**Topics Covered in Pre-Calculus**

Please explore these topics on khanacademy .com. In addition to these topics, students should be able to simplify radical expressions as well as add, subtract, multiply and divide fractions fluently without the assistance of a calculator.

Students should have a TI-84 Plus Calculator or equivalent for Honors Pre-Calculus.

**Unit 1 Functions and Their Graphs**

* **Lines in the Plane**
* **Functions**
* **Graphs of Functions**
* **Graph Transformations**
* **Combinations of Functions**
* **Inverse Functions**

**Unit 2 Polynomial and Rational Functions**

* **Quadratic Functions**
* **Polynomial Functions of Higher Degree**
* **Real Zeros of Polynomial Functions**
* **Complex Numbers**
* **The Fundamental Theorem of Algebra**
* **Graphs of Rational Functions**

**Unit 3 Trigonometric Functions**

* **Radian and Degree Measure**
* **The Unit Circle**
* **Right Triangle Trigonometry**
* **Trigonometric Functions of Any Angle**
* **Graphs of Sine and Cosine Functions**
* **Inverse Trigonometric Functions**
* **Applications and Models**

**Unit 4 Analytic Trigonometry**

* **Using Fundamental Identities**
* **Verifying Trigonometric Identities**
* **Solving Trigonometric Equations**
* **Sum and Difference Formulas**
* **Multiple-Angle and Product- to- Sum Formulas**

**Unit 5 Additional Topics in Trigonometry**

* **Law of Sines**
* **Law of Cosines**
* **Vectors in the Plane**
* **Vectors and Dot Products**
* **Trigonometric Form of a Complex Number**

**Unit 6 Topics in Analytic Geometry**

* **Conics: Circles and Parabolas**
* **Ellipses**
* **Hyperbolas**
* **Parametric Equations**
* **Polar Coordinates**
* **Graphs of Polar Equations**

**Unit 7 Exponential and Logarithmic Functions**

* **Exponential Functions and Their Graphs**
* **Logarithmic Functions and Their Graphs**
* **Properties of Logarithms**
* **Solving Exponential and Logarithmic Equations**
* **Nonlinear Models and Regression**