Lindsay Harris
Pre-Calculus
B103
Office Hours 7:30am -8:20 am

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Course Description: This course is the analysis of polynomial, rational, power, exponential, logarithmic, trigonometric, and piecewise functions and their general characteristics. In addition logic, probability, statistics, matrices, transformations, composition, inverses, and the binomial theorem will be covered. Students will be exposed to some beginning calculus topics. Applications are emphasized throughout the material and algebraic, graphical, numerical, and verbal methods will be used to analyze and interpret problems.

Major Units:

Chapter 1	Algebraic Fundamentals	Chapter 7	Analytic Trigonometry
Chapter 2	Transformations of Functions	Chapter 8	Polar Coordinates and Vectors
Chapter 3	Polynomial and Rational Functions	Chapter 9	Systems of Equations and Inequalities
Chapter 4	Exponential and Logarithmic Functions	Chapter 10	Analytic Geometry
		Chapter 11	Sequences and Series
Chapter 5	Trigonometric Functions of Real Numbers	Chapter 12	Limits and Derivatives
Chapter 6	Trig Functions of Angles		

Learning Objectives: Using a graphing calculator to investigate and solve problems, by engaging students in critical thinking tasks. Students will be required to communicate mathematical ideas verbally, graphically, algebraically, and numerically. Describe general properties of functions as they relate to calculus, using the concept of limit as it pertains to sequences and functions, analyzing the graphs of polynomial, rational, radical, and transcendental functions, using the Pythagorean Theorem to develop and understand both circular and right triangle trigonometry.

Learning Goals:

- Find and interpret average rate of change and communicate how it applies to a relative application
- Find and interpret the difference quotient and explore its application in real life
- Find and interpret properties of piecewise-defined, polynomial, rational, power, radical, exponential and logarithmic functions
- Evaluate and graph piecewise-defined, polynomial, rational, power, radical, exponential and logarithmic functions
- Solve equations involving piecewise-defined, polynomial, rational, power, radical, exponential and logarithmic functions
- Apply the solving of piecewise-defined, polynomial, rational, power, radical, exponential and logarithmic functions within real liefe applications and effectively communicate the results in the proper context
- Analyze and communicate differences in behaviors of different types of functions both graphically and numerically

- Data will be modeled using the appropriate regression ad the model will be used to answer real-life questions and make predictions
- Apply transformations to functions
- Factor polynomial functions from a graphical perspective and write equations of polynomials given a graph
- Find and interpret composition of functions and use the composition function to answer questions pertaining to a real-life application
- Find and interpret inverse functions
- Utilize proper notation to define and evaluate sequences and series
- Solve applications involving sequences and series
- Apply Pascal's Triangle and the Binomial Theorem
- Define and identify trigonometric functions
- Convert between radian measure and degrees
- Use radian measure to compute the length of an arc
- Find trigonometric values for particular angles in a right triangle
- Evaluate the sine and cosine functions for particular angles on the unit circle from memory
- Define sine and cosine functions based on the unit circle
- Graph, transform, and analyze the graphs of sine and cosine functions
- Rewrite tangent, secant, cosecant, and cotangent functions in terms of sine and cosine functions
- Use the trigonometric identities and inverse trigonometric functions appropriately to solve mathematical problems
- Verify trigonometric identities
- Use the laws of sine and cosine to solve mathematical problems
- Recognize, model, and solve applications using trigonometry
- Perform vector arithmetic
- Use vectors to model applications and solve mathematical problems
- Use parametric equations to describe curves
- Convert between Cartesian and polar coordinates
- Use polar equations to describe curves
- Recognize, and solve mathematical problems with polar equations
- Graph and translate graphs of conic sections (parabolas, ellipses, hyperbolas, and circles)
- Demonstrate an appropriate use of technology to solve problems

Standards of Mathematical Practice:

The student will:

- ✓ Make sense of problems and persevere in solving them.
- ✓ Reason abstractly and quantitatively.
- ✓ Construct viable arguments and critique the reasoning of others.
- ✓ Model with mathematics.
- ✓ Use appropriate tools strategically.
- ✓ Attend to precision.
- ✓ Look for and make sense of structure.
- ✓ Look for and express regularity in repeated reasoning.

All math courses are designed to meet the requirements of the WLWV Mathematics Curriculum and the Common Core State Standards.

Grading Policy: Grades will be assigned as follows

Grading Cutoffs:		**Grading Breakdown:**	
A:	[90,100]	Tests	40%
B:	[80, 90)	Quizzes	20%
C:	[70, 80)	Final Exam	20%
D:	[60, 70)	Homework	20%
F:	[0, 60)		

Prerequisites: Successful completion of trigonometry or advanced algebra with instructor recommendation.

Text: *Precalulus, Fifth edition, Mathematics for Calculus* by James Stewart, Lothar Redlin, and Saleem Watson

Required Materials

- Pencils, I will **NOT** accept any work done in pen.
- Graphing calculator is required for calculus. TI-83/TI-84 is best. TI-86 and TI-89 calculators will not be allowed on any test or quiz.
- Textbook
- Loose leaf paper

Classroom Rules and Expectations

- Be in your seat and ready to work when class starts. This means materials are out, pencils are sharpened, restroom breaks are taken, and socializing is done.
- Bring all materials (books, completed assignments, calculators, and pencils) to class each day.
- If quiet time is given, you are to work on your MATH assignment. Keep noise levels down when working in pairs or groups.
- Cheating is not tolerated. If you are caught cheating, you will get a zero and your parents will be notified. This includes if you let someone "borrow" the homework you have already completed
- Absolutely no electronic devices are allowed in class.
- No food, drinks, or gum. Water is OK.
- If you have an excused absence you will be able to make up the test in a timely manner. There will be **NO TEST RETAKES**. Missing a review day does **not** postpone a chapter test.
- If homework is not done when you enter class it is considered late. Late work will be accepted for half credit before you take the chapter test.
- Work must be neat and complete for credit.
- If you have an excused absence you have one day to make-up the assignment after the one day, the assignment is considered late and you will earn only half credit.
- Pre-arranged absences. If you will be out of class (this includes for all field trips, school events, and sporting events) you will be held accountable for the work due. For instance if you leave prior to my class and return after my class for a field trip it is your responsibility to come turn in homework and get your current assignment from me or a classmate. If you do not check that day's assignment on the day it is due it become late work and will be treated accordingly. If you do not have the assignment prepared for the next day upon your return it also becomes late work.