

# Contents

## 1 The Basics 1

- 1.1 Variables, Symbols, and the Order of Operations 3
- 1.2 The Real Numbers 15
- 1.3 Addition of Real Numbers 29
- 1.4 Subtraction of Real Numbers 39
- 1.5 Multiplication and Division of Real Numbers 47
- 1.6 Fractions 59
- 1.7 Properties of Real Numbers 77
- Chapter 1 Summary 87
- Chapter 1 Test 90

## 2 Linear Equations and Inequalities 91

- 2.1 Simplifying Expressions 93
- 2.2 Addition Property of Equality 103
- 2.3 Multiplication Property of Equality 111
- 2.4 Solving Linear Equations 119
- 2.5 Formulas and Percents 129
- 2.6 Applications 141
- 2.7 More Applications 155
- 2.8 Linear Inequalities 167
- Chapter 2 Summary 177
- Chapter 2 Test 180



## 3 Linear Equations and Inequalities in Two Variables 181

- 3.1 Paired Data and Graphing Ordered Pairs 183
- 3.2 Graphing Linear Equations in Two Variables 195
- 3.3 More On Graphing: Intercepts 209
- 3.4 The Slope of a Line 219
- 3.5 Slope-Intercept Form 233
- 3.6 Point-Slope Form 243
- 3.7 Linear Inequalities in Two Variables 251
- Chapter 3 Summary 259
- Chapter 3 Test 262

## 4 Systems of Linear Equations 265

- 4.1 Solving Linear Systems by Graphing 267
- 4.2 The Elimination Method 277
- 4.3 The Substitution Method 287
- 4.4 Applications 295
- Chapter 4 Summary 305
- Chapter 4 Test 307

## 5 Exponents and Polynomials 309

- 5.1 Multiplication with Exponents and Scientific Notation 311
- 5.2 Division with Exponents 321
- 5.3 Operations with Monomials 335
- 5.4 Addition and Subtraction of Polynomials 345
- 5.5 Multiplication with Polynomials 353
- 5.6 Binomial Squares and Other Special Products 361
- 5.7 Division with Polynomials 369
- Chapter 5 Summary 379
- Chapter 5 Test 381

## 6 Factoring 383

- 6.1 The Greatest Common Factor and Factoring by Grouping 385
- 6.2 Factoring Trinomials 395
- 6.3 More on Factoring Trinomials 401
- 6.4 Special Factoring Patterns 409
- 6.5 Factoring: A General Review 417
- 6.6 Solving Equations by Factoring 423
- 6.7 Applications 431
- Chapter 6 Summary 441
- Chapter 6 Test 444

## 7 Rational Expressions 445

- 7.1 Reducing Rational Expressions to Lowest Terms 447
- 7.2 Multiplication and Division of Rational Expressions 459
- 7.3 Addition and Subtraction of Rational Expressions 469
- 7.4 Complex Fractions 479
- 7.5 Equations Involving Rational Expressions 487
- 7.6 Proportions 493
- 7.7 Applications 499
- 7.8 Variation 509
- Chapter 7 Summary 517
- Chapter 7 Test 520

## 8 Roots and Radical Expressions 521

- 8.1 Definitions and Common Roots 523
- 8.2 Simplified Form and Properties of Radicals 535
- 8.3 Addition and Subtraction of Radical Expressions 547
- 8.4 Multiplication of Radicals 555
- 8.5 Division of Radicals 563
- 8.6 Equations Involving Radicals 573
- Chapter 8 Summary 581
- Chapter 8 Test 584

## 9 Quadratic Equations 585

- 9.1 Square Root Property 587
- 9.2 Completing the Square 597
- 9.3 The Quadratic Formula 605
- 9.4 Complex Numbers 613
- 9.5 Complex Solutions to Quadratic Equations 619
- 9.6 Graphing Parabolas 625
- Chapter 9 Summary 635
- Chapter 9 Test 637

Answers A-1

Index I-1