

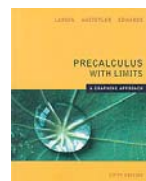


Student Name: _____ Class Period: _____

Course Outline and Syllabus

Trigonometry & Math Analysis (Precalculus), Dorsey Math Department

COURSE OUTLINE: Trigonometry uses the techniques that students have previously learned from the study of algebra and geometry. The trigonometric functions studied are defined geometrically rather than in terms of algebraic equations. Facility with these functions as well as the ability to prove basic identities regarding them is especially important for students intending to study calculus, more advanced mathematics, physics and other sciences, and engineering in college. Mathematical Analysis combines many of the trigonometric, geometric, and algebraic techniques needed to prepare students for the study of calculus and strengthens their conceptual understanding of problems and mathematical reasoning in solving problems. These standards take a functional point of view toward those topics. (Adapted from the California State Standards Framework) To be successful in Precalculus, students are expected to have passed Algebra One, Algebra Two and Geometry with a letter grade of C or better and to have passed CAHSEE Math with a score of 350 or better. The curriculum is based on the Summative Math California Standards Test (CST) given in May with the goal of having all students score Proficient or Advanced on the test. This course also prepares students for the S.A.T. exams. The following content standards are aligned with the textbook, *Houghton Mifflin Precalculus with Limits, a Graphing Approach*.



PRECALCULUS A: ALGEBRA ONE (REVIEW)

TEXTBOOK: Functions and Their Graphs Chapter One, Appendix B, Supplemental materials from Pizzazz and Prentice Hall Algebra One (September and October 2009)

- 4.0 Students simplify expressions prior to solving linear equations and inequalities in one variable, such as $3(2x-5) + 4(x-2) = 12$.
- 5.0 Students solve multistep problems, including word problems, involving linear equations and linear inequalities in one variable and provide justification for each step.
- 6.0 Students graph a linear equation and compute the x- and y- intercepts (e.g., graph $2x + 6y = 4$). They are also able to sketch the region defined by linear inequality (e.g., they sketch the region defined by $2x + 6y < 4$).
- 7.0 Students verify that a point lies on a line, given an equation of the line. Students are able to derive linear equations using the point-slope formula.

- 8.0 Students understand the concepts of parallel lines and perpendicular lines and how those slopes are related. Students are able to find the equation of a line perpendicular to a given line that passes through a given point.
- 15.0 Students apply algebraic techniques to solve rate problems, work problems, and percent mixture problems.

PRECALCULUS A: GEOMETRY AND TRIGONOMETRY

TEXTBOOK: Trigonometric Functions Chapter 4, Supplemental materials from Pizzazz and Prentice Hall Geometry (November and December 2009)

- 3.0 Students construct and judge the validity of a logical argument and give counterexamples to disprove a statement.
- 4.0 Students prove basic theorems involving congruence and similarity.
- 5.0 Students prove that triangles are congruent or similar, and they are able to use the concept of corresponding parts of congruent triangles.
- 7.0 Students prove and use theorems involving the properties of parallel lines cut by a transversal, the properties of quadrilaterals, and the properties of circles.
- 8.0 Students know, derive, and solve problems involving the perimeter, circumference, area, volume, lateral area, and surface area of common geometric figures.
- 9.0 Students compute the volumes and surface areas of prisms, pyramids, cylinders, cones, and spheres; and students commit to memory the formulas for prisms, pyramids, and cylinders.
- 10.0 Students compute areas of polygons, including rectangles, scalene triangles, equilateral triangles, rhombi, parallelograms, and trapezoids.
- 11.0 Students determine how changes in dimensions affect the perimeter, area, and volume of common geometric figures and solids.
- 15.0 Students use the Pythagorean Theorem to determine distance and find missing lengths of sides of right triangles.
- 18.0 Students know the definitions of the basic trigonometric functions defined by the angles of a right triangle. They also know and are able to use elementary relationships between them. For example, $\tan(x) = \sin(x)/\cos(x)$, $(\sin(x))^2 + (\cos(x))^2 = 1$.
- 19.0 Students use trigonometric functions to solve for an unknown length of a side of a right triangle, given an angle and a length of a side.
- 21.0 Students prove and solve problems regarding relationships among chords, secants, tangents, inscribed angles, and inscribed and circumscribed polygons of circles.

PRECALCULUS A& B: ALGEBRA TWO

TEXTBOOK: Polynomials and Rational Functions Chapter 2, Exponential and Logarithmic Functions Chapter 3, Linear Systems and Matrices Chapter 7, Appendix E & F, Sequences, Series, Probability Chapter 8 (January, February, and March 2010)

- 1.0 Students solve equations and inequalities involving absolute value.
- 2.0 Students solve systems of linear equations and inequalities (in two or three variables) by substitution, with graphs, or with matrices.
- 3.0 Students are adept at operations on polynomials, including long division. (Algebra One Standard)
- 4.0 Students factor polynomials representing the difference of squares, perfect square trinomials, and the sum and difference of two cubes. (Combine with Algebra One Standard)
- 6.0 Students add, subtract, multiply, and divide complex numbers.
- 7.0 Students add, subtract, multiply, divide, reduce, and evaluate rational expressions with monomial and polynomial denominators and simplify complicated rational expressions, including those with negative exponents in the denominator. (Combine with Algebra One Standard)
- 8.0 Students solve and graph quadratic equations by factoring, completing the square, or using the quadratic formula. Students apply these techniques in solving word problems. They also solve quadratic equations in the complex number system. (Combine with Algebra One Standard)
- 10.0 Students graph quadratic functions and determine the maxima, minima, and zeros of the function.
- 11.1 Students understand the inverse relationship between exponents and logarithms, and use this relationship to solve problems involving logarithms and exponents.
- 12.0 Students know the laws of fractional exponents, understand exponential functions, and use these functions in problems involving exponential growth and decay.
- 14.0 Students understand and use the properties of logarithms to simplify logarithmic numeric expressions and to identify their approximate values.
- 15.0 Students determine whether a specific algebraic statement involving rational expressions, radical expressions, or logarithmic or exponential functions is sometimes true, always true, or never true.
- 22.0 Students find the general term and the sums of arithmetic series and of both finite and infinite geometric series.
- 23.0 Students derive the summation formulas for arithmetic series and for both finite and infinite geometric series.
- 24.0 Students solve problems involving functional concepts, such as composition, defining the inverse function and performing arithmetic operations on functions.

SEMESTER PRECALCULUS B: PROBABILITY AND STATISTICS

TEXTBOOK: Sequences, Series, Probability Chapter 8 (April 2010)

- A2 18.0 Students use fundamental counting principles to compute combinations and permutations.
- A2 19.0 Students use combinations and permutations to compute probabilities.
- PS 1.0 Students know the definition of the notion of independent events and can use the rules for addition, multiplication, and complementation to solve for probabilities of particular events in finite sample spaces.
- PS 2.0 Students know the definition of conditional probability and use it to solve for probabilities in finite sample spaces.
- PS 7.0 Students compute the variance and the standard deviation of a distribution of data.

SEMESTER PRECALCULUS B: TRIGONOMETRY (TOPICS AFTER CST)

TEXTBOOK: Trigonometric Function Chapter 4, Analytic Trigonometry Chapter 5 (May 2010)

- 1.0 Students understand the notion of angle and how to measure it, in both degrees and radians. They can convert between degrees and radians.
- 2.0 Students know the definition of sine and cosine as y - and x -coordinates of points on the unit circle and are familiar with the graphs of the sine and cosine functions.
- 3.0 Students know the identity $\cos^2(x) + \sin^2(x) = 1$: Students prove that this identity is equivalent to the Pythagorean theorem and prove other trigonometric identities and simplify others by using the identity $\cos^2(x) + \sin^2(x) = 1$. For example, students use this identity to prove that $\sec^2(x) = \tan^2(x) + 1$.
- 4.0 Students graph functions of the form $f(t) = A \sin(Bt + C)$ or $f(t) = A \cos(Bt + C)$ and interpret A , B , and C in terms of amplitude, frequency, period, and phase shift.
- 5.0 Students know the definitions of the tangent and cotangent functions and can graph them.
- 6.0 Students know the definitions of the secant and cosecant functions and can graph them.
- 8.0 Students know the definitions of the inverse trigonometric functions and can graph the functions.

SEMESTER PRECALCULUS B: MATH ANALYSIS (TOPICS AFTER CST)

TEXTBOOK: Topics in Analytic Geometry Chapter 9 & 10, Limits and an Introduction to Calculus Chapter 11 (June 2010)

- 1.0 Students are familiar with, and can apply, polar coordinates and vectors in the plane. In particular, they can translate between polar and rectangular coordinates and can interpret polar coordinates and vectors graphically.
- 2.0 Students are adept at the arithmetic of complex numbers. They can use the trigonometric form of complex numbers and understand that a function of a complex variable can be viewed as a function
- 5.0 Students are familiar with conic sections, both analytically and geometrically.

- 6.0 Students find the roots and poles of a rational function and can graph the function and locate its asymptotes.
- 7.0 Students demonstrate an understanding of functions and equations defined parametrically and can graph them.
- 8.0 Students are familiar with the notion of the limit of a sequence and the limit of a function as the independent variable approaches a number or infinity. They determine whether certain sequences converge or diverge.

CLASSWORK/HOMEWORK:

- Each assignment is worth 10 points and must be completed in pencil.
- Include First and Last Name, Class Period, and Title.
- Show all work neatly and clearly. Box or circle your answers.
- Classwork is due at the END of the period.
- Homework is due the next day at the BEGINNING of the period.

ASSESSMENTS AND PROJECTS:

- All quizzes and tests are based on the content standards in the California Standards Test.
- Both quizzes and tests are given regularly to evaluate student understanding of Algebra 2 concepts and to help prepare students for the CST exam.
- Final Exams are given at the end of each semester (100 points).
- The Algebra 2 CST Exam is given in May to all ninth/tenth/eleventh grade students.
- 12th-grade students must take the S.A.T. in October/November/December 2009 for college admissions. 11th-grade students are recommended to take the S.A.T. in March/April/May/June 2010.
- In-class activities and projects will be given throughout the course and especially after the CSTs (May and June 2010).

GRADES: Students will receive weekly progress reports. Grades are based on cumulative points earned on assignments, assessments, and projects. Please take the time to review their grades and attendance as well as any missing assignments or low scores on tests. If you have any questions, you may contact the teacher through the Dorsey website. Students who pass both semesters of Precalculus with a letter grade of C or better fulfill one of the A-G college admission course requirements.

3-RING BINDER: You are required to keep a neatly organized three-ring binder for this course. You must bring the binder to class EVERY DAY. The binder must contain these four dividers labeled as follows. Your teacher may require additional dividers:

- Agenda/Assignment Sheet, Syllabus and Test Prep
- Classwork and Homework
- 3. Notes
- 4. Quizzes, Tests, and Projects

SUPPLIES: You must bring the following to class EVERY DAY:

- Packet of Pencils, Erasers, Pencil Sharpeners
- 3-Ring Binder with Lined Paper and Graph Paper
- Ruler
- Graphing Calculator (Texas Instruments 83/84 or Nspire)
- Color Pencils, Highlighter, Pen



GRADE SCALE:

- 100 – 90% A
- 89 – 80% B
- 79 – 70% C
- 69 – 60% D
- 59 – 0% Fail

STUDENT RESPONSIBILITIES:

- ✓ Bring textbook, supplies, and homework to class.
- ✓ Be in class on time and present every day.
- ✓ Come to class to learn and get work done.

TEACHER NAME & CONTACT: _____

SCHOOL TELEPHONE: (323) 298 – 8400

DORSEY WEBSITE: www.DorseyDons.org



ALGEBRA 2 COURSE SYLLABUS INFORMATION SHEET



Student Name: _____ Class Period: _____

Please provide your grades for the following math courses and test scores in order for the teacher to better support you:

Algebra 1A _____ Algebra 1B _____ Geometry A _____ Geometry B _____

Algebra 2A _____ Algebra 2B _____ CAHSEE English _____ CAHSEE Math _____

S.A.T I Math _____ S.A.T. II Math II _____

Read the statement and sign below. Please include any contact information and the best way to keep in touch.

“I read the course outline and syllabus for this class, including the grading policy, class procedures, and supplies needed for class.”

Parent/Guardian Signature and Date

Phone/Cell/Email

Student Signature and Date

Phone/Cell/Email

Parents, please write any comments or questions that may help me teach your child more effectively below:
