

Math 14 — Precalculus — Spring 2005

Text: Sullivan/Sullivan (1999) *Precalculus: Graphing and Data Analysis*

Material Covered: This course is designed to acquaint you with numbers, algebraic expressions, and graphs of equations. You will learn how to solve equations and inequalities by using analytical, numerical, and graphing techniques. You will study about lines, parabolas, circles, ellipses, hyperbolas, and translation of axes. While studying functions and their graphs, you will learn about polynomial and rational functions, and inverse, exponential, and logarithmic functions. The study of trigonometry will emphasize the use of both right triangles and unit circles. You will learn how to derive trigonometric identities and will solve trigonometric equations by using analytical, numerical, and graphing techniques. The use of the computer and cooperative learning are integrated throughout the course. Class will meet in a computer laboratory once a week.

Suggested assignments: With the exception of the first lecture, assignments should be read before the day they are discussed by the instructor. Homework problems should be attempted immediately after the lecture. (This list may be supplemented if the instructor wishes.)

| Section | Name | Problem Numbers |
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| Appendix | | |
| 1.1 | Rect. Coordinates | 1,3,5,7,25,27,31,35,43,49,53,59 |
| 1.2 | Graphs of Equatns | 1,3,11,15,17,19,27,33,37,41-44,49,51,55,59,63,67,75 |
| 1.3 | Lines | 1,5,9,13,15,25,27,29,31,47,51,87 |
| 1.5 | Solving Equations | 1,5,7,9,13,15,17,21,33,45,59,63,69,73,75 |
| 1.6 | Setting up Equatns | 9,15,21,35,39,41,45,53 |
| 1.7 | Inequalities | 3,5,15,19,33,37,49,51,53,55,57,61 |
| 2.1 | Functions | 1-12,13,17,19,51-31,37,39,43,53,57,61 |
| 2.2 | More about Functns | 1-8,9,13,19,29,53,65,71,73 |
| 2.3 | Graph Techn: Transform | 1-12, 13, 15, 17, 19, 25, 29, 31, 33, 43, 55, 57, 65, 67 |
| 2.4 | Operatns on Functns | 1, 5, 13, 15, 19, 21, 23, 25, 27, 31, 33, 39, 43, 47, 51, 63, 65, 77 |
| 3.1 | Quadratic Functions | 1-8, 9, 11, 17, 25, 27, 29, 31, 33, 39, 51, 53, 61 |
| 3.6 | Complex Numbers | 1, 3, 9, 11, 13, 15, 19, 39, 45, 51, 53 |
| 3.2 | Polynomial Functions | 1, 2, 3, 4, 5, 15, 19, 21, 25, 31, 35, 43, 49, 53, 55 |
| 3.3 | Rational Functions | 1, 5, 13, 15, 17, 29, 31, 33, 35, 45, 59, 67, 69 |
| 3.4 | Synthetic Division | 1, 3, 5, 13, 17, 19, 21 |
| 5.5 | Real Zeros of a Polyn | 1, 3, 5, 23, 25, 29, 47, 49 |
| 3.7 | Fund Theorem Algebra | 1, 3, 9, 17, 21 |
| 4.1 | One-to-One Functions | 1, 3, 9, 10, 11, 12, 13, 14, 15, 19, 21, 25, 29, 43, 47, 49 |
| 4.2 | Exponential Functions | 1, 11-18, 19, 21, 25, 27, 37, 39 |
| 4.3 | Logarithmic Functions | 1, 5, 13, 15, 19, 25, 33, 37, 39, 45, 51-58, 59, 67, 77 |
| 4.4 | Prop of Logarithms | 1, 7, 13, 17, 19, 23, 27, 33, 35, 37, 43, 45 |
| 4.5 | Logar & Expon Equatns | 1, 5, 11, 19, 23, 27, 29, 49, 61, 63 |
| 4.6 | Compound Interest | 1, 7, 21, 25, 33 |
| 4.7 | Growth and Decay | 1, 3, 7, 9, 11 |
| 5.1 | Angles & Their Measure | 3,5,7,9,15,19,25,31,33,37,41,43,49,55 |
| 5.2 | Trig Fens Unit Circle | 1,3,5,11,13,15,21,23,27,31,33,35,45,47,49,51,57,63,65,71, 73,77,91 |

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| 6.3 | Properties of Trig Fns | 1,3,5,9,11,13,17,19,23,25,29,33,39,47,49,51,59,63,67,69,71,79,85 |
| 5.4 | Right Triangle Trig. | 1,7,11,13,19,27,29,41,45,49,57,75,76,82 |
| 5.5 | Trig Fns Graphs | 1,3,5,7,9,11,13,15,17,19,21,31,33,35,37,43,47,51,65 |
| 5.6 | Inverse Trig Fns. | 1,3,5,7,9,11,13,15,17,19,21,23,25,27,29,31,33,35,37,39,51 |
| 6.1 | Identities | 1,3,5,7,9,11,13,15,17,19,21,23,35,55,63 |
| 6.2 | Sum and Difference | 3,5,7,13,15,17,19,23,27,29,33,35,43,51,55,71 |
| 6.3 | Double and Half Angle | 1,3,5,13,21 |
| 6.5 | Trig Equations | 1,3,5,7,9,11,13,15,17,19,21,23,25,27,33 |
| 7.1 | Solve Right Triangles | 1,5,11,15,17,21,24,27,28,45 |
| 7.2 | Law of Sines | 1,3,7,9,15,17,19,21,23,31,33 |
| 7.3 | Law of Cosines | 1,3,7,9,13,17,19,25,31,36 |
| 8.1 | Polar Coordinates | 1,3,11,13,19,21,33,37,45,49,55,57,63 |
| 8.2 | Polar Equations | 1,5,11,17,17-24,31,39,41,45,55,57 |
| 8.3 | Complex Plane | 1,3,5,11,13,15,17,23,29,31,35 |
| 8.4 | Vectors | 1,3,5,9,11,19,21,23,27,49,51 |
| 9.2 | The Parabola | 1-8, 25, 29, 31, 37 |
| 9.3 | The Ellipse | 1-4, 5, 7, 9, 11, 29, 35 |
| 9.4 | The Hyperbola | 1-4, 15, 17, 19, 35, 41 |
| 10.1 | Sys of Lin: Sub Elimination | 1, 11, 13, 19, 23, 35, 55 |
| 10.2 | Sys of Lin: Matrices | 1, 11, 13, 35, 41, 47, 53, 55, 57 |