ATYP Algebra II (Wednesday) **2024**

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

Grading Scale:

A : 90 – 100%
AB: 80 – 89%
B: 70 - 79%
C: 60 – 69%
NC: below 60%

Exams/Quizzes

- Three exams will be given.
- 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.

Academic Expectations and Homework

- Mastery comes from practice, i.e., doing homework problems daily. Concepts and skills are honed through study and completing homework assignments on time. Before attempting homework problems from the new section, read the section for understanding and review your notes from class. Expect to spend an hour a day on your homework.

- Every problem assigned should be done. Do not give up on a difficult problem. Read the textbook for help or discuss with a classmate or seek help from a parent or ask for assistance by emailing me. Students are expected to seek additional assistance from me at the earliest sign of misunderstanding or inability to complete an assignment. Often, a short zoom session with me helps. A student has a few options to ask for help from Help Sessions. I will conduct my own Help Session each Sunday from 3 to 5 pm.

- On the first page of your homework, write the Week Number on the top left-hand corner. Begin each new section by labeling it with the page number. Start each problem by writing the problem number on the ***left*** of the margin. Leave a line space before doing the next problem. Show steps/methods on separate lines. If an answer comes from your calculator, state clearly the procedure you used and/or draw a sketch of your graphing screen. A sketch does not need to be drawn on graph paper, but actual graphs are to be drawn on graph paper (4 squares per inch) and cut and pasted onto your homework. Use a ruler for straight lines.

- Homework must be turned in on the next week of class. DO NOT PROCRASTINATE. Please be reminded that being absent for ATYP is the equivalent of missing an entire week of homeschool. If you are going to be absent, please have a classmate or parent hand in your homework. Alternatively, your homework can be submitted online.

- To receive credit for each problem done, some degree of work needed to be shown. The student needs to communicate how an answer is obtained using algebraic properties. The goal in this process is for each student to exhibit a deep understanding and mastery of algebraic concepts.

- To become fluent and competent in mathematics, students must be aware of their shortcomings and their wrong interpretations of concepts. Doing corrections is a very important habit in the growth of an algebra student. When doing corrections, please state the section and problem number. You may turn in corrections the week after and earn points missed.

Algebra II Course Syllabus

Chapter 1: Tools of Algebra

This chapter summarizes 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

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. New in this chapter will be solving systems of equations with 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. Kramer's Rule will also be introduced.

Chapter 5: Quadratic Equations

Students already learnt the properties of Quadratic Functions. Built on what they have learnt, they will learn to transform quadratic functions into vertex form. After studying the properties of complex numbers, students will learn how 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, by factoring and using the Rational Root 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: Radical 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 will learn to write a sequence both explicitly and recursively. We will also cover both finite and infinite arithmetic and geometric series.