

California State University, Sacramento
Department of Mathematics and Statistics

SYLLABUS

Math 9: Essentials of Algebra and Trigonometry

Prerequisites: One year each of high school algebra and geometry

This course is designed to prepare students, majoring in bioscience, economics, and social science for courses requiring basic algebra and right angle trigonometry (e.g. Physics 2 and 5A). Course coverage includes a review of high school algebra up to and including the quadratic formula with an introduction to right angle trigonometry. Manipulative skills are emphasized.

OUTLINE:

- I. Basic Algebra 3 Weeks
 - a. Exponents
 - b. Radicals
 - c. Factoring
 - d. Operations
 - e. Simplifying algebraic fractions

- II. Equations 5 Weeks
 - a. Linear
 - b. Graphs of linear equations
 - c. Linear systems (not larger than 3 x 3)
 - d. Quadratic equations
Factoring, completing the square, quadratic formula
 - e. Equations of quadratic form
 $3x + 5 = 1/x$, $x^4 - 2x^2 = 3$

- III. Exponential and logarithmic functions 1 Week
 - a. Graphs of exponential functions
 2^x , $(1/3)^x$, 5^{-x}
 - b. Graphs of logarithmic functions
 $\log_2 x$, $\log x$, $\ln x$

IV. Basic trigonometry

5 Weeks

- a. Angular measurement using degrees
- b. Definition of trigonometric ratios
- c. Solution of triangles
 - Right triangles, law of sines
 - law of cosines
- d. Elementary identities

$$\sin^2 \theta + \cos^2 \theta = 1, \quad 1 + \tan^2 \theta = \sec^2 \theta$$

- e. Two dimensional vectors and resolution of vectors