Honors Precalculus

Course Overview:

This course includes those mathematical topics necessary to prepare college bound students for AP Calculus. Students will study in depth the properties of linear, quadratic, exponential, logarithmic, absolute value, step, piecewise, polynomial, rational, and trigonometric functions and explore the characteristics of their graphs. Additional topics covered include sequences, series, probability, statistics, systems of equations, and matrices. A graphing utility is required for this course. This course meets NCAA eligibility requirements.

Text Books:

WebAssign

Math XL

Assessments:

Teacher Created Assessments

First Quarter:

Standards/Learning Goals:

- Unit 1: Algebra Review
  - Working with linear, quadratic, polynomial, exponential, radical, and rational expressions - focus on algebra mechanics
  - Equations and inequalities
  - Assessments: Algebra summer packet, algebra boot camp worksheets, quizzes and exams
- Unit 2: Limits and Continuity
  - Domain and range
  - Max/Min value
  - Average rate of change
  - Instantaneous rate of change
  - Even/odd functions
  - One-to-one and inverse functions

Second Quarter:

Standards/Learning Goals:

- Unit 3: Writing and Optimizing Functions, Polynomial Functions, Rational Functions
    - Polynomial function
    - Rational function
    - Optimization
    - Vertex form
- Unit 4: Trigonometric Functions - Right Triangle Trig, Applications, Unit Circle, Trig Identities
    - Right triangle trig
    - Six basic trig functions, proper notation
    - Unit circle - development and use

Third Quarter:

Standards/Learning Goals:

- Unit 5: Trigonometric Functions
    - Radian measure
    - Analytic trigonometry - graphing trig functions
    - Simple harmonic motion
- Unit 6: Deeper into Trigonometry
    - More advanced trig identities
    - Inverse trig functions
    - Solving trig equations

Fourth Quarter:

Standards/Learning Goals:

- Unit 7: Exponential and Logarithmic Functions
    - Exponential functions - properties, solving equations, inequalities
    - Logarithmic functions - properties, solving equations, inequalities
    - Application problems - radioactive decay, compound interest, population growth
- Unit 8: Conic Sections
    - Parabola, circle, ellipse, hyperbola
    - Manipulating algebraic form, use of completing the square
- Further Study (Time Permitting)
    - Polar coordinates

- Parametric defined curves