ALGEBRA 2AB Syllabus

Teacher: Mrs. Lourdes P. Lapitan
Room: 219D
Textbook: Algebra 2 with Trigonometry by Smith, Charles, Dossey and Bittinger
Description:
Algebra 2 complements and expands the mathematical content and concepts of Algebra 1 and Geometry. New concepts and techniques are introduced that will be basic to more advanced courses in mathematics and the sciences and useful in the workplace. In general terms, the emphasis is on abstract thinking skills, the function concept, and the algebraic solution of problems in various content areas. Students who master Algebra 2 will gain experience with algebraic solutions of problems in various content areas including the solution of systems of quadratic equations, logarithmic and exponential functions, the binomial theorem and the complex number system.

Prerequisite: Algebra 1AB or Geometry AB

Algebra 2AB covers the essential California content standards in four (4) units:

Unit 1: Linear Functions and Polynomials
Focus Standards:
1.0 Students solve equations and inequalities involving absolute value.
2.0 Students solve systems of linear equations and inequalities (in two or three variables) by substitution, with graphs, or with matrices.
3.0 Students are adept at operations on polynomials, including long division.
4.0 Students factor polynomials representing the difference of squares, perfect square trinomials, and the sum and difference of two cubes.
Scope and Sequence:
This introductory unit sets the stage for success in Algebra 2 by providing a connection with the Algebra 1 concepts of graphing equations, solving systems of equations and inequalities, and working with polynomials. These concepts are expanded to include work with absolute value problems, work with three variables, specialized factoring and polynomial long division.

Unit 2: Rational Expressions, Quadratic Functions and Complex Numbers
Focus Standards:
5.0 Students demonstrate knowledge of how real and complex numbers are related both arithmetically and graphically. In particular, they can plot complex numbers as points in the plane.
6.0 Students add, subtract, multiply, and divide complex numbers.
7.0 Students add, subtract, multiply, divide, reduce, and evaluate rational expressions with monomial and polynomial denominators and simplify complicated rational expressions, including those with negative exponents in the denominator.
8.0 Students solve and graph quadratic equations by factoring, completing the square, or using the quadratic formula. Students apply these techniques in solving word problems. They also solve quadratic equations in the complex number system.
9.0 Students demonstrate and explain the effect that changing a coefficient has on the graph of quadratic functions; that is, students can determine how the graph of a parabola changes as *a, b,* and *c* vary in the equation $y = a(x-b)^2 + c$.
10.0 Students graph quadratic functions and determine the maxima, minima, and zeros of the function.
Scope and Sequence:
This unit begins with previously learned concepts; rational expressions and parabolas. These concepts are expanded to include quadratic denominators in the case of rational expressions and complex numbers in the case of quadratic equations.

Unit 3: Exploring Functional Concepts and Counting Principles
Focus Standards:

11.0 Students prove simple laws of logarithms.
11.1 Students understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents.
11.2 Students judge the validity of an argument according to whether the properties of real numbers, exponents, and logarithms have been applied correctly at each step.
12.0 Students know the laws of fractional exponents, understand exponential functions, and use these functions in problems involving exponential growth and decay.
18.0 Students use fundamental counting principles to compute combinations and permutations.
19.0 Students use combinations and permutations to compute probabilities.
20.0 Students know the binomial theorem and use it to expand binomial expressions that are raised to positive integer powers.
Scope and Sequence:
The big ideas in this unit are exponential and logarithmic functions, combinations and permutations and probability and statistics.

Unit 4: Conic Sections and Polynomial Theorems
Focus Standards:
15.0 Students determine whether a specific algebraic statement involving rational expressions, radical expressions, or logarithmic or exponential functions is sometimes true, always true, or never true.
16.0 Students demonstrate and explain how the geometry of the graph of a conic section (e.g., asymptotes, foci, eccentricity) depends on the coefficients of the quadratic equation representing it.
17.0 Given a quadratic equation of the form $ax^2 + by^2 + cx + dy + e = 0$, students can use the method for completing the square to put the equation into standard form and can recognize whether the graph of the equation is a circle, ellipse, parabola, or hyperbola. Students can then graph the equation.
23.0 Students derive the summation formulas for arithmetic series and for both finite and infinite geometric series.
Scope and Sequence:
Logical reasoning allows review of several topics like rational expressions, radical expressions, logarithmic and exponential functions. Other topics covered include arithmetic and geometric series, conic sections, functional concepts and mathematical induction.

Goals / Expectations:
- Respect and follow the school policies, classroom rules and procedures.
- Use time appropriately. Begin work promptly & complete all activities on or before due date.
- Work independently and be cooperative with classmates whenever assigned to do group work.
- Obey teacher's instruction the first time they are given.

Classroom Rules:
1) Be nice and respectful to all.
2) Be organized and prepared for class (with paper, pencil, book & notebook)
3) Be an engaged learner/stay on task.
4) Do not interrupt other students' learning
5) Follow directions.
6) Absolutely no gum/food/or any electronic device permitted.
7) Keep hands, feet and object to yourself.

The consequences for breaking classroom rules include phone call and conference with parents, referral with the dean and/or counselor, and a grade of "U" in the cooperation grade.

Requirements: Textbook with cover   Graph paper   Lined papers
Note book (2 or 3 examples per topic taken in class, warm-ups, problem of the day (POD), CST review problems)

Classwork/Homework will be collected every Thursday only. Late submission will be given half credit only. In case of excused/unexcused absences, student still needs to submit missed CW/HW.

Grading Policy: To pass this course, a student needs a grade of D or better.

Grade Scale:
A	90% - 100%		**D**	50 – 65%
B	80% - 89%		**F**	below 50%
C	66% – 79%			

Cooperation Grade: U – Unsatisfactory   **S** – Satisfactory   **E** - Excellent

How Cooperation Grade is given:
>   **N** – noisy, disruptive, & disrespectful
>   **O** – off task, not cooperating in group work, not following teacher's instruction
>   **T** – using cell phone, MP3, any other electronic device,

E = none of N, O, T   **S = any 2 of N, O T**   **U = at least 3 of N, O, T**

Academic Dishonesty
CHEATING will not be tolerated in my class at any level. If a student is caught cheating during tests and other individually assigned class work and homework, it will be considered a ground for being dropped from the course and/or a zero on the quiz/exam/homework/class work.

Parents' Involvement:
Parents' regular communication with the teacher is highly appreciated especially if a note home requesting for a conference is given to the student concerned.

Classroom expectations and policies are designed to achieve a desirable classroom environment and to make students and their parents aware of what is expected from them in advance. Please fill-up the information below and return this portion to Ms. Lapitan at the next class meeting. I look forward to a fruitful school year with all of you.

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Cut and return this part of the page only.

I have read and fully understood the above-mentioned classroom expectations and policies and have discussed them with my parent/guardian. I agree to abide by these while a student in Mrs. Lapitan's Algebra 2AB class.

_____   _____
Student's Printed Name   **Student's Signature**

_____   _____
Parent/Guardian's Printed Name   **Parent/Guardian's Signature**

_____   _____
Relationship to student   **Home Phone/Cell Phone**

Date Signed:_____   **Class Period:**_____