

Pre-Calculus

Purpose

This class is designed to prepare students for the rigors of Calculus. Although called Pre-Calculus, the content can be subdivided into three well known branches of mathematics: Algebra III, Trigonometry, and basic Calculus. The text emphasizes the correlation between algebraic, graphical, and numerical understanding of concepts for true mastery.

Grading Policies

The overall nine-weeks grades is determined as follows: 60% Exams and 40% Assignments

Assignments are given regularly, and typically checked for whether they are completed. A completed assignment will receive full credit of five points. If a score appears in the grade book lower than five, it is due to the work being inadequate (partially done/necessary steps not provided) or late.

Exams are typically given twice per chapter. Exams will always be preceded by a review closely emulating what will be seen the following day.

All students enrolled in this course have created a login name and password giving them access to the site listed below. This program can be beneficial, especially when attempting additional practice prior to an exam. The online resource also contains an online version of the text.

www.math4forschool.com

Topics Covered

1st 9-Weeks: Prerequisites and Chapter 1

- Real Numbers
- Cartesian Coordinate System
- Linear Equations and Inequalities
- Lines in the Plane
- Solving Equations Graphically, Numerically, and Algebraically
- Complex Numbers
- Solving Inequalities Algebraically and Graphically
- Modeling and Equation Solving

- Functions and Their Properties
- Twelve Basic Functions
- Building Functions from Functions
- Parametric Relations and Inverses
- Graphical Transformations
- Modeling with Functions

2nd 9-Weeks: Chapter 2 and Chapter 3

- Linear and Quadratic Functions and Modeling
- Power of Functions with Modeling
- Polynomial Functions of Higher Degree with Modeling
- Real Zeros of Polynomial Functions
- Complex Zeros and the Fundamental Theorem of Algebra
- Graphs of Rational Functions
- Solving Equations in One Variable
- Solving Inequalities in One Variable
- Exponential and Logistic Functions
- Exponential and Logistic Modeling
- Logarithmic Functions and Their Graphs
- Properties of Logarithmic Functions
- Equation Solving and Modeling
- Mathematics of Finance

3rd 9-Weeks: Chapter 4 and Chapter 5

- Angles and Their Measures
- Trigonometric Functions of Acute Angles
- Trigonometry Extended: The Circular Functions
- Graphs of Sine and Cosine: Sinusoids
- Graphs of Tangent, Cotangent, Secant, and Cosecant
- Graphs of Composite Trigonometric Functions
- Inverse Trigonometric Functions
- Solving Problems with Trigonometry
- Fundamental Identities
- Proving Trigonometric Identities
- Sum and Difference Identities
- Multiple-Angle Identities

- The Law of Sines
- The Law of Cosines

4th 9-Weeks: Chapter 6 and Chapter 7

- Vectors in the Plane
- Dot Product of Vectors
- Parametric Equations and Motion
- Polar Coordinates
- Graphs of Polar Equations
- De Moivre's Theorem and nth Roots
- Solving Systems of Two Equations
- Matrix Algebra
- Multivariate Linear Systems and Row Operations
- Partial Fractions
- Systems of Inequalities in Two Variables