ATYP Algebra II **2022**

Instructor: Mrs. Lily Goh Nordmoe
lnordmoe@yahoo.com 269-364-4026
1:20 – 3:50 pm Room: 4310

Text: *Algebra 2*, Prentice Hall Mathematics High School Math Series by Bellman, Bragg, Charles, Hall Handlin & Kennedy, 2007

Homework

- Mastery comes from practice, i.e., doing homework problems – roughly 70-90 per week.
- On the front page of your homework, write your name on the top right-hand corner and the Week Number on the top left-hand corner.
- Start each problem by writing the problem number on the ***left*** of the margin. Do not try to fill a line with your work. Show steps/methods. If an answer comes from your calculator, state clearly the procedure you used and /or draw a sketch of your graphing screen. If graph paper is being used, cut and paste each graph onto your homework. Use a ruler for straight lines.
- Use a pencil with a darker lead.

Grading Scale

A (80 - 99%) **B** (70 - 79%) C (60 – 69%).

Exams/Quizzes

- The first two exams are one-hour exams written by me
- The Final Exam is a Standardized Test which covers all the Algebra I and II content.
- Each Exam grade is weighted equally with the average of the previous six homework assignment grades.
- Mastery Exams and 5-minute quizzes may be given from time to time.

Course Syllabus

Chapter 1: Tools of Algebra

This chapter summarizes and reviews properties of real numbers and operations, equalities and inequalities – to be used to simplify algebraic expressions and to solve equations and inequalities throughout the course.

Chapter 2: Functions, Equations, and Graphs

New equations like the Piecewise Functions will be introduced. Family of functions with respect to translations will be emphasized.

Chapter 3: Linear Systems

Using the skills on solving two-variable inequalities, students will learn some basics of linear programming. Students also extend the algebraic method for solving systems of linear equations with two variables to that of three variables.

Chapter 4: Matrices

Students learn to represent data in matrices. New concepts will include multiplying and finding determinants and inverses of 2 by 2 matrices. Students will learn to represent a system of linear equations in matrix form to solve it.

Chapter 5: Quadratic Equations

Students learn to transform quadratic functions into vertex form. After studying the properties of complex numbers, students go on to solve quadratic equations with complex solutions.

Chapter 6: Polynomials and Polynomial Equations

Students examine polynomial functions in more detail – solving polynomial equations of degree 3 and higher, using the Rational Roots Theorem and the Fundamental Theorem of algebra.

Concepts of Permutations and Combinations are to be studied as an application to the Binomial Theorem.

Chapter 7: Rational Functions and Rational Exponentials

The *nth r*oot of a real number leads to *nth* power and rational exponents. Students will perform operations on radical expressions and functions with rational exponents using the properties of integer number exponents studied in Algebra I.

Operations on functions are extended to compositions and inverses of functions.

Chapter 8: Exponential and Logarithmic Functions

Logarithmic functions as inverses of exponential functions will be introduced, together with the properties of logarithms. Students will learn to solve exponential and logarithmic equations.

Chapter 9: Rational Functions

Students will learn to sketch graphs of more complicated rational functions that may have more than one asymptote. Some of these functions may have holes. The concept of points of discontinuity is discussed.

Chapter 10: Quadratic Relations and Conic Sections

Students identify and graph and write equations of conic sections. Students will also learn to solve systems of quadratic equations.

Chapter 11: Sequences and Series

Students have learnt to represent arithmetic and geometric sequences explicitly. Writing a sequence with a recursive formula will be introduced. They also investigate arithmetic and geometric series, including infinite geometric series that converge.
