

Honors Precalculus Syllabus

Chapter P: Prerequisites

P.1 Real Numbers

P.2 Cartesian Coordinate System

P.3 Linear Equations and Inequalities

P.4 Lines in the Plane

P.5 Solving Equations Graphically, Numerically, and Algebraically

P.6 Solving Inequalities Algebraically and Graphically

Test

Chapter 1: Functions and Graphs

1.1 Modeling and Equation Solving

1.2 Functions and Their Properties

1.3 Twelve Basic Functions

1.4 Building Functions from Functions

1.5 Graphical Transformations

1.6 Modeling with Functions

Test

Chapter 2: Polynomial, Power, and Rational Functions

2.1 Linear and Quadratic Functions and Modeling

2.2 Power Functions with Modeling

2.3 Polynomial Functions of Higher Degree with Modeling

2.4 Real Zeros of Polynomial Functions

2.5 Complex Numbers

2.6 Complex Zeros and the Fundamental Theorem of algebra

2.7 Graphs of Rational Functions

2.8 Solving Equations in One Variable

2.9 Solving Inequalities in One Variable

Test

Chapter 3: Exponential, Logistic, and Logarithmic Functions

- 3.1 Exponential and Logistic Functions
- 3.2 Exponential and Logistic Modeling
- 3.3 Logarithmic Functions and Their Graphs
- 3.4 Properties of Logarithmic Functions
- 3.5 Equation Solving and Modeling
- 3.6 Mathematics of Finance
- Test

Chapter 4: Trigonometric Functions

- 4.1 Angles and Their Measures
- 4.2 Trigonometric Functions of Acute angles
- 4.3 Trigonometry Extended: The Circular Functions
- 4.4 Graphs of Sine and Cosine Functions: Sinusoids
- 4.5 Graphs of Tangent, Cotangent, Secant, and Cosecant
- 4.7 Inverse Trigonometric Functions
- 4.8 Solving Problems with Trigonometry
- Test

Chapter 5: Analytic Trigonometry

- 5.1 Fundamental Identities
- 5.2 Proving Trigonometric Identities
- 5.3 Sum and difference Identities
- 5.4 Multiple-Angle Identities
- 5.5 The Law of Sines
- 5.6 The Law of Cosines

Chapter 6: Vectors, Parametric Equations, and Polar Equations (covered if time allows)

- 6.1 Vectors in the Plane
- 6.2 Dot Product of Vectors
- 6.3 Parametric Equations and Motion
- 6.4 Polar Coordinates

6.5 Graphs of Polar Equations

Chapter 7: System and Matrices

7.1 Solving Systems of Two Equations

7.2 Matrix Algebra

7.3 Multivariate Linear Systems and Row Operations

Test

Chapter 8: Analytic Geometry

8.1 Conic Sections and Parabolas

8.2 Ellipses

8.3 Hyperbolas

Test

Chapter 9: Discrete Mathematics

9.1 Basic Combinatorics

9.2 The Binomial Theorem

9.3 Probability

9.4 Sequences and Series

Test