

Larson, Algebra and Trigonometry, TOC

P. PREREQUISITES.

Review of Real Numbers and Their Properties. Exponents and Radicals. Polynomials and Special Products. Factoring Polynomials. Rational Expressions. The Rectangular Coordinate System and Graphs. Chapter Summary. Review Exercises. Chapter Test. Proofs in Mathematics. P.S. Problem Solving.

1. EQUATIONS, INEQUALITIES, AND MATHEMATICAL MODELING.

Graphs of Equations. Linear Equations in One Variable. Modeling with Linear Equations. Quadratic Equations and Applications. Complex Numbers. Other Types of Equations. Linear Inequalities in One Variable. Other Types of Inequalities. Chapter Summary. Review Exercises. Chapter Test. Proofs in Mathematics. P.S. Problem Solving.

2. FUNCTIONS AND THEIR GRAPHS.

Linear Equations in Two Variables. Functions. Analyzing Graphs of Functions. A Library of Functions. Shifting, Reflecting, and Stretching Graphs. Combinations of Functions. Inverse Functions. Chapter Summary. Review Exercises. Chapter Test. Cumulative Test: Chapters P-2. Proofs in Mathematics. P.S. Problem Solving.

3. POLYNOMIAL FUNCTIONS.

Quadratic Functions and Models. Polynomial Functions of Higher Degree. Polynomial and Synthetic Division. Zeros of Polynomial Functions. Mathematical Modeling. Chapter Summary. Review Exercises. Chapter Test. Proofs in Mathematics. P.S. Problem Solving.

4 RATIONAL FUNCTIONS AND CONICS.

Rational Functions and Asymptotes. Graphs of Rational Functions. Conics. Translations of Conics. Chapter Summary. Review Exercises. Chapter Test. Proofs in Mathematics. P.S. Problem Solving.

5. EXPONENTIAL AND LOGARITHMIC FUNCTIONS.

Exponential Functions and Their Graphs. Logarithmic Functions and Their Graphs. Properties of Logarithms. Exponential and Logarithmic Equations. Exponential and Logarithmic Models. Chapter Summary. Review Exercises. Chapter Test. Cumulative Test: Chapters 3-5. Proofs in Mathematics. P.S. Problem Solving.

6. TRIGONOMETRY.

Angles and Their Measure. Right Triangle Trigonometry. Trigonometric Functions of Any Angle. Graphs of Sine and Cosine Functions. Graphs of Other Trigonometric Functions. Inverse Trigonometric Functions. Applications and Models. Chapter Summary. Review Exercises. Chapter Test. Proofs in Mathematics. P.S. Problem Solving.

7. ANALYTIC TRIGONOMETRY.

Using Fundamental Identities. Verifying Trigonometric Identities. Solving Trigonometric Equations. Sum and Difference Formulas. Multiple-Angle and Product-to-Sum Formulas. Chapter Summary. Review Exercises. Chapter Test. Proofs in Mathematics. P.S. Problem Solving.

8. ADDITIONAL TOPICS IN TRIGONOMETRY.

Law of Sines. Law of Cosines. Vectors in the Plane. Vectors and Dot Products. Trigonometric Form of a Complex Number. Chapter Summary. Review Exercises. Chapter Test. Cumulative Test: Chapters 6-8. Proofs in Mathematics. P.S. Problem Solving.

9. SYSTEMS OF EQUATIONS AND INEQUALITIES.

Linear and Nonlinear Systems of Equations. Two-Variable Linear Systems. Multivariable Linear Systems. Partial Fractions. Systems of Inequalities. Linear Programming. Chapter Summary. Review Exercises. Chapter Test. Proofs in Mathematics. P.S. Problem Solving.

10. MATRICES AND DETERMINANTS.

Matrices and Systems of Equations. Operations with Matrices. The Inverse of a Square Matrix. The Determinant of a Square Matrix. Applications of Matrices and Determinants. Chapter Summary. Review Exercises. Chapter Test. Proofs in Mathematics. P.S. Problem Solving.

11. SEQUENCES, SERIES, AND PROBABILITY.

Sequences and Series. Arithmetic Sequences and Partial Sums. Geometric Sequences and Series. Mathematical Induction. The Binomial Theorem. Counting Principles. Probability. Chapter Summary. Review Exercises. Chapter Test. Cumulative Test: Chapters 9-11. Proofs in Mathematics. P.S. Problem Solving.

APPENDIX A: ERRORS AND THE ALGEBRA OF CALCULUS.

APPENDIX B: CONCEPTS IN STATISTICS (WEB).

Representing Data. Measures of Central Tendency and Dispersion. Least Squares Regression.

ALTERNATIVE/EXPANDED VERSION OF CHAPTER P (WEB).

Operations with Real Numbers. Properties of Real Numbers. Algebraic Expressions. Operations with Polynomials. Factoring Polynomials. Factoring Trinomials.