

Syllabus for Algebra and Trigonometry MATH 016 Fall 2006

Kathleen Smith, Instructor

Required text: **PRECALCULUS**
Mathematics for Calculus 5th Edition
Stewart, Redlin and Watson
Brooks/Cole 2006

Algebra and Trigonometry (Math 016) is a comprehensive look at functions beyond the level of Algebra II. It may be used to meet a math requirement for some, but not all, of the degree programs here at the University. In some cases this class is intended to prepare you for subsequent math courses you will take for your degree program.

It is suggested that you review the topics from Algebra that are listed below. An understanding of these topics will be assumed as prior knowledge. Time will be available during the first three tutorial sessions if you should require additional help with these review topics.

Review Topics (Chapter 1 Sections 1.1 - 1.6 in the text)
Real Numbers, order of operations and properties
Laws of Exponents
Algebraic Expressions, vocabulary, operations and factoring
Equation Solving

It is planned that each unit of the syllabus will take approximately four weeks with the Unit Tests falling the 3rd week of September, the 4th week of October and the 1st week of December. The exact date of each test will be announced both in class and on the website at least one week in advance. The final exam for this class will be held at the University's scheduled time. There is no conflict time for this exam.

I will make every effort to adhere to the timelines and topic outline below. I do, however reserve the right to make changes to both.

TOPICS TO BE COVERED IN THIS COURSE

UNIT 1 (8/23 - 9/22)

Coordinate Geometry and Linear Functions

- Definition of functions
- Looking at functions on the Cartesian Plane
- Slope (rate of change)
- Intercepts and their meanings
- Writing the equations of linear functions
- Linear function models
- Lines of "best fit" and their uses

Polynomial Functions

- Definition
- Domain and Range
- Vertical Line Test
- Slope, Increasing, Decreasing
- Transformations
- Even and Odd functions
- Critical Points
- End Behavior
- Finding all zeros
 - Graphing
 - Factoring and Synthetic Division
 - Quadratic Formula
- Complex Roots
- Finding functions from the roots
- Modeling

UNIT 1 TEST (9/20-22)

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UNIT 2 (9/25 – 10/27)

Rational Functions

- Definition
- Domain and Range
- Discontinuity and Asymptotes
- Graphing
- Transformations
- Models (Inverse Variation)

Inverse Functions

- Definition
- One-to-One functions
- Composite Functions
- Recognizing
- Graphing
- Finding equations for
- Determining range and domain

Exponential Functions

- Definition
- Graphing
- Growth and Decay
- Interest models
- Regression Fitting

Logarithmic Functions

- Definition
- History of logarithms
- Graphing
- Applying Properties of Logarithms
- As inverse of Exponential function
- Models

UNIT 2 TEST (10/25-27)

UNIT 3 (10/30 – 12/5)

Trigonometric Functions

- Sin (x), Cos (x), Tan (x)
- As ratio of sides in a right triangle
- Defining, finding, applying
- As circular functions
- Graphing on the unit circle
- Graphing on the Coordinate Plane
- Sinusoidal models
- Trig Identities
- Trig Equations

UNIT 3 TEST (12/5)

FINAL EXAMS

8AM: 8 to 11am Sat. 12/16

10AM: 8 to 11am Thur. 12/14

Noon: 7 to 10pm Tues. 12/12