Trigonometric Graphs 497	
7.5	Inverse Trigonometric Functions and Their Graphs 504	
7.6	Modeling Harmonic Motion 510 Chapter 7 Poving 521	
	Chapter 7 Review 521 Chapter 7 Test 524	
	FOCUS ON MODELING Fitting Sinusoidal Curves to Data 525	
CHARTER Q	ANALYTIC TRIGONOMETRY	F 3.4
CHAPIER 6		531
	Chapter Overview 531	
8.1	Trigonometric Identities 532	
8.2 8.3	Addition and Subtraction Formulas 538	
8.4	Double-Angle, Half-Angle, and Product-Sum Formulas 545 Basic Trigonometric Equations 555	
6. 4 8.5	More Trigonometric Equations 562	
0.5	Chapter 8 Review 568	
	Chapter 8 Test 570	
-	·	
-	FOCUS ON MODELING Traveling and Standing Waves 571	
	CHRIDATION VOVIAU LACTEL BARTAN & 7 AMAY 674	

CHAPTER 9		Polar Coordinates and Parametric Equations	579
	9.1 9.2 9.3 9.4	Chapter Overview 579 Polar Coordinates 580 Graphs of Polar Equations 585 Polar Form of Complex Numbers; De Moivre's Theorem 593 Plane Curves and Parametric Equations 602 Chapter 9 Review 610 Chapter 9 Test 612 FOCUS ON MODELING The Path of a Projectile 613	
CHAPTER	10	VECTORS IN TWO AND THREE DIMENSIONS	617
	10.1 10.2 10.3 10.4 10.5 10.6	Chapter Overview 617 Vectors in Two Dimensions 618 The Dot Product 627 Three-Dimensional Coordinate Geometry 635 Vectors in Three Dimensions 641 The Cross Product 648 Equations of Lines and Planes 654 Chapter 10 Review 658 Chapter 10 Test 661 FOCUS ON MODELING Vector Fields 662 Cumulative Review Test: Chapters 9 and 10 666	
CHADTED	11	Systems of Equations and Inequalities	667
	11.1 11.2 11.3 11.4 11.5 11.6 11.7 11.8 11.9	Chapter Overview 667 Systems of Linear Equations in Two Variables 668 Systems of Linear Equations in Several Variables 678 Matrices and Systems of Linear Equations 687 The Algebra of Matrices 699 Inverses of Matrices and Matrix Equations 710 Determinants and Cramer's Rule 720 Partial Fractions 731 Systems of Nonlinear Equations 736 Systems of Inequalities 741 Chapter 11 Review 748 Chapter 11 Test 752 FOCUS ON MODELING Linear Programming 754	
CHADTED	12	Conic Sections	761
CHATILE	12.1 12.2 12.3	Chapter Overview 761 Parabolas 762 Ellipses 770 Hyperbolas 779	701

	12.4	Shifted Conics 788	
	12.5	Rotation of Axes 795	
	12.6	Polar Equations of Conics 803	
		Chapter 12 Review 810	
		Chapter 12 Test 813	
		FOCUS ON MODELING Conics in Architecture 814	
		Cumulative Review Test: Chapters 11 and 12 818	
CHAPTER	13	SEQUENCES AND SERIES	821
		Chapter Overview 821	
	13.1	Sequences and Summation Notation 822	
	13.2	Arithmetic Sequences 832	
	13.3	Geometric Sequences 838	
	13.4	Mathematics of Finance 846	
	13.5	Mathematical Induction 852	
	13.6	The Binomial Theorem 858	
		Chapter 13 Review 867	
		Chapter 13 Test 870	
		FOCUS ON MODELING Modeling with Recursive Sequences 871	
CHAPTER	14	COUNTING AND PROBABILITY	877
		Chapter Overview 877	
	14.1	Counting Principles 878	
	14.2	Permutations and Combinations 882	
	14.3	Probability 891	
	14.4	Binomial Probability 902	
	14.5	Expected Value 907	
		Chapter 14 Review 909	
		Chapter 14 Test 912	
		FOCUS ON MODELING The Monte Carlo Method 913	
		Cumulative Review Test: Chapters 13 and 14 917	
		APPENDIX: Calculations and Significant Figures 919	
		ANSWERS A1	
		INDEX 11	