

PRE-CALCULUS
SYLLABUS

TOPICAL OUTLINE

- I. Prerequisite topics. Obj: students will show a mastery for Math B topics.
- A. Exponent properties
 - B. Radicals - all properties & simplifying
 - C. Polynomials
evaluation: review the above topics and then have a test on them
 - D. Fractional expressions - all operations & simplifying
 - E. Linear equations & inequalities - solve & graph
 - 1) Cartesian plane
- II. Functions. Obj: students will be able to solve various equations with extraneous roots.
- A. Basics - definition, parts of, all operations
 - B. Solving equations
 - 1) Absolute value
 - 2) radical equations*evaluation: review topics D,E,A,B and have a test*
 - C. Problem solving
- III. Polynomial functions. Obj: students will be able to use transformations to graph quadratic functions and identify parts of a parabola
- A. All operations
 - B. Transforming graphs
 - C. Finding zeros
 - D. Complex numbers
evaluation: review topics a - d and test
- IV. Exponents and logs. Obj: The students will be able to recognize relationships between exponents and logs.
- A. Rules and solving equations
 - B. exponents and logs equality
 - C. Solving interest problems
- V. Rational functions. Obj: the students will be able to describe graphs and solve using different methods.

- A. Solving equations and inequalities
- B. Asymptotes

VI Trigonometry. Obj: students will be able to use triangles & properties to problem solve

- A. Basics - terms & definitions
- B. Right triangle - sin, cos, tan
- C. Problem solving
- D. All triangles
Evaluation: review V - A,B and VI A - D and test
- E. Simplify and factor
- F. Proving identities
Evaluation: quiz on E & F
- G. Solving a triangle
- H. Area of a triangle

VII. Vectors. Obj: the students will use their trig knowledge to solve for any part of a vector

- A. Definition, parts of, & operations with
- B. Applications
Evaluation: review VI G-H & VII A,B and give test

VIII. Solving equations. Obj: the students will be able to solve systems of equations using different method

- A. Linear and nonlinear
- B. Gaussian elimination and matrices
- C. Infinite solutions
- D. Applications and curve fitting
- E. Matrix multiplication
Evaluation: VIII A-G and give a test

IX. Conic sections. Obj: the students will be able to recognize, solve and sketch each section.

- A. Parabola
- B. Ellipse
Evaluation: quiz on A & B
- C. Hyperbola
- D. Sketching conics
- E. Transformations
Evaluation: review A-E and test

- X. Discrete Algebra. Obj: the students will be able to define explicit and recursive sequences and problem solve
- A. Sequences - arithmetic and geometric
 - B. Series
 - C. Sums & sigma
Evaluation: quiz on A & B
 - D. Induction
Evaluation: quiz on C,D and E
- XI. Calculus. Obj: students will be getting a preview of the basics of calculus
- A. Introduction to limits
 - 1) properties and evaluating
 - 2) continuity
 - 3) infinite limits
Evaluation: test on part A
 - B. Derivatives
 - 1) definition of
 - 2) rules - sum, difference, product and quotient
Evaluation: quiz on sum and difference rule
 - 3) trig with chain rule
 - 4) second derivative
Evaluation: test on parts A & B
 - 5) applications
 - 6) implicit differentiation
 - 7) velocity - instantaneous and average
Evaluation: quiz on 5 & 6
 - 8) Related Rates-an application of implicit differentiation
 - 9) Graph Reading- graphs of derivatives will be explained

TEACHING TECHNIQUE

Most activities will be given through a lecture with students doing examples of material given. They will also be given 10 - 15 minutes (when possible) to start their work and will be encouraged to work together. Any evaluation assignment given will be preceded by a review session.

EVALUATION

There will be section, unit, and chapter tests, given along with a midterm and final. Homework will also be evaluated occasionally.

TEXT

PRE-CALCULUS: A GRAPHING APPROACH: 4TH EDITION ADDISON-WESLEY