Class: Pre-Calculus

Teacher: TBD

Dates: June 21–July 30, 2020 (6 weeks)

Time: 9:30 a.m.–12:30 p.m. (87 hours total)

Textbook Used: Glencoe Pre–Calculus, ISBN: 978–0076641833

Course Content:

Week 1 Topics (June 21–25)

Functions from a Calculus Perspective – Chapter 1

- Functions
- Analyzing Graphs of Functions and Relations
- Continuity, End Behavior, and Limits
- Extrema and Average Rate of Change
- Parent Functions and Transformations
- Function Operations and Composition of Functions
- Inverse Relations and Functions

Power, Polynomial, and Rational Functions – Chapter 2

- Power and Radical Functions
- Polynomial Functions
- The Remainder and Factor Theorems
- Zeros of Polynomial Functions
- Rational Functions
- Nonlinear Inequalities

Week 2 Topics (June 28–July 2)

Exponential and Logarithmic Functions – Chapter 3

- Exponential Functions
- Logarithmic Functions
- Properties of Logarithms
- Exponential and Logarithmic Equations

Trigonometric Functions – Chapter 4

- Right Triangle Trigonometry
- Degrees and Radians
- Trigonometric Functions on the Unit Circle
- Graphing Sine and Cosine Functions

- Graphing Other Trigonometric Functions
- Inverse Trigonometric Functions
- The Law of Sines and the Law of Cosines

<u>Week 3 Topics (July 6–9)</u>

Trigonometric Functions – Chapter 4 (continued)

- Trigonometric Functions on the Unit Circle
- Graphing Sine and Cosine Functions
- Graphing Other Trigonometric Functions
- Inverse Trigonometric Functions
- The Law of Sines and the Law of Cosines

Trigonometric Identities and Equations – Chapter 5

- Trigonometric Identities
- Verifying Trigonometric Identities
- Solving Trigonometric Equations
- Sum and Difference Identities
- Multiple–Angle and Product–to–Sum Identities

<u>Week 4 Topics (July 12–16)</u>

Systems of Equations and Matrices – Chapter 6

- Multivariable Linear Systems and Row Operations
- Matrix Multiplication, Inverses, and Determinants
- Solving Linear Systems Using Inverses and Cramer's Rule
- Partial Fractions

Conic Sections and Parametric Equations – Chapter 7

- Parabolas
- Ellipses and Circles
- Hyperbolas
- Parametric Equations

<u>Week 5 Topics (July 19–23)</u>

Vectors – Chapter 8

- Introduction to Vectors
- Vectors in the Coordinate Plane
- Dot Products and Vector Projections

Sequences and Series – Chapter 10

- Sequences, Series, and Sigma Notation
- Arithmetic Sequences and Series

- Geometric Sequences and Series
- The Binomial Theorem
- Functions as Infinite Series

<u>Week 6 Topics (July 26–30)</u>
Review of Topics covered during Weeks 1–5
Final Exam – Friday, July 30

Textbook: YOU MUST HAVE YOUR TEXTBOOK WITH YOU AND READY TO USE ACTIVELY DURING CLASS EACH DAY. Given that the textbook is on loan, please take good care of it, do not write in it, and maintain the pristine condition throughout the summer.

Daily Participation/Attendance: You are expected to attend class daily (you receive a zero for participation if you are absent). Daily attendance is mandatory. You will be given a daily participation grade, which will address various criteria such as timely arrival, attending class daily, having necessary supplies with you, attitude, effort, attentiveness, cooperation, remaining on task, level of involvement, asking/answering questions, and working to solve problems during class. Please consider that one class period this summer is equivalent to about one to two weeks during an academic year; therefore, being absent during one summer class period is equivalent to being absent from five to ten class periods during a school year.

Grading: A = 90–100 (outstanding), B = 80–89 (clearly above average), C = 70–79 (average), D = 60–69 (passing but clearly unsatisfactory), F = 0–59 (not passing). Your numeric grade is determined using several weighted categories, namely participation 20%, homework 20%, daily assessments (quizzes/tests) 40%, and final exam 20%.

Materials/Supplies: Daily requirements include: textbook, dedicated calculus notebook (for daily notes and homework), writing utensil, graph paper, loose leaf paper, & graphing calculator (TI84 strongly recommended). A graphing calculator is required and is an essential learning tool that we will use on a daily basis.

Daily Quiz: You will take a daily quiz (or test) during class. You will occasionally take at-home quizzes, which you will take after the 9:30–12:30 class period and which you should answer without help from other people and without help from Internet resources. You must have your textbook with you each day because many quiz questions are taken from the textbook.

Final Exam: On the last day of the summer session, Friday, July 30, you will take a final exam with a three–hour time allotment. The exam will be comprehensive, covering all major units presented and discussed throughout the six weeks.

Homework: The amount of time required to properly and thoroughly complete homework assignments depends on your prerequisite knowledge and your level of understanding of the material at hand. You should write your homework solutions in your notebook and not on loose leaf, which are hard to keep organized. You should begin each assignment on a new page with proper identification such as textbook page number, the numbers of the assigned problems and the date due. I will check homework completion routinely. You are expected to participate by periodically sharing your homework solutions with your classmates. Your written work should be legible, organized, complete, thorough, and neat. If a question requests that you graph, you should draw your graph on graph paper (not loose leaf paper) even if you use a graphing calculator to view the graph. Completion of homework assignments is itself a minimum, i.e. your individual needs may necessitate additional time, effort and practice.