



MAC 2147 (formerly MAC 2132)
Precalculus Departmental Syllabus
Revised: Fall 2011 by Mike Rosenthal

Objectives Covered: Functions and their graphs. Operations on functions and inverses of functions. Linear, quadratic, exponential and logarithmic functions. Trigonometric functions and their graphs, inverse trig functions, trig identities and conditional equations, solving right and oblique triangles. The conic sections.

Text: Algebra and Trigonometry, 9th edition, by Sullivan (published by Pearson) Students are required to do online homework from the MyMathLab web site. It is recommended that this homework component be counted as 15% of the final grade. Faculty not wanting to make their own MyMathLab assignments may copy the course coordinator's MyMathLab course.

Suggested pacing: There are usually about 28 100-minute classes in a semester. With four tests, not including the cumulative final exam, this leaves about 24 100-minute lectures. The pacing below allows you to cover all of the material in 23 lectures. Objectives in *italics* are optional.

CHAPTER 2 (1.25 lectures)

Section 2.1 Distance formula, *midpoint formula*

Section 2.2 Graph equations, find the intercepts on a graph, find the intercepts from an equation, *test an equation for symmetry, know how to graph key equations*

Section 2.3 Cover all 10 objectives

Section 2.4 Cover all 3 objectives

CHAPTER 3 (3.75 lectures)

Section 3.1 Cover all 4 objectives

Section 3.2 Cover both objectives

Section 3.3 Find average rates of change, *local and absolute maxima and minima, determine where a function is increasing and decreasing, determine even or odd functions from a graph, identify even or odd functions from the equation*

Section 3.4 Cover both objectives, *the greatest integer function is optional*

Section 3.5 Cover all 3 objectives with emphasis on shifts and x-axis reflections

Section 3.6 Build and analyze functions

CHAPTER 4 (1.25 lectures)

Section 4.1 Cover all 4 objectives

Section 4.3 Cover all 5 objectives

Section 4.4 Cover applied problems but not those requiring a graphing calculator.

CHAPTER 6 (5 lectures)

Section 6.1 Form a composite function, *find the domain of a composite function*, make sure to assign some problems from exercises 53-58.

Section 6.2 Cover all 4 objectives

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Section 6.3 Cover all 4 objectives

Section 6.4 Cover all 5 objectives

Section 6.5 Work with the properties of logs, write a log expression as a sum or difference of logs, write a log expression as a single log, *evaluate logs whose base is neither 10 nor e*

Section 6.6 Solve logarithmic equations, solve exponential equations

Sec. 6.7-6.8 Choose enough objectives to fill about 75 minutes. In summer sections, these applications can be omitted. There are plenty of applications in sections 6.3 and 6.4 that should be assigned.

CHAPTER 7 (4.5 lectures)

Section 7.1 Cover all objectives except finding the area of a sector of a circle and the linear speed of an object traveling in circular motion. In objective 1, covering seconds is optional.

Sections 7.2-7.4 Cover all objectives

Section 7.5 Cover the first 3 objectives briefly. Objective 1 they can do by the section 7.4 method. Objectives 2-3 will be easier for them to see after they learn section 7.6. While you don't have to use the even-odd properties to find trig function values, make sure these properties are memorized by the students.

Section 7.6 Cover all 5 objectives.

Section 7.7 Students need to know the graphs of $y = \tan x$, $y = \cot x$, $y = \sec x$, and $y = \csc x$, but not any transformations.

Section 7.8 Cover the first objective

CHAPTER 8 (3.75 lectures)

Cover all sections except section 8.7. In section 8.2, students do not have to memorize the ranges for $\sec^{-1}x$, $\csc^{-1}x$, and $\cot^{-1}x$, and objective 3 is optional. In section 8.3, cover only the first four objectives. In section 8.5, the final objective is optional. The half-angle identities in 8.6 are optional.

CHAPTER 9 (2 lectures)

Cover sections 9.1, 9.2, and 9.3 in their entirety. If time is short, omit the derivations of the Law of Sines and Law of Cosines and/or the ambiguous case.

CHAPTER 11 (1.5 lectures)

The conic sections should be covered in an informal manner. Students do not need to know what a focus or a directrix is. They should be able to look at a second degree equation and identify which conic it is, then draw the graph.

Section 11.1 Know the names of the conics

Section 11.2 Students should be able to do problems like #11-18, 27, 28, 37-54 (graph only), 55-62, 67, 68, 73, 74

Section 11.3 Students should be able to do problems like #13-16, 17-24 (graph only), 39-42, 43-54 (all parts except foci), 65-70, 73, 74

Section 11.4 Students should be able to do problems like #15-18, 19-36 (graph only), 37-40, 49-62 (all parts except foci), 63-66

Students who already have credit in College Algebra or Trigonometry may not receive credit for Precalculus. Point out to students that we are starting in chapter 2; meaning they should already know the material in chapters R and 1. Graphing calculators are prohibited.