# Elementary Algebra <br> Harold R Jacobs 

## Table of Contents

## 1. FUNDAMENTAL OPERATIONS

1. Addition
2. Subtraction
3. Multiplication
4. Division
5. Raising to a Power
6. Zero and One
7. Several Operations
8. Parentheses
9. The Distributive Rule

Summary and Review

## 2. FUNCTIONS AND GRAPHS

1. An Introduction to Functions
2. The Coordinate Graph
3. More on Functions
4. Direct Variation
5. Linear Functions
6. Inverse Variation

Summary and Review

## 3. THE INTEGERS

1. The Integers
2. More on the Coordinate Graph
3. Addition
4. Subtraction
5. Multiplication
6. Division
7. Several Operations

Summary and Review

## 4. THE RATIONAL NUMBERS

1. The Rational Numbers
2. Absolute Value and Addition
3. More on Operations with Rational Numbers
4. Approximations
5. More on Graphing Functions

Summary and Review

## 5. EQUATIONS IN ONE VARIABLE

1. Equations
2. Inverse Operations
3. Equivalent Equations
4. Equivalent Expressions
5. More on Solving Equations
6. Length and Area
7. Distance, Rate, and Time
8. Rate Problems

Summary and Review

## 6. EQUATIONS IN TWO VARIABLES

1. Equations in Two Variables
2. Formulas
3. Graphing Linear Equations
4. Intercepts
5. Slope
6. The Slope-Intercept Form

Summary and Review
7. SIMULTANEOUS EQUATIONS

1. Simultaneous Equations
2. Solving by Subtraction
3. More on Solving by Addition and Subtraction
4. Graphing Simultaneous Equations
5. Inconsistent and Equivalent Fractions
6. Solving by Substitution
7. Mixture Problems

Summary and Review

## 8. EXPONENTS

1. Large Numbers
2. A Fundamental Property of Exponents
3. Two More Properties of Exponents
4. Zero and Negative Exponents
5. Small Numbers
6. Powers of Products and Quotients
7. Exponential Functions

Summary and Review

## MIDTERM REVIEW

## 9. POLYNOMIALS

1. Monomials
2. Polynomials
3. Adding and Subtracting Polynomials
4. Multiplying Polynomials
5. More on Multiplying Polynomials
6. Squaring Binomials
7. Dividing Polynomials

Summary and Review

## 10. FACTORING

1. Prime and Composite Numbers
2. Monomials and Their Factors
3. Polynomials and Their Factors
4. Factoring Second-Degree Polynomials
5. Factoring the Difference of Two Squares
6. Factoring Trinomial Squares
7. More on Factoring Second-Degree Polynomials Summary and Review

## 11. FRACTIONS

1. Fractions
2. Algebraic Fractions
3. Adding and Subtracting Fractions
4. More on Addition and Subtraction
5. Multiplying Fractions
6. More on Multiplication
7. Dividing Fractions
8. Complex Fractions

Summary and Review

## 12. SQUARE ROOTS

1. Squares and Square Roots
2. Square Roots of Products
3. Square Roots of Quotients
4. Adding and Subtracting Square Roots
5. Multiplying Square Roots
6. Dividing Square Roots
7. Radical Equations

Summary and Review

## 13. QUADRATIC EQUATIONS

1. Polynomial Equations
2. Polynomial Functions
3. Solving Polynomial Equations by Graphing
4. Solving Quadratic Equations by Factoring
5. Solving Quadratic Equations by Taking Square Roots
6. Completing the Square
7. The Quadratic Formula
8. The Discriminant
9. Solving Higher-Degree Equations

Summary and Review

## 14. THE REAL NUMBERS

1. Rational Numbers
2. Irrational Numbers
3. More Irrational Numbers
4. $\mathrm{Pi}(\pi)$
5. The Real Numbers

Summary and Review

## 15. FRACTIONAL EQUATIONS

1. Ratio and Proportion
2. Equations Containing Fractions
3. More on Fractional Equations
4. Absolute Value and Inequalities

Summary and Review

## 16. INEQUALITIES

1. Inequalities
2. Solving Linear Inequalities
3. More on Solving Inequalities
4. Absolute Value and Inequalities

Summary and Review

## 17. NUMBER SEQUENCES

1. Number Sequences
2. Arithmetic Sequences
3. Geometric Sequences
4. Infinite Geometric Sequences

Summary and Review

## FINAL REVIEW

## Answers to the Set II Exercises <br> Index

