

## **Gustafson, College Algebra, TOC**

### **0. A REVIEW OF BASIC ALGEBRA.**

Sets of Real Numbers. Integer Exponents and Scientific Notation. Rational Exponents and Radicals. Polynomials. Factoring Polynomials. Rational Expressions. Chapter Review. Chapter Test.

### **1. EQUATIONS AND INEQUALITIES.**

Linear Equations and Rational Equations. Applications of Linear Equations. Quadratic Equations. Applications of Quadratic Equations. Complex Numbers. Polynomial and Radical Equations. Inequalities. Absolute Value. Chapter Review. Chapter Test. Cumulative Review Exercises.

### **2. THE RECTANGULAR COORDINATE SYSTEM AND GRAPHS OF EQUATIONS.**

The Rectangular Coordinate System. The Slope of a Nonvertical Line. Writing Equations of Lines. Graphs of Equations. Proportion and Variation. Chapter Review. Chapter Test.

### **3. FUNCTIONS.**

Functions and Function Notation. Quadratic Functions. Polynomial and Other Functions. Transformation of Functions. Rational Functions. Operations on Functions. Inverse Functions. Chapter Review. Chapter Test. Cumulative Review Exercises.

### **4. EXPONENTIAL AND LOGARITHMIC FUNCTIONS.**

Exponential Functions and Their Graphs. Applications of Exponential Functions. Logarithmic Functions and Their Graphs. Applications of Logarithmic Functions. Properties of Logarithms. Exponential and Logarithmic Equations. Chapter Review. Chapter Test.

### **5. SOLVING POLYNOMIAL EQUATIONS.**

The Remainder and Factor Theorems; Synthetic Division. Descartes' Rule of Signs and Bounds on Roots. Roots of Polynomial Equations. Approximating Irrational Roots of Polynomial Equations. Chapter Review. Chapter Test. Cumulative Review Exercises.

### **6. LINEAR SYSTEMS.**

Systems of Linear Equations. Gaussian Elimination and Matrix Methods. Matrix Algebra. Matrix Inversion. Determinants. Partial Fractions. Graphs of Linear Inequalities. Linear Programming. Chapter Review. Chapter Test.

### **7. CONIC SECTIONS AND QUADRATIC SYSTEMS.**

The Circle and the Parabola. The Ellipse. The Hyperbola. Solving Problems Using Nonlinear Systems of Equations. Chapter Review. Chapter Test. Cumulative Review Exercises.

### **8. NATURAL NUMBER FUNCTIONS AND PROBABILITY.**

The Binomial Theorem. Sequences, Series, and Summation Notation. Arithmetic Sequences. Geometric Sequences. Mathematical Induction. Permutations and Combinations. Probability. Chapter Review. Chapter Test.

### **9. MATHEMATICS OF FINANCE (online).**

Interest. Annuities and Future Value. Present Value of an Annuity; Amortization. Linear Programming. Chapter Review. Chapter Test. Cumulative Review Exercises.

### **Appendix I: A PROOF OF THE BINOMIAL THEOREM.**

### **Appendix II: TABLES.**

Powers and Roots. Base-10 Logarithms. Base-e Logarithms.

### **Appendix III: ANSWERS TO SELECTED EXERCISES (in Student Edition only).**