

# Peddie Summer School

## Course syllabus: Precalculus credit

Pre-Calculus emphasizes the study of functions and their behavior graphically. This course covers both algebraic and trigonometric concepts. In particular, the course emphasizes logarithmic and exponential functions in addition to select topics in analytic geometry, sequences and series, vectors, polar coordinates, parametric equations, limits, and an introduction to calculus.

### Rational Functions

- Functions and Graphs of Functions
- Graphs of Rational Functions and Asymptotes

### Exponential and Logarithmic Functions

- Exponential Functions and their Graphs
- Logarithmic Functions and Their Graphs
- Properties of Logarithms
- Solving Exponential and Logarithmic Equations

### Trigonometric Functions

- Right Triangle Trigonometry
- Radian and Degree measure
- Trigonometric Functions: The unit circle
- Trigonometric Functions of any angle
- Graphs of sine and cosine Functions
- Graphs of other trigonometric Functions
- Inverse Trigonometric Functions

### Analytic Trigonometric

- Using Fundamental Identities
- Verifying Fundamental Identities
- Solving Trigonometric Equations
- Sum and difference formulas
- Multiple-Angle and Product-to-sum Formulas

### Additional Topics Trigonometry

- Law of Sines
- Law of cosines
- Vectors in the plane
- Vectors and Dot Products
- Trigonometric Form of Complex Numbers

**Topics in Analytic Geometry**

- Parametric Equations
- Polar coordinates
- Graphs of polar equations

**Sequences and Series**

- Sequences and Series
- Arithmetic Sequence and Partial Sums
- Geometric Sequences and Series

**Limits and an Introduction to Calculus**

- Introduction to Limits
- Techniques for evaluating Limits
- Limits at Infinity