

AN OVERVIEW OF ELEMENTARY ALGEBRA

Numbers

- Natural Numbers
- Whole Numbers
- Integer Numbers
- Rational Numbers
- Irrational Numbers
- Real Numbers – Axioms of Real Numbers
- Complex Numbers

The Fundamental Theorem of Arithmetic

Factors and Factoring

- Greatest Common Factor
- Least Common Multiple

Ratios

- Fractions
- Operations on Numbers
- Addition and Multiplication
- Subtraction and Division

Proportions

Percents

Equality, Inequality, Absolute Value

- Axioms of Equality
- Axioms of Inequality
- Definition of Absolute Value

Variables, Algebraic Expressions

- Monomials, Binomials, Trinomials,
- Polynomials, Similar Terms
- Addition and Multiplication
- Subtraction and Division
- Factoring Algebraic Expressions

Rational Algebraic Expressions

- Operations
 - Addition and Multiplication
 - Subtraction and Division
- Equations
- Applications
- Complex Fractions

Equations

- Linear Equations
 - Slope-Intercept Form
 - Point-Slope Form
 - Standard Form
- Quadratic Equations
 - Solution by Factoring
 - Solution by Completing the Square
 - Solution by Quadratic Formula
- Polynomial Equations

The Fundamental Theorem of Algebra

Second Degree Equations and Functions

- Circle, Ellipse, Parabola, Hyperbola
- Second Degree Inequalities
- Inverse Functions

Systems of Equations and Inequalities

- Linear Systems of Equations in 2 variables
- Linear Systems of Equations in 3 variables
- Determinants
- Non-Linear Systems of Equations
- Systems of Inequalities

Exponents, Radicals and Logarithms

- Properties, Relations and Equations
- Exponential and Logarithmic Functions

Sequences and Series

- Arithmetic Series
- Geometric Series
- The Binomial Theorem
- Mathematical Induction

Applications of Algebra (*among others*)

- Biology and Chemistry
- Physics and Engineering
- Business and Management
- Social and Psychological Sciences