Southmoreland School District
PRECALCULUS Curriculum Overview

PRECALCULUS

Precalculus combines the concepts of trigonometry, geometry, and algebra that are needed to prepare students for the study of calculus. This course will develop and strengthen a students' ability to understand and solve real world application problems. The students will use mathematical reasoning to analyze and model real world data. Students will need to demonstrate communicating mathematical ideas clearly and take on problems that are more challenging and advanced. Students will work with limits, functions and graphs, polynomial and rational functions, inverse functions, exponential and logarithmic functions, conic sections, matrices, trigonometric functions and their inverses, trigonometric identities.

Module Titles:

Module 1:   Functions from a Calculus Perspective
Module 2:   Polynomial and Rational Functions
Module 3:   Exponential and Logarithmic Functions
Module 4:   Analytic Geometry
Module 5:   Trigonometry

Module Overviews:

Module 1:
The student will be able to calculate limits algebraically and estimate limits from graphs and tables of values. The student will be able to solve equations and use functional notation. The students will be able to construct and interpret graphs of functions.

Module 2:
The student will be able to solve polynomial equations and sketch and analyze graphs of polynomial and rational functions. They will be able to build functions from existing functions.

Module 3:
The student will be able to use the laws of exponents and logarithms to solve equations and rewrite expressions by condensing to a single logarithm or expanding to sums or differences . The students will apply properties to solve real world problems and analyze the results.

Module 4:
The students will be able to investigate conic sections algebraically and graphically. The student will be able to use conic sections to model and solve real world problems.

Module 5:
The student will be able to define trigonometric ratios and apply trig to solve real world problems. They will define trigonometric functions in terms of the unit circle. The students will be able to sketch and analyze trigonometric graphs. The students will be able to solve trigonometric equations, investigate inverse trigonometric functions. They will also verify trigonometric identities.