Algebra 2/Trigonometry – Honors Level
2018-2019
Mrs. Paula Allshouse

Welcome to our math class. Let's work together to make this a successful year for all of us!

<u>COURSE DESCRIPTION:</u>   This course prepares students for higher level mathematics. Students will gain a deep understanding of the fundamental concepts and relationships of functions. They will expand their knowledge of linear, quadratic, and exponential functions to include logarithmic, polynomial, rational, piece-wise, and trigonometric functions. Students will make frequent use of the graphing calculator for course work.

TEXT: *PRECALCULUS with Limits*: Larson and Hostetler

Course of study: The following is a brief list of the topics we will be mastering this year.

Intro to Algebra 2
- Solve systems of equations
- Solve absolute value equations and inequalities
- Solve rational equations
- Solve radical equations
- Solve quadratic equations
- Exponent rules
- Work with rational exponents

Chapter 1: Functions and their graphs
- Find x and y-intercepts
- Graph and write linear equations
- Determine whether relations are functions
- Use function notation
- State the domain of a function
- Find the zeros of functions
- Determine the average rate of change of a function
- Identify even and odd functions
- Identify and graph parent functions
- Use shifts and reflections to sketch graphs of parent functions
- Add, subtract, multiply, divide functions
- Find the composition of functions
- Find inverse functions
- Verify that two functions are inverse functions

Chapter 2: Polynomial and rational functions
- Write quadratic functions in standard form and sketch graph
- State the max or min of a quadratic
- Sketch graphs of polynomial functions
- Find and use zeros as sketching aids

- ➢ Use long or synthetic division
- ➢ Work with the imaginary unit *i*
- ➢ Find complex solutions of quadratic equations
- ➢ Find all zeros of a polynomial function

Chapter 3: Exponential and logarithmic functions
- ➢ Sketch exponential functions with base a or e
- ➢ Sketch log functions and natural log functions
- ➢ Evaluate logarithmic functions
- ➢ Solve exponential and log equations
- ➢ Use the change of base formula
- ➢ Use properties of logs to evaluate log expressions or solve log equations
- ➢ Use exponential growth and decay functions

Chapter 4: Trigonometry
- ➢ Use radian and degree measure
- ➢ Find the arc length, radius, or central angle of a circle
- ➢ Evaluate trig functions using reference angles and the unit circle
- ➢ Solve trig equations using basic algebraic techniques
- ➢ Find the area of a sector of a circle

Chapter 4: Graphing trig functions
- ➢ Use amplitude and period to sketch the graphs of sine and cosine
- ➢ Sketch translations of the graphs of sine and cosine
- ➢ Write an equation of a sine or cosine graph
- ➢ Recognize graphs of tangent, cotangent, secant, and cosecant

Chapter 5: Analytic trig
- ➢ Recognize and write the fundamental identities
- ➢ Use the fundamental identities to simplify trig expressions and verify identities
- ➢ Solve trig equations using the fundamental identities and double angle identities
- ➢ Use the double angle formulas to evaluate trig functions

Items needed daily

- ➢ A three-ring binder
- ➢ Loose leaf paper – I will not accept any paper with frayed edges.
- ➢ Graph paper
- ➢ Straight-edge
- ➢ Graphic calculator
- ➢ Pencils – <u>All work to be handed in must be in pencil</u>.

To be successful in this class:

1. Come to class prepared.
2. Always pay attention in class and take good notes.
3. Do homework assignments to reinforce material and to prepare you for tests.
4. Study for tests by reviewing notes, assignments, and the text.
5. Observe the MPS honor code and follow the student expectations outlined in your handbook.

GRADING

Letter grades and percentage grades will follow the grading rules set forth in the Mercyhurst Prep handbook. Students will receive three term grades and one final assessment grade. Term grades will consist of total points converted into a percentage and letter grade at the end of each trimester. A comprehensive final assessment will be given at the end of our study of Algebra 2 and another final assessment will be given at the end of our study of Trigonometry. The combination of these two exams will count as your final assessment grade and be worth $\frac{1}{7}$ of the final grade.

Homework

Homework will be assigned daily. Collected homework is due at the start of class. If homework is handed in any time after the start of class it will be considered late and points will be deducted. No credit will be given once the assignment is returned to the class. If you are absent the day homework is due, you must hand it in the day you return (even if this is not a class day). Homework will be posted on the MPS website. I cannot stress enough the importance of practice in a math class. The assignments are carefully selected to ensure enough practice to gain a solid understanding of the concepts we are working on.

In-Class Assignments

In-class assignments are given to allow students to use their notes to complete problems pertaining to the topics we are currently working on. This set of problems will help us to gain a better understanding of where you are in mastering the unit concepts. They are handed in at the end of class.

Tests

Tests are usually announced two classes ahead of the test date. An outline with review problems will be handed out the class period before the exam.

ATTENDANCE

If you are absent from a class, you are responsible to do the following:
1) Obtain missed notes from a classmate before the next class.
2) Check the website for a summary of what was done in class and the homework assigned.
3) If necessary, get any document that were handed out in class.

If you are absent on a test day, you are responsible to do the following:
1) Have a parent or guardian notify me via e-mail stating that they are aware that you are missing an exam.
2) You must email me to tell me the day you will be returning to school so that we can arrange a make-up exam. Please be prepared to make up the test during your class time as soon as possible (within a day or two).

Behavior

It is important to create a positive learning environment in every class. This is very easy to achieve. We must always respect one another, be compassionate towards one another and empower one another by believing in our own potential and the potential of everyone in the class. The vision statement, the mission statement, and the academic honesty policy, which exemplify the charism of a Mercy education, are all an integral part of this classroom.

Extra Help

Please utilize our class time together as much as possible. Even the brightest of students have difficulty understanding concepts in mathematics. Please do not hesitate to see me if you are having trouble, and try not to get behind.

It is easier to keep up than catch up.

If you have any questions or concerns and would like to meet with me outside of class, please send me an e-mail or speak with me after class and we will set up a time to meet. My email is pallshouse@mpslakers.com.

Good luck & have a fantastic year!