PETERS TOWNSHIP HIGH SCHOOL COURSE SYLLABUS: PRECALCULUS ACADEMIC

Course Overview and Essential Skills

Pre-Calculus Academic is a course designed for students who have successfully completed Algebra II and are working towards continuing their Math knowledge into topics necessary to prepare them for Calculus or college-level Mathematics. Students will study functions and their graphs, Polynomial and Rational Functions, Exponential and Logarithmic Functions, Trigonometric Functions, Analytical Trigonometry, and Systems of Equations.

Essential skills acquired throughout the year will include evaluating, recognizing, and applying functions graphically, numerically, and algebraically. Students will also be able to make connections between the functions studied and real-world situations.

Course Textbook and Required Materials

- Pre-calculus with Limits A Graphing Approach, 7th edition, Cengage Learning
- On-line books: www.cengagebrain.com
- Textbook, Folder, Notebook or 3-ring binder, Pencil, Graphing Calculator (TI-83 Plus, TI-84, or TI-84 Plus)

Unit or Topic	Course Activities/Resources	Timeframe
Trigonometric Functions	Compare and Recognize Radian and Degree Measure, Apply Unit Circle, Right Triangle Trigonometry, Graphing Trigonometric Functions, Inverse Trigonometric Functions	7 weeks
Analytic Trigonometry	Verifying Trigonometric Identities, Solving Trigonometric Equations, Use Sum and Difference Formulas	4 weeks
Solving Triangles	Apply Law of Sines, Law of Cosines	5 weeks
Prerequisites/Functions and	Solve Equations by Factoring, Analyze	6 weeks
their graphs	Linear Functions, Identify and Graph Parent Functions, Transform Functions, Perform Function Operations, Evaluate Composite Functions, Inverse Functions, Linear Regression	
Polynomial and Rational Functions	Analyze Quadratic Functions, Graph Polynomial Functions of Higher Order, Determine Real Zeros of Functions, Complex Numbers, Apply Fundamental Theorem of Algebra, Analyze Rational Functions and	5 weeks

Course Outline of Material Covered:

	Asymptotes, Graph Rational Functions, Quadratic Regression	
Exponential and Logarithmic Functions	Graph Exponential and Logarithmic Functions, Investigate Properties of Logarithms, Solve Exponential and Logarithmic Equations, Exponential and Logarithmic Regression	5 weeks
Linear Systems and Matrices	Solve Systems of Equations (Graphing, Substitution, Elimination), Solve Multivariable Linear Systems, Matrices and Systems of Equations, Perform Operations with Matrices, Inverse Matrices	2 weeks
Intro to Limits	Apply Limits (Graphically, Numerically, Analytically), Tangent Line Problem, Limits at Infinity and Infinite Limit	2 weeks

*Depending on the needs of the class or changes in the school year, the course outline is subject to change.