MATH 101 (951) - Summer Term 2, 2014
Integral Calculus with Applications to Physical Sciences and Engineering

Classes: Mo Thu Fri 4-6 pm; Wed 4-5 pm; Room: MATH 100
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Course webpage: http://www.math.ubc.ca/~jfeng/Math101S

Textbook: *Calculus, Early Transcendentals* by James Stewart, 7th Edition

Grading scheme: 5 WebWork assignments (10%) + 4 in-class quizzes (10%) + 1 midterm
(30%) + final exam (50%)

Course Outline

Week 1: §5.1 Areas and Distances
§5.2 The Definite Integral
§5.3 The Fundamental Theorem of Calculus
§5.4 Indefinite Integrals and the Net Change Theorem (ignore sinh and cosh
formulas)
§5.5 The Substitution Rule

Week 2: §6.1 Areas Between Curves
§6.2 Volumes
§6.4 Work
§7.1 Integration by Parts (ignore: "reduction formulas")
§7.2 Trigonometric Integrals (ignore: sin mx, cos nx, etc.)

Week 3: §7.3 Trigonometric Substitution (ignore: inverse secant and inverse hyperbolic
substitutions)
§7.4 Integration of Rational Functions by Partial Fractions (ignore: "CASE IV:
Q(x) contains a repeated irreducible quadratic factor")
§7.7 Approximate Integration
§7.8 Improper Integrals

Week 4: §8.3 Applications to Physics and Engineering (ignore: Hydrostatic Pressure and
Force and Theorem of Pappus)
§9.3 Separable Equations (ignore: direction fields and Orthogonal Trajectories)
§11.1 Sequences (ignore: Definitions 2 and 5, proof of Monotonic Sequence
Theorem, Example 14)
§11.2 Series

Week 5: §11.3 The Integral Test and Estimates of Sums (ignore: Estimating the Sum of a
Series and Proof of the Integral Test)

§11.4 The Comparison Tests (ignore: Estimating Sums)
§11.5 Alternating Series
§11.6 Absolute Convergence and the Ratio and Root Tests (ignore: The Root Test)

Week 6: §11.8 Power Series
§11.9 Representations of Functions as Power Series
§11.10 Taylor and Maclaurin Series (ignore: Binomial Series)
Review