Sierra College
Math 29
Precalculus
Fall Semester
2017

Instructor:

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Course Identification:

Math 29, Precalculus
Course Code #81679
V324, MWF 9:30-10:45
4 units

Office Hours:

MWF: 7:00-9:30 am
Office hours will be held in the Math Lab, V329.

Math Lab:

The Math Lab is located in V329
This is free, walk in tutoring.
Monday – Saturday: TBA

Materials:

Text: Precalculus - Mathematics for Calculus, 7th edition, by Stewart ;Cengage.

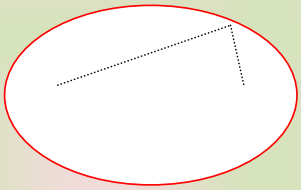
Calculator: A scientific calculator is required. In addition, a graphing calculator is recommended. Either a graphing calculator or a computer algebra system will be used periodically in the classroom for demonstration purposes. The graphing utility device is an excellent tool for acquiring the understanding of many of the concepts of this course due to its ability to rapidly investigate both the numerical and graphical aspects of these concepts. There will not be any opportunity to use cell phones or graphing calculators on the quizzes and exams.

Prerequisites:

Completion of Math 8, Trigonometry, with a grade of "C" or better

Withdraw Date:

September 4, without a W
October 30, with a W



Homework:

Homework will be assigned daily, but will be not be collected. Instead, a quiz will be given each Friday (except those days on which we have an exam) covering the material from the previous homework.

Exams:

There will be four 100 point exams and a 150 point comprehensive final exam. One of the four 100 point exams, or the quit total, will be dropped in the computation of the course grade. Only a scientific calculator can be used on the exams. The exam dates are given below:

Exam I: September 15
Exam II: October 6
Exam III: October 27
Exam IV: November 17
Final Exam: Week of Dec. 3

Grading:

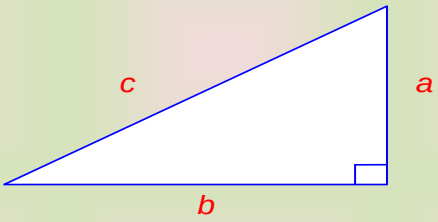
Quizzes:	100 pts
Exams:	400 pts
Final Exam:	150 pts

Quizzes:

There will be more than 10 quizzes, worth 10 points each. The top 10 scores will be used in the computation of your final course grade. There will be no make up quizzes. In having well more than 10, you will easily be able to miss a few. Only a scientific calculator can be used on the quizzes.

Group Work:

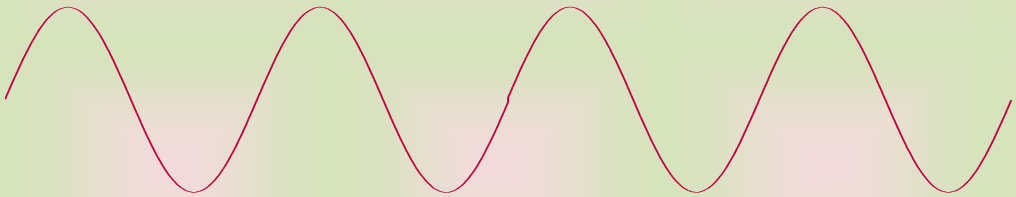
Working with other students outside of class is strongly encouraged. The Math Lab is an ideal location for working with your peers as well as receiving help from the tutors.



$$a^2 + b^2 = c^2$$

Course Description:

Preparation for calculus. Study of polynomials, rational functions, exponential and logarithmic functions, trigonometric functions, systems of linear equations, matrices, determinants, rectangular and polar coordinates, conic sections, complex number systems, mathematical induction, binomial theorem, and sequences. Recommended for students who plan to take Math. 30.



Workload:

The material is treated with a scope and intensity that requires students to study independently outside of class. This course requires a minimum of two hours of work outside the classroom for every one hour in class.

Attendance:

Attendance isn't incorporated in the final course grade. Nevertheless, a solid attendance record is necessary to succeed in a course that is both rigorous and fast paced.

Drop/Refunds:

A student must drop him/herself in order to be eligible for a refund. Instructor drops do not generate refunds.

Honesty Policy:

Cheating is of course forbidden. College policy on cheating, as outlined in the student conduct code, will be strictly enforced.

Math Department Website:

The Website for the Math Department is at http://math.sierracollege.edu/ This website is a useful resource for graphing paper, other Math Department contacts, full course descriptions, example Assessment Tests, past Math Contests, and more.

Sierra College Website:

The website for the college is at http://www.sierracollege.edu/ This website provides you with class schedules, academic calendars, and contact information for the various student services that this college provides you.

Student Outcomes:

Through homework assignments, quizzes, exams, projects and classroom discussions, the student will be able to:

1. Simplify expressions and solve equations of the following types: linear,

Topical Outline:

I. Algebra Review
A. Polynomial, Radical, quadratic in form, rational, and literal equations with real and imaginary solutions
B. Nonlinear and absolute value inequalities
C. Applications of problems from parts A and B.
II. Functions and Graphs
A. Definition of Function and Evaluation of

quadratic (including some with complex solutions), rational, radical, absolute value, exponential, logarithmic, and trigonometric.

2. Interpret and construct graphs of polynomial, rational, exponential, logarithmic, and trigonometric functions, and conic sections.

3.Translate, model, and solve applied problems utilizing polynomial, rational, radical, exponential, logarithmic, trigonometric functions, and matrix algebra.

4. Logically present clear, complete, accurate, and sufficiently detailed solutions to communicate reasoning and demonstrate the method of solving problems.

5. Apply techniques from linear algebra and combinatorics.

Other Services:

The college tutor lab, in which one-on-one tutoring arrangements can be made, is located in the LRC 402. The testing center is located in LRC 441. Student ID is required for services here.

Functions
- B. Graphing of Functions
  - 1. Zeros, or Roots, and Intercepts of Functions
  - 2. Asymptotes of Functions
  - 3. Shifting and Reflection of Functions
  - 4. Symmetry
- C. Inverse Functions

III. Exponential and Logarithmic Functions
- A. Solving Equations with Exponentials and Logarithms
- B. Graphing Exponential and Logarithmic Functions
- C. Word Problems with Logarithmic and Exponential Equations

IV. Systems of Equations and Matrices
- A. Solving Systems of Equations
  - 1. Substitution
  - 2. Elimination
- B. Introduction to Matrices
  - 1. Algebra of matrices
  - 2. Elementary row operations
  - 3. Inverse of a square matrix
- C. Matrices as a Method of Solving a System of Equations
  - 1. Elementary row operations
  - 2. Inverse matrices
  - 3. Cramer's Rule

V. Binomial Expansion
- A. Pascal's triangle
- B. Binomial Theorem

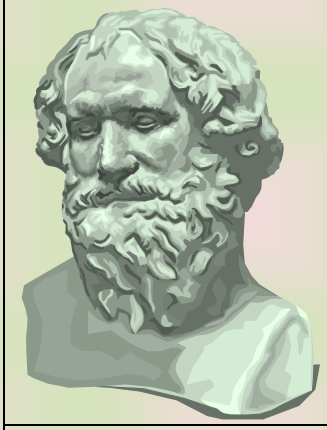
VI. Sequences and Mathematical Induction
- A. Arithmetic Sequences
  - 1. Terms
  - 2. Sums
- B. Geometric Sequences
  - 1. Terms
  - 2. Sums (finite and infinite)
- C. Introduction to Mathematical Induction

VII. Basic Trigonometric Functions
- A. Graphing Trigonometric Functions
- B. Trigonometric Identities
  - 1. Verify Identities
  - 2. Reciprocal, Ratio, Pythagorean, Sum, Difference, Double Angle, Half Angle
- C. Application Problems

Misc:

Any work turned in that is torn out of a spiral notebook with rough edges will not be graded.

All exams and quizzes will be turned back promptly, so there is no need to ask, "what is my grade?"



VIII. Analytic Trigonometry
- **A. Inverse Trigonometric Functions**
- **B. Solving Trigonometric Equations**
- **C. Right and Oblique Triangles**

IX. Polar Coordinates and DeMoivre's Theorem
- **A. Polar Coordinates**
- **B. Graphs of Polar Equations**
- **C. Polar Form of Complex Numbers**
- **D. DeMoivre's Theorem**

X. More Graphs
- **A. Conic sections**
  1. **Graphs of conic sections and their transformations in Cartesian coordinates**
  2. **Polar form of conic sections**
- **B. Parametric Equations and Graphs**

If You Want Your Work to Be Accepted and Graded, Then the Following Must Be Followed:

- **Remove any fringe from paper torn out of spiral notebook.**
- **Do not use graph paper unless it is used solely for graphing.**
- **All work must be clear and organized.**
- **A full name must be included.**
- **Any take home work must be turned in at the very beginning of class on the next class meeting. No late materials will be accepted.**
- **All paper turned in must be on paper that is approximately 8½ X 11.**

Harassment and Discrimination:

Sierra College is committed to providing a safe learning environment, free of harassment and discrimination as described in District policies found on our website. It is my goal that you feel you can share information related to your life experiences in classroom discussions, in your written work, and in our one-on-one meetings and I will seek to keep information you share private to the greatest extent possible; however, I am required to report information about incidents of gender based discrimination, violence and harassment to the College's Title IX Coordinator.