

Aufmann, Algebra: Beginning and Intermediate, TOC

1. REAL NUMBERS AND VARIABLE EXPRESSIONS.

Introduction to Integers. Operations with Integers. Rational Numbers. Exponents and the Order of Operations Agreement. Variable Expressions. Translating Verbal Expressions into Variable Expressions.

2. SOLVING EQUATIONS AND INEQUALITIES.

Introduction to Equations. General Equations. Value Mixture and Uniform Motion Problems. Geometry Problems. Markup and Discount Problems. Applications: Problems Involving Percent. Inequalities in One Variable. Absolute Value Equations and Inequalities.

3. LINEAR FUNCTIONS AND INEQUALITIES IN TWO VARIABLES.

The Rectangular Coordinate System. Introduction to Functions. Linear Functions. Slope of a Straight Line. Finding Equations of Lines. Parallel and Perpendicular Lines. Inequalities in Two Variables.

4. SYSTEMS OF EQUATIONS AND INEQUALITIES.

Solving Systems of Linear Equations by Graphing and by the Substitution Method. Solving Systems of Linear Equations by the Addition Method. Solving Systems of Equations by Using Determinants and by Using Matrices. Application Problems. Solving Systems of Linear Inequalities.

5. POLYNOMIALS.

Introduction to Polynomials. Multiplication of Monomials. Multiplication of Polynomials. Integer Exponents and Scientific Notation. Division of Polynomials.

6. FACTORING.

Common Factors. Factoring Polynomials of the Form $x^2 + bx + c$. Factoring Polynomials of the Form $ax^2 + bx + c$. Special Factoring. Factor Polynomials Completely. Solving Equations.

7. RATIONAL EXPRESSIONS.

Introduction to Rational Functions. Operations on Rational Expressions. Complex Fractions. Rational Equations. Proportions and Variation. Literal Equations.

8. RATIONAL EXPONENTS AND RADICALS.

Rational Exponents and Radical Expressions. Operations on Radical Expressions. Radical Functions. Solving Equations Containing Radical Expressions. Complex Numbers.

9. QUADRATIC EQUATIONS AND INEQUALITIES.

Solving Quadratic Equations by Factoring or by Taking Square Roots. Solving Quadratic Equations by Completing the Square and by Using the Quadratic Formula. Equations that are Reducible to Quadratic Equations. Applications of Quadratic Equations. Properties of Quadratic Functions. Applications of Quadratic Functions. Nonlinear Inequalities.

10. FUNCTIONS AND RELATIONS.

Translations of Graphs. Algebra of Functions. One-to-One and Inverse Functions.

11. EXPONENTIAL AND LOGARITHMIC FUNCTIONS.

Exponential Functions. Introduction to Logarithms. Graphs of Logarithmic Functions. Exponential and Logarithmic Equations. Applications of Exponential and Logarithmic Functions.

12. CONIC SECTIONS.

The Parabola. The Circle. The Ellipse and the Hyperbola. Solving Nonlinear Systems of Equations. Quadratic Inequalities and Systems of Inequalities.

Final Exam.
Appendix.