

Course IV Curriculum

TEXTBOOKS: *Precalculus, 7th Edition* by Robert Blitzer

FUNDAMENTAL CONCEPTS OF ALGEBRA

algebraic expressions and real numbers; exponents; radicals and rational exponents; polynomial expressions; factoring polynomials; rational expressions; solving quadratic, rational, and radical equations

FUNCTIONS AND GRAPHS

graphs and graphing utilities; nine basic functions and their graphs; transformations of functions; combinations of functions; composite functions; inverse functions; equations of circles; modeling with functions

COMPLEX NUMBERS

Operations with complex numbers; graphing complex numbers; finding the modulus of a complex number; solving quadratic equations with complex roots; transformations on quadratic equations; locus definition of parabolas; modeling with quadratic functions

POLYNOMIAL AND RATIONAL FUNCTIONS

polynomial functions and their graphs; dividing polynomials; remainder; zeros of polynomial functions; rational functions and their graphs; polynomial and rational inequalities; modeling with polynomial and rational functions

EXPONENTIAL AND LOGARITHMIC FUNCTIONS

exponential functions; logarithmic functions; natural log; properties of logarithms; exponential and logarithmic equations and graphs; exponential growth and decay; modeling with exponential functions

PROBABILITY AND STATISTICS

probability and sets; conditional probability; independent events; variability and sampling; population parameters; normal distribution; z-scores; sample means and proportions; difference in sample means; distribution of sample means; distribution of sample proportions; margin of error; linear regression; other types of regression

SEQUENCES AND SERIES

arithmetic and geometric sequences; summation notation; arithmetic series; geometric series

SYSTEMS OF EQUATIONS

systems of linear equations; systems of non-linear equations

TRIGONOMETRY

Angles and radian measure; the unit circle; sine, cosine, tangent, secant, cosecant, and cotangent; trigonometric values using reference angles and radians; finding the value of trigonometric functions; graphing all trigonometric functions; graphs of the inverse trigonometric functions; calculations with inverse trigonometric functions; verifying trigonometric identities; using the

sum/difference angle identities; using the double angle identities and half angle identities; solving trigonometric equations

AVAILABLE FOR STUDENT INDEPENDENT EXPLORATION

Ellipses; hyperbolas; piecewise functions; vectors; operations with vectors; polar coordinates; polar graphing; types of discontinuity