

ELEMENTARY FUNCTIONS REVIEW OF CONCEPTS

Chapter 1

Absolute value equations and inequalities
Quadratic and higher degree inequalities
Distance relationships on the line and in the plane
Intersection of inequalities
Circles, triangles, and other geometric figures and relationships shown in the coordinate plane

Chapter 2

Functions, domains, ranges
The algebra of functions ($+$, $-$, \times , \div)
Composition of functions
Inverses of functions
Increasing, decreasing, constant, step functions; 1-1, onto, continuous, Intermediate Value Theorem and its use in locating zeroes

Chapter 3

Polynomials and their graphs
Division—long and synthetic
Factors, zeroes, Rational Root Theorem, factorization, Factor and Remainder Theorems
Rational, real and/or complex roots in polynomials with real coefficients
Rational functions, limits, asymptotes, even- or odd-ness and their graphs
Algebraic functions and their graphs and their equations

Chapter 4

Exponents and how to operate using them
Logarithms and how to operate using them
Solution of equations involving the use of exponents and logarithms

Chapter 5

Degrees, radians, angular and linear velocity relationships
Definition of six trigonometric functions and their relationships to one another
Special angles and their trig function values; quadrantal considerations and their parity implications
Graphs of trig functions and related modifications including changes in amplitude, period (wave length), phase shift, vertical displacement
Graphs of functions that are the sums of trig functions

Chapter 6

Reference angle computation and cofunction relationships among angles
Solution of applications of triangles; right and oblique triangles; using right triangle relationships and the Laws of Sines and Cosines

Chapter 7

Proofs of trig identities
Sum and difference of angles—formulas and applications
Double and half angle formulas and applications
Complex numbers and deMoivre's Theorem for computing powers and roots of complex numbers

Chapter 8

Arcfunctions, their definitions and applications
Solution of trigonometric equations

Chapter 9

Arithmetic, geometric, and other sequences and series
Limits of sequences (or series)
Proof by mathematical induction
Combinations, permutations, selections, and independent choices
Binomial Theorem