

Learning Outcomes for 3450:222 Analytic Geometry and Calculus II

Students are expected to be able to:

- (1) Communicate mathematical results through the proper use of mathematical notation and words
- (2) Use basic integration techniques, including substitution, integration by parts, trig integrals, trig substitution, and partial fractions
- (3) Apply integration techniques to solve problems regarding volume, surface area, length of a curve, and other applications
- (4) Understand sequences and series, including tests of convergence and divergence of series
- (5) Work with power series and their basic properties
- (6) Understand parameterized curves and polar coordinates.

Tentative Section Outline

Section (page)	Topic	Suggested Homework
6.1 (427)	Areas Between Curves	1-13 odd, 17-31 odd
6.2 (438)	Volumes	1-29 odd, 39, 41, 49, 56-59
6.3 (444)	Volumes by Cylindrical Shells	1-19 odd, 29, 37, 39, 41
6.5 (453)	Average Value of a Function	1-13 odd, 14, 15, 17, 19
7.1 (468)	Integration by Parts	1-45 odd, 51, 55, 57, 61, 63
7.2 (476)	Trigonometric Integrals	1-53 odd, 57, 61, 63
7.3 (483)	Trigonometric Substitution	1-29 odd, 33, 37
7.4 (492)	Integration of Rational Functions by Partial Fractions	1-51 odd
7.5 (499)	Strategy for Integration	1, 3, 4, 5, 7-11, 13-17, 21, 25, 29, 32, 33, 35, 37, 39-42, 45, 49, 51, 55, 56, 59, 60, 69, 70, 73, 74, 75, 79
7.6 (504)	Integration Using Tables and Computer Algebra Systems	3, 7, 9, 13, 17, 19, 21, 23
7.7 (516)	Approximate Integration	7, 11, 15
7.8 (527)	Improper Integrals	1, 5-41 odd, 49, 51, 53
11.1 (700)	Sequences	1-55 odd, 75-79 odd
11.2 (711)	Series	1, 15-47 odd, 51-63
11.3 (720)	The Integral Test and Estimates of Sums	3-29 odd
11.4 (726)	The Comparison Tests	1-31 odd
11.5 (731)	Alternating Series	3-19 odd, 23, 29
11.6 (737)	Absolute Convergence and the Ratio and Root Tests	1-9 odd, 10, 11-29 odd
11.7 (740)	Strategy for Testing Series	1-37 odd
11.8 (745)	Power Series	1-27 odd
11.9 (751)	Representations of Functions as Power Series	1-29 odd
11.10 (765)	Taylor and Maclaurin Series	5-19 odd, 25-51 odd, 63
8.1 (543)	Arc Length	7-17 odd, 33, 35
8.2 (550)	Area of Surface of Revolution	1a, 3a, 5, 7, 11, 13, 15
8.3 (560)	Applications to Physics and Engineering	21-37 odd
10.1 (641)	Curves Defined by Parametric Equations	1-15 odd, 19, 21, 24, 25, 27, 28
10.2 (651)	Calculus With Parametric Curves	1-21 odd, 25, 29, 33, 41, 43, 45, 61, 63, 65
10.3 (662)	Polar Coordinates	1-45 odd, 54, 55-61 odd
10.4 (668)	Area and Arc Length in Polar Coordinates	1-41 odd, 45, 47