

Precalculus 2010-2011

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Office Hours: M & F 2:40 - 4:00, T & TH 3:00 - 4:00

Location: U5

Course Description: Precalculus is the bridge between Algebra and Calculus. It consists of an in depth review of topics from Algebra and Geometry, covered in a more rigorous, formal manner. Using this foundation, the course then presents a reasonably complete look at trigonometry, progressing from right triangle based definitions to functions of real numbers and their graphs. Trigonometric laws, identities, formulas, and equations are presented. The course ends with an introduction to the equations and graphs of the conic sections: circles, parabolas, hyperbolas, and ellipses.

Benchmarks and Performance Standards:

Students who have successfully completed two semesters of Precalculus will:

- Solve linear, quadratic, and absolute value equations and inequalities
- Divide functions, polynomials (using long and synthetic division), and complex numbers
- Use interval notation fluently
- Graph transformations of a given function from a definition or a picture
- Know the definitions of even and odd functions and apply these definitions to a specific function to classify its type and symmetry
- Find the domain of a composite function and of functions created by operations on functions
- Graph piecewise-defined functions
- Use the Descartes' Rule of signs to describe the zeroes of a function
- Know and apply the Fundamental Theorem of Algebra
- Factor polynomials using grouping and the sum of difference of two cubes
- Find the roots and asymptotes of rational and polynomial functions and graph them using sign analysis
- Show fluency with angle measures in degrees or radians and convert from one to the other
- Understand and use real numbers or angle measures in the domain of trigonometric functions
- Know and be able to apply the right triangle definitions of trigonometric functions
- Know and be able to apply the coordinate definition (unit circle) of trigonometric functions
- Know and be able to apply the real number definitions of the tangent, cotangent, secant, and cosecant functions
- Graph the trigonometric and inverse trigonometric functions including graphs with different amplitudes, frequencies, periods and phase shifts
- Compute by hand the values of trigonometric and inverse trigonometric functions at various standard points
- Graph functions of the form $f(t) = A \sin (Bt + C)$ and $f(t) = A \cos (Bt + C)$ and interpret A, B, and C in terms of amplitude, frequency, period and phase shift
- Know and apply the trigonometric identities and formulas including reciprocal, Pythagorean, negatives, addition, multiple angles, and half angles
- Solve trigonometric equations and verify trigonometric identities
- Know and apply the law of sines and the law of cosines
- Graph circles, parabolas, ellipses and hyperbolas from equations including those given in nonstandard form
- Understand basic parametric equations and polar coordinates

Requirements:

Precalculus with Calculus Previews, 4th edition, Expanded Volume, by Dennis Zill and Jacqueline Dewar, 2010. three-ring binder or notebook with a pocket, lots of graph paper, pencil (**mechanical is preferred**), eraser, pen (any color but blue or black), ruler in inches **and** centimeters, TI-83+ or TI-84 calculator

Course Content:

Semester One	Semester Two
Chapter 1 Inequalities, Equations, and Graphs Chapter 2 Functions Chapter 3 Polynomial and Rational Functions Chapter 6 Exponential and Logarithmic Functions	Chapter 4 Trigonometric Functions Chapter 5 Triangle Trigonometry Chapter 7 Conic Sections Chapter 8 Systems of Equations and Inequalities

Grading Policy: Your grade is comprised of homework, quizzes, tests, and final exams. Homework will be checked weekly. Specific even-numbered problems will be assigned to turn in worth 5 points. Quizzes will be given after one or two sections and worth between 10-20 points. Tests will worth between 75-100 points. The final exam will be worth 30% of the final grade. You can earn 3 extra credit points for each CaML question answered correctly. Other opportunities for extra credit are available on quizzes or in class. There is a maximum of 30 extra credit points per semester. You are responsible for checking your grade regularly using NetClassroom.

Homework: Many problems will be assigned but will not be checked by the teacher but tested on quizzes. It is the responsibility of the student to correct her homework by either checking the odd-numbered answers in the back of the book or asking questions during class the following day about specific homework problems. At this level, most students do homework willing and know the academic consequences of not doing it. Much of the class time will be devoted to notes so that students will have a solid basis of knowledge to apply to the nightly homework.

Make-Up Work: You have the same number of days you were absent to make up the work you missed. If you are able, check the website for the assignment then read the appropriate section in the book before starting the homework. If not, on your return, schedule time with the teacher to go over the section that was missed and get the missing notes from another student.

YOU MAY NOT MAKE UP A MISSED QUIZ. If you miss a quiz, then that quiz is dropped. If you miss more than one quiz, I will record a **zero** for the quiz score. If you know ahead of time that you will miss a quiz, please notify me, preferably by e-mail. Sometimes, we can make an arrangement to take the quiz at another time during the day of the quiz. You are required to make up a missed test.

Other classroom rules: You are expected to be on time and in your seat with your homework on your desk ready to go over difficult problems. You are also encouraged to **quietly** discuss homework questions with your neighbors in hopes that the questions could be solved as soon as possible. If you are delayed since you are talking to another teacher, administrator or staff member, a computer message or pass from that person is mandatory. You do not need your book every day but you do need your notes and tools. You are expected to abide by the Honor Code at all times, especially during quizzes and tests.

Extras: This book has a website with flashcards, a glossary, and chapter quizzes.
<http://math.jbpub.com/precalculus/expanded/>