

# Algebra 2 with Trigonometry 2011-2012

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**Office Hours**    *Odd days 3:30-4:30, Even days 2:45-3:45*    **Location** U5

**Course Description:** Algebra 2 builds on the content and skills learned in Algebra 1 and in Geometry. You will sharpen your problem-solving skills in a variety of mathematical applications with an emphasis on functions and systems as preparatory to the Precalculus and Calculus courses.

## **Benchmarks and Performance Standards:**

*Students who have successfully completed two semesters of Algebra 2 with Trigonometry will:*

- Solve and graph equations involving absolute value.
- Solve systems of linear equations and inequalities (in two or three variables) by substitution, elimination, with graphs and/or matrices.
- Use matrices to represent data.
- Add, subtract, and multiply matrices.
- Find the inverse of a matrix using technology.
- Use matrix algebra to solve equations and to solve systems of equations represented by matrices.
- Solve and graph quadratic equations by factoring, completing the square, and using the Quadratic Formula. Students apply these techniques in solving word problems. They also solve quadratic equations in the complex number system.
- Determine how the graph of a parabola changes as  $a$ ,  $b$ , and  $c$  vary in the equation  $y = a(x - b)^2 + c$ .
- Graph quadratic functions and determine the maxima, minima, and zeros of the function.
- Add, subtract, multiply, divide and graph complex numbers.
- Complete operations on polynomials, including addition, subtraction, and multiplication.
- Factor polynomials representing the difference of two squares, greatest common factors, perfect square trinomials, trial and error trinomials, and the sum and difference of two cubes.
- Add, subtract, multiply, divide, reduce and evaluate rational expressions with monomial and polynomial denominators, and simplify complicated rational expressions including complex fractions and expressions with rational exponents.
- Write and solve rational equations (work, rate, and flow problems).
- Apply simple laws of logarithms including the properties and inverse relationships to solve problems.
- Write exponential functions to model growth and decay situations, graph the functions.
- Solve exponential and logarithmic equations.
- Use properties of logarithms to simplify logarithmic expressions and identify approximate values.
- Use Fundamental Counting Principal to compute combinations and permutations.
- Use combinations and permutations to compute probabilities.
- Find the general term and the sums of arithmetic series and of both finite and infinite geometric series.
- Solve problems involving functional concepts such as composition, defining the inverse function and performing arithmetic operations on functions.
- Use real number properties to justify algebraic steps.
- Understand, measure, and sketch angles in standard position.
- Know the definitions of the basic trigonometric functions.
- Use trigonometry to determine unknown sides or angles in right triangles.

**Requirements:** *Algebra 2: Applications, Equations, Graphs*, by Larson, Boswell, Kanold, and Stiff, **2011** three-ring binder or notebook with a pocket, graph paper, pencil (**mechanical is preferred**), eraser, pen (any color but blue or black), ruler in inches **and** centimeters, TI-83+ or TI-84 calculator

### Course Chronology:

Semester One:	Semester Two:
Ch. 1 Equations and Inequalities	Ch. 6 Rational Exponents and Radical Functions
Ch. 2 Linear Equations and Functions	Ch. 7 Exponential and Logarithmic Functions
Ch. 3 Linear Systems and Matrices	Ch. 8 Rational Equations and Functions
Ch. 4 Quadratic Functions and Factoring	Ch. 13 Trigonometric Ratios and Functions
Ch. 5 Polynomials and Polynomial Functions	Ch. 12 Sequences and Series
	Ch. 10 Counting Methods and Probability

**Grading Policy:** Your grade is comprised of homework, quizzes, tests, and final exams. Homework will be checked at the end of the **week**, where each assignment is two points but only one point if it is late or incomplete. Generally there will be one quiz per week worth between 30 to 50 points each and a chapter test worth 75-100 points. Some chapters will only have quests that are worth between 50 to 80 points. The final exam will be worth 30% of the final grade. You can earn 3 extra credit points for each CaML question answered correctly. Other opportunities for extra credit are available on quizzes or in class. There is a maximum of 30 extra credit points per semester. You are responsible for checking your grade regularly using NetClassroom.

**Homework:** The requirements for earning full credit on homework are:

1. Write the problem and any picture or graph that is associated with it. (You must **paraphrase** long word problems.)
2. Show **all** your work that leads to the solution. Writing only the answer is not sufficient since an answer makes no sense without a question and you will be studying from your homework for quizzes and tests.
3. Check the odd-numbered problems in the back of the book before class. Use a colored pen to show that the work has been corrected. Use **hotmath.com** to look at the solutions to odd-numbered problems when necessary.
4. Ask questions about your homework the following day. Corrections are made during the first ten to fifteen minutes of class and it is important to pay attention to this. Knowing what you did wrong helps you avoid the same mistake.

**Make-Up Work:** You have the same number of days you were absent to make up the work you missed. If you are able, check the website for the assignment then read the appropriate section in the book before starting the homework. If not, on your return, schedule time with the teacher to go over the section that was missed and get the missing notes from another student.

**YOU MAY NOT MAKE UP A MISSED QUIZ.** If you miss a quiz, then that quiz is dropped. If you miss more than one quiz, I will record a **zero** for the quiz score. If you know ahead of time that you will miss a quiz, please notify me, preferably by e-mail. Sometimes, we can make an arrangement to take the quiz at another time during the day of the quiz. You are required to make up a missed test.

**Other classroom rules:** You are expected to be on time and in your seat with your homework on your desk ready to go over difficult problems. You are also encouraged to **quietly** discuss homework questions with your neighbors in hopes that the questions could be solved as soon as possible. If you are delayed since you are talking to another teacher, administrator or staff member, a computer message or pass from that person is mandatory. **Bring your book every day** since you should have time to do some problem in class. You are expected to abide by the Honor Code at all times, especially during quizzes and tests.