

HONORS ADVANCED ALGEBRA 1-2
GRADE 10
(2 Semesters - Prerequisite: Geometry)

COURSE OVERVIEW:

Advanced Algebra helps the student to understand algebra as a study of functions and of the structure of the real and complex number systems. Students will recognize the techniques of algebra as an outgrowth of this structure and will acquire facility in applying algebraic concepts and skills. The course also exposes the student to the topics of conics, sequences and series, permutations, combinations, probability, and trigonometry. Course content is the same as Advanced Algebra with more emphasis on analysis and applications. Concepts of Advanced Algebra are pursued in greater depth. Participation in math contests is highly recommended. Each student is required to have his/her own graphing calculator.

UNITS OF INSTRUCTION:

The following topics are included: Problem Solving; The Language of Algebra; Linear Relationships; Quadratic Functions; Functions; Graphic and Conics; Systems; The Real and Complex Number System; Polynomials and Polynomial Functions; Rational Expressions, Equations and Functions; Exponential and Logarithmic Functions; Counting, Probability, Sequences, and Series; and Trigonometry.

STUDENT OUTCOMES:

1. Write and speak the language of Algebra. (8A, 8B, 8C, 8D)
2. Identify, solve, graph, and apply linear and quadratic models (equations and inequalities). (8A, 8B, 8C, 8D)
3. Identify, evaluate, solve, graph, and represent functions. (8B, 8C, 8D)
4. Identify and graph the conic sections. (9A)
5. Identify, solve, graph, and apply linear and non-linear systems of equations and inequalities. (8B, 8C, 8D)
6. Perform operations and solve equations in both the real and complex number systems. (8C, 8D)
7. Solve and graph higher order polynomials. (8D)
8. Perform operations and solve rational expressions and equations. (8C, 8D)
9. Identify, solve, graph, and apply exponential and logarithmic functions. (8C, 8D)
10. Recognize and apply the formulas relating to arithmetic and geometric sequences and series. (8D, 9D)
11. Understand and apply the principles of probability. (10C)
12. Understand and apply the basic principles of trigonometry. (9D)

This course addresses the following state standards: 6A, 6B, 6C, 6D, 7A, 7B, 7C, 8A, 8B, 8C, 8D, 9C, 9D, 10A, 10C)

MAJOR LEARNING EXPERIENCES TO ACHIEVE OUTCOMES:

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| 1. | Keep an organized notebook, take notes, do daily homework, and participate in class. |
| 2. | Explore mathematical concepts through individual, small group, and whole class investigation. Summarize and apply learning to problem solving situations. |
| 3. | |

ADOPTED TEXT OR PRINCIPAL MATERIALS USED:

<p><i>Algebra and Trigonometry Functions and Applications.</i> Addison-Wesley, 1994. (adopted 1997) Graphing Calculator – TI-83/83-Plus recommended.</p>
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(05/16/00)