



Experiential education for young people promoting the natural world
and the betterment of human character.

Spring Semester Pre-Calculus

To be completed by the Student and their Pre-Calculus Teacher

Student's Name: _____ Semester attending OA: _____

Pre-Calculus Teacher's Name: _____

Pre-Calculus Teacher's Signature: _____

Phone Number: _____ Fax Number: _____

Email address: _____

To the teacher: The topics below are those usually offered in this course at OA. Please check the topics that align with your class and write in any additional topics needed under each unit. Specific examples and assessment questions are also very helpful and may be attached to this form. Thank you so much for your time! This will help us ensure a smooth transition for your student between our schools. **Prerequisite topics include linear relations and functions, systems of linear equations and inequalities, parent functions and translations, inverse functions, polynomial and rational functions, introduction to trigonometric topics.*

Name of course: _____

Textbook used for this course: _____ Edition: _____

Publisher: _____

Unit 1: Trigonometry

- The Law of Sines
- The Ambiguous Case
- The Law of Cosines
- Solving Non right Triangles
- Verifying Trigonometric Identities
- Sum and Difference Identities
- Double Angle and Half Angle Identities
- Solving Trigonometric Equations
- Additional Topics (*Reduction Identities, Trig Graphs, Unit Circle*): _____

Unit 2: Vectors and Parametric Equations

- Geometric Vectors
- Magnitude and Direction
- Resultants
- Scalars
- Adding/Subtracting Geometric Vectors
- Algebraic Vectors
- Vectors as Ordered Pairs
- Vector Operations
- Vectors in Three Dimensional Space
- Perpendicular Vectors
- Inner Products
- Cross Products
- Vectors and Parametric Equations
- Applications with Vectors
- Additional Topics: _____

Unit 3: Polar Coordinates and Complex Numbers

- Polar Coordinates
- Graphing
- Distance Formula
- Graphs of Polar Equations
- Changing Between Polar and Rectangular Coordinates
- Polar Form of a Linear Equation
- The Complex Plane and Polar Form of Complex Numbers
- Products and Quotients of Complex Numbers in Polar Form
- Powers and Roots of Complex Numbers
- Additional Topics: _____

Unit 4: Conic Sections

- The Distance and Midpoint Formulas
- Parabolas
- Circles
- Ellipses
- Hyperbolas
- Recognizing and Graphing Conics
- Writing Equations of Conics
- Solving Quadratic Systems of Equations and Inequalities
- Graphically
- Algebraically
- Additional Topics: _____

Unit 5: Sequences and Series

- Arithmetic Sequences
- Geometric Sequences
- Fibonacci Sequence
- Golden Ratio
- Golden Angle
- Arithmetic Series
- Geometric Series
- Infinite Sequences and Series
- Limit Notation
- Convergent and Divergent Series
- Notation
- Sigma
- nth Term
- Factorials
- The Binomial Theorem
- Additional Topics (*Explicit vs. Recursive, Mathematical Induction*): _____

Unit 6: Probability and Statistics

- Theoretical Probability
- Experimental Probability
- Probability of Compound Events
- Conditional Probability
- Normal Distributions
- Standard Deviation
- t-scores
- Additional Topics (*Box and Whisker Plots, Histograms, Permutations, Combinations, Binomial Theorem, z-scores*): _____

Unit 7: Calculus

- Limits
- Definition
- Continuity
- Evaluation
- Derivatives
- Limit Definition
- Finding Critical Points
- Integrals
- Area Under a Curve
- Notation
- Additional Topics: _____

Please return this form to our office AS SOON AS POSSIBLE. We are unable to guarantee any curriculum needs at OA without completed academic forms.

**Form may be mailed to: The Outdoor Academy
43 Hart Road, Pisgah Forest, NC 28768
Faxed to: (828)884-2788 or Emailed to: admissions@enf.org**