



COURSE: MAT 310 Algebra 2/Trigonometry

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VALOR CHRISTIAN HIGH SCHOOL MISSION STATEMENT

To provide a rigorous and comprehensive college preparatory program, supporting student's unique gifts and abilities, in a vibrant, Christ-centered environment, enhanced by cutting edge facilities, and led by highly skilled and innovative faculty, in a partnership with committed parents and community members.

DEPARTMENT PHILOSOPHY

The Valor Math Program offers a differentiated mathematics instruction that engages students in interactive experiences supported by the use of manipulatives, models, textbooks, and technology. Students will move from the concrete foundational stage, to the investigative stage and finally to the project-based stage of contextual application. Frequent and ongoing assessment, in a variety of forms, guides the instructional decisions made by teachers. Assessments include the opportunities for demonstrating mastery and high level thinking.

COURSE DESCRIPTION

Algebra II presents function notation, linear equations, factoring, quadratic and polynomial equations and radical expressions. Students work with complex numbers, curve sketching, conic sections, exponential and rational functions, logarithms, matrices and simple statistics. Curriculum includes an introduction to trigonometry. An emphasis will be placed on written expression in the form of writing responses and projects.

COURSE GOALS

- Promote the concept of an orderly, patterned universe, established and maintained by God.
- Develop clear, logical thinking through exposure to and experience of mathematical patterns in creation.
- Help the student realize that the analytical reasoning skills he or she possesses are gifts of God and should be developed to their utmost.
- Help students develop sufficient computational, procedural, and problem solving skills to provide a solid foundation for further study in mathematics.
- Provide concrete experience of the mathematical features of creation such as: shape, number, physical quantity, space, time, movement, speed, and causality.
- Give the student an organized scheme of mental operations as a means by which to appreciate the world and to develop fluency in applying those operations.

- Encourage a flexible use of mathematical thought; to regulate and adapt it through the use of strategies; to problem solve, demonstrating initiative, competency, and creativity in a variety of everyday situations.
 - Increase the student's awareness that mathematics is a powerful means of communication and to introduce the symbolic vocabulary and grammar necessary to the acquisition of this precise language.
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COURSE BENCHMARKS

Chapter 1 Equations and Inequalities

- Use properties to evaluate and simplify expressions.
- Apply problem solving strategies and verbal models.
- Solve linear and absolute value equations and inequalities.

Chapter 2 Linear Equations and Functions

- Represent relations and functions.
- Graph linear equations and inequalities in two variables.
- Write linear equations and inequalities in two variables.

Chapter 3 Linear Systems and Matrices

- Solve systems of equations using a variety of methods.
- Graph systems of equations and inequalities.
- Use matrices.

Chapter 4 Quadratic Functions and Factoring

- Graph and write quadratic functions in several forms.
- Solve quadratic equations using a variety of methods.
- Perform operations with square roots and complex numbers.

Chapter 5 Polynomials and Polynomial Functions

- Graph polynomial functions.
- Perform operations with polynomials.
- Solve polynomial equations finding zeros.

Chapter 6 Rational Exponents and Radical Functions

- Use rational exponents.
- Perform function operations and find inverse functions.
- Solve radical equations.

Chapter 7 Exponential and Logarithmic Functions

- Graph exponential and logarithmic functions.
- Solve exponential and logarithmic equations.
- Write and apply exponential and power functions.

Chapter 8 Rational Functions

- Perform operations with rational expressions.
- Solve rational equations.

Chapter 9 Quadratic Relations and Conic Sections

- Write equations of conic sections.
- Graph equations of conic sections.
- Solve quadratic systems.

Chapter 10 Counting Methods and Probability

- Using permutations and combinations
- Finding probabilities
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Chapter 11 Data Analysis and Statistics

- Finding measures of central tendency
- Using normal distributions

Chapter 13 Trigonometric Ratios and Functions

- Use trigonometric functions.
- Use inverse trigonometric functions.

Chapter 14 Trigonometric Graphs, Identities, and Equations

- Apply the law of sines and law of cosines.
- Graph trigonometric functions.
- Apply trigonometric formulas.

TEXTS/SUPPLEMENTAL INSTRUCTIONAL MATERIALS

- Textbook (*Algebra 2 Applications, Equations, Graphs*, McDougal Littell, 2006)
- TI 84+ Graphing Calculator
- #2 Pencils
- Highlighters
- College-ruled Notebook Paper
- Graph Paper
- 4 Dry-erase Markers (broad tip)
- Metric Ruler

CLASS EXPECTATIONS AND REQUIREMENTS

- Respect the teacher and your fellow students
 - Be on time to class. Consistent tardiness will result in disciplinary action.
 - Contribute to a positive learning environment.
- Show proper stewardship by taking care of property (books, calculators, furniture, etc.) especially if it does not belong to you.
- Come to class prepared to work.

- Homework will be due at the end of each chapter.

EVALUATION/ASSESSMENT PROCEDURES

TESTS

Tests will be administered covering the material in each chapter. Students can also expect some cumulative review questions from previous chapters. Points will be given for correct answers and work shown. Test dates will be given in advance and a review assignment will be given prior to the test. Students are limited to two test redemptions per semester. Before a student can retake a test, the teacher will require a student to review the material. This may include test corrections, tutoring sessions in the Math Lab, and/or other extra practice. Students must make appointments on their own time, not during class time, to review and retake a test. Retakes will be administered by the teacher and must be completed before the end of the cycle. The final test score for that chapter will be an average of the original test score and the redemption test score.

QUIZZES

Quizzes will be given periodically to ensure that students are up to date with the homework that has been assigned. Students should expect approximately two or three quizzes each chapter.

PROJECTS

Projects may be assigned throughout the year. Projects are designed to translate real-life situations to mathematical models, obtain mathematical solutions, and then translate those solutions back into the context of the real-life application.

HOMEWORK

Homework is vital for mastering concepts learned in math class. Homework will be given daily. On most days, there will be time set aside at the end of each period and the student is expected to begin working on homework at this time. This allows students to ask questions. The homework assignment will be graded the following class period. All assignments should be organized by assignment number and kept in the 3-ring binder until the end of the semester. Students must write down each problem and show work in order to receive full credit. Each homework assignment will be graded based upon completion.

WRITING ASSIGNMENTS

Writing assignments are an essential element of this course. There will typically be one writing assignment per chapter. Written response assignments are designed to help students explain concepts and reasoning using the necessary mathematical vocabulary. Through written assignments, students are able to master and express mathematical ideas. Written assignments are to be typed and will be graded for content, clarity, and form.

FINAL EXAM

The semester final is cumulative and will make up 15% of the semester grade. Students will be expected to spend a significant amount of time reviewing for the final exam. A final exam review packet will be provided well in advance.

LATE WORK POLICY

Please reference valor student handbook.

GRADE REDEMPTION OPPORTUNITIES

Valor does not support "extra credit" opportunities that provide students with grade recovery. A student should not expect to neglect assignments, and then look for alternative ways to make up those lost points with an "extra credit" assignment. Nor should a student approach a teacher asking for an extra assignment in hopes of raising their grade. However, if a student performs poorly on an assignment, test or quiz, a "grade redemption" assignment may be periodically available at the discretion of the teacher. A "grade redemption" opportunity provides a student with an assignment that is directly related to the subject content with which he or she struggled. The purpose of this assignment is to improve understanding. An example of grade redemption is the opportunity to rewrite an essay to earn a percentage of the original points back.

GRADING POLICY

Grade Categories	Category Weight
Semester Coursework	85%
Final Exam	15%

Semester Coursework *	Category Weight
Tests	60%
Quizzes/Projects/Homework	40%

GRADING PERCENTAGE

Letter Grade	Numeric Grade	Unweighted GPA	Weighted GPA
A+	97-100	4.0	5.0
A	93-96	4.0	5.0
A-	90-92	3.7	4.7
B+	87-89	3.3	4.3
B	83-86	3.0	4.0
B-	80-82	2.7	3.7
C+	77-79	2.3	3.3
C	73-76	2.0	3.0
C-	70-72	1.7	2.7
D+	67-69	1.3	1.3
D	63-66	1.0	1.0
D-	60-62	0.7	0.7
F	59 and below	0.0	0.0