• 1	Basic Concepts and Properties	1
1.1	Sets, Real Numbers, and Numerical Expressions	2
1.2	Addition and Subtraction of Integers	-11
1.3	Multiplication and Division of Integers	17
1.4	Properties of Real Numbers and Use of Exponents	21
1.5	Algebraic Expressions	29
	Chapter Summary	39
	Review Problem Set	40
2	Equations and Inequalities	43
2.1	Solving First-Degree Equations	44
2.2	Equations Involving Fractional Forms	51
2.3	Equations Involving Decimals	59
2.4	Formulas	66
2.5	Inequalities	76
2.6	More on Inequalities	83
2.7	Equations and Inequalities Involving Absolute Value	92
	Chapter Summary	98
	Review Problem Set	101

xi

3	Polynomials	103
3.1	Polynomials: Sums and Differences	104
3.2	Products and Quotients of Monomials	109
3.3	Multiplying Polynomials	115
3.4	Factoring: Use of the Distributive Property	120
3.5	The Difference of Two Squares	129
3.6	Factoring Trinomials	135
3.7	Equations and Problem Solving	143
	Chapter Summary	149
	Review Problem Set	152
	Cumulative Review Problem Set	153
4	Rational Expressions	156
4.1	Simplifying Rational Expressions	157
4.2	Multiplying and Dividing Rational Expressions	163
4.3	Adding and Subtracting Rational Expressions	168
4.4	More on Rational Expressions and Complex Fractions	176
4.5	Dividing Polynomials	184
4.6	Fractional Equations	189
4.7	More Fractional Equations and Applications	197
	Chapter Summary	206
	Review Problem Set	208
5	Exponents and Radicals	210
5.1	Using Integers as Exponents	211
5.2	Roots and Radicals	218
5.3	Combining Radicals and Simplifying Radicals Containing Variables	227
5.4	Products and Quotients Involving Radicals	233
5.5	Equations Involving Radicals	238
5.6	The Merging of Exponents and Roots	243
5.7	Scientific Notation	250
	Chapter Summary	254
	Review Problem Set	256
	Cumulative Review Problem Set	257

6	Quadratic Equations and Inequalities	260
6.1	Quadratic Equations	261
6.2	Completing the Square	268
6.3	The Quadratic Formula	272
6.4	More Quadratic Equations and Applications	280
6.5	Quadratic Inequalities	290
6.6	Complex Numbers	295
6.7	Quadratic Equations Revisited: Complex Solutions	304
	Chapter Summary	308
	Review Problem Set	310
= 7	Coordinate Geometry and	
	Graphing Techniques	313
7.1	The Rectangular Coordinate System	314
7.2	Graphing Techniques—Linear Equations and Inequalities	323
7.3		323
7.4	Determining the Equation of a Line Graphing Parabolas	342
7.5	More Parabolas and Some Circles	349
7.6	Ellipses and Hyperbolas	356
7.7	More on Graphing	364
	Chapter Summary	371
	Review Problem Set	374
	Cumulative Review Problem Set	375
	brishers Carrier Froblem Set S	373
8	Functions	377
8.1	Relations and Functions	378
8.2	Special Functions and Their Graphs	384
8.3	Problem Solving and the Composition of Functions	393
8.4	Inverse Functions	400
8.5	Direct and Inverse Variations	409
	Chapter Summary	417
	Review Problem Set	418

	9	Polynomial and Rational Functions	420
	9.1	Synthetic Division	421
	9.2	The Remainder and Factor Theorems	426
	9.3	Polynomial Equations	431
	9.4	Graphing Polynomial Functions	442
	9.5	Graphing Rational Functions	452
		Chapter Summary	460
		Review Problem Set	461
-	10	Exponential and Logarithmic Functions	463
	10.1	Exponents and Exponential Functions	464
	10.2	Applications of Exponential Functions	470
	10.3	Logarithms	480
	10.4	Logarithmic Functions	489
	10.5	Exponential Equations, Logarithmic Equations, and Problem Solving	498
	10.6	Computation with Common Logarithms (Optional)	508
		Chapter Summary	514
		Review Problem Set	517
	11	Systems of Equations and Inequalities	519
	11.1	Systems of Two Linear Equations in Two Variables	520
	11.2	The Substitution Method	529
	11.3	Systems of Three Linear Equations in Three Variables	538
	11.4	Systems Involving Nonlinear Equations and Systems	
		of Inequalities	545
	11.5	Linear Programming—Another Look at Problem	551
	~	Solving (Optional) Chapter Summary	554
		Pavious Problem Cat	563
		Keview Froblem Set	564
	12	Using Matrices and Determinants to	
		Solve Linear Systems	565
	12.1	A Matrix Approach to Solving Systems	566
	12.2	Reduced Echelon Form	573

Con	tents	xv
12.3	Determinants and Cramer's Rule	
12.4	erdiner's Rule	584
	Chapter Summary	590
	Review Problem Set	599
	Cumulative Review Problem Set	601
	Camarative Keview Liopiem 264	603
= 13	Sequences and Series	608
13.1	Arithmetic Sequences	609
13.2		614
13.3	Geometric Sequences and Series	620
13.4		628
13.5	Binomial Expansions	633
	Chapter Summary	637
	Review Problem Set	638
1 4	Basic Concepts of Trigonometry	640
14.1	A Brief Review of Some Geometric Concepts	641
14.2	Radian Measure	650
14.3	Trigonometric Functions	658
14.4	Trigonometric Functions of Any Angle	669
14.5	Right Triangle Trigonometry	680
14.6	Solving Oblique Triangles—Law of Cosines	691
14.7	Law of Sines	699
	Chapter Summary	710
	Review Problem Set	713
15	Graphing Trigonometric Functions	716
		716
15.1	Sine and Cosine Curves	717
15.2	More on Graphing: Period, Amplitude, and Phase Shift	726
15.3	Graphing the Other Basic Trigonometric Functions	733
15.4	Inverse Trigonometric Functions	739
	Chapter Summary	748
	Review Problem Set	749

1 6	Trigonometric Identities and Equations	752
16.1	Trigonometric Identities	753
16.2	Trigonometric Equations	762
16.3	Sum and Difference Formulas	768
16.4	Multiple and Half-Angle Formulas	778
	Chapter Summary	787
	Review Problem Set	788
	pendix le A: Values of the Trigonometric Functions	A1 A3
	swers to Odd-Numbered Problems and all view Problems	A15
■ Ind	ex	A75