

Table of Contents

Review

- R.1 Real Numbers
- R.2 Algebra Essentials
- R.3 Geometry Essentials
- R.4 Polynomials
- R.5 Factoring Polynomials
- R.6 Synthetic Division
- R.7 Rational Expressions
- R.8 n th Roots; Rational Exponents

Chapter 1 Equations and Inequalities

- 1.1 Linear Equations
- 1.2 Quadratic Equations
- 1.3 Complex Numbers; Quadratic Equations in the Complex Number System
- 1.4 Radical Equations; Equations Quadratic in Form; Factorable Equations
- 1.5 Solving Inequalities
- 1.6 Equations and Inequalities Involving Absolute Value
- 1.7 Problem Solving: Interest, Uniform Motion, Constant Rate Job Applications

Chapter 2 Graphs

- 2.1 The Distance and Midpoint Formulas
- 2.2 Graphs of Equations in Two Variables; Intercepts; Symmetry
- 2.3 Lines
- 2.4 Circles
- 2.5 Variation

Chapter 3 Functions and Their Graphs

- 3.1 Functions
- 3.2 The Graph of a Function
- 3.3 Properties of Functions
- 3.4 Library of Functions; Piecewise-defined Functions
- 3.5 Graphing Techniques: Transformations
- 3.6 Mathematical Models: Building Functions

Chapter 4 Linear and Quadratic Functions

- 4.1 Properties of Linear Functions and Linear Models
- 4.2 Building Linear Models from Data
- 4.3 Quadratic Functions and Their Properties
- 4.4 Build Quadratic Models from Verbal Descriptions and from Data
- 4.5 Inequalities Involving Quadratic Functions

Chapter 5 Polynomial and Rational Functions

- 5.1 Polynomial Functions
- 5.2 Graphing Polynomial Functions; Models
- 5.3 Properties of Rational Functions
- 5.4 The Graph of a Rational Function
- 5.5 Polynomial and Rational Inequalities
- 5.6 The Real Zeros of a Polynomial Function
- 5.7 Complex Zeros; Fundamental Theorem of Algebra

Chapter 6 Exponential and Logarithmic Functions

- 6.1 Composite Functions
- 6.2 One-to-One Functions; Inverse Functions
- 6.3 Exponential Functions
- 6.4 Logarithmic Functions
- 6.5 Properties of Logarithms
- 6.6 Logarithmic and Exponential Equations
- 6.7 Financial Models
- 6.8 Exponential Growth and Decay Models; Newton's Law; Logistic Growth and Decay Models
- 6.9 Building Exponential, Logarithmic, and Logistic Models from Data

Chapter 7 Trigonometric Functions

- 7.1 Angles, Arc Length, and Circular Motion
- 7.2 Right Triangle Trigonometry
- 7.3 Computing the Values of Trigonometric Functions of Acute Angles
- 7.4 Trigonometric Functions of Any Angle
- 7.5 Unit Circle Approach; Properties of the Trigonometric Functions
- 7.6 Graphs of the Sine and Cosine Functions
- 7.7 Graphs of the Tangent, Cotangent, Cosecant, and Secant Functions
- 7.8 Phase Shift; Sinusoidal Curve Fitting

Chapter 8 Analytic Trigonometry

- 8.1 The Inverse Sine, Cosine, and Tangent Functions
- 8.2 The Inverse Trigonometric Functions (Continued)
- 8.3 Trigonometric Equations
- 8.4 Trigonometric Identities
- 8.5 Sum and Difference Formulas
- 8.6 Double-angle and Half-angle Formulas
- 8.7 Product-to-Sum and Sum-to-Product Formulas

Chapter 9 Applications of Trigonometric Functions

- 9.1 Applications Involving Right Triangles
- 9.2 The Law of Sines
- 9.3 The Law of Cosines
- 9.4 Area of a Triangle
- 9.5 Simple Harmonic Motion; Damped Motion; Combining Waves

Chapter 10 Polar Coordinates; Vectors

- 10.1 Polar Coordinates
- 10.2 Polar Equations and Graphs
- 10.3 The Complex Plane; De Moivre's Theorem
- 10.4 Vectors
- 10.5 The Dot Product

Chapter 11 Analytic Geometry

- 11.2 The Parabola
- 11.3 The Ellipse
- 11.4 The Hyperbola
- 11.5 Rotation of Axes; General Form of a Conic
- 11.6 Polar Equations of Conics
- 11.7 Plane Curves and Parametric Equations

Chapter 12 Systems of Equations and Inequalities

- 12.1 Systems of Linear Equations: Substitution and Elimination
- 12.2 Systems of Linear Equations: Matrices
- 12.3 Systems of Linear Equations: Determinants
- 12.4 Matrix Algebra
- 12.5 Partial Fraction Decomposition
- 12.6 Systems of Nonlinear Equations
- 12.7 Systems of Inequalities
- 12.8 Linear Programming

Chapter 13 Sequences; Induction; the Binomial Theorem

- 13.1 Sequences
- 13.2 Arithmetic Sequences
- 13.3 Geometric Sequences; Geometric Series
- 13.4 Mathematical Induction
- 13.5 The Binomial Theorem

Chapter 14 Counting and Probability

- 14.1 Counting
- 14.2 Permutations and Combinations
- 14.3 Probability