

MTH 1322 – Calculus II

Text: Single Variable Calculus: Early Transcendentals, 4th Edition, Jon Rogawski and Colin Adams

The course covers techniques of integration, applications of integration, and infinite series:

Techniques of Integration

- Review: Substitution (including the change of variables formula) [Section 5.7]
- Integration by parts [Section 7.1]
- Trigonometric integrals and trigonometric substitution [Sections 7.2 and 7.3]
- Partial fractions [Section 7.5]
- Improper integrals (including examples that require L'Hospital's rule) [Sections 7.7 and 4.5]

Applications of Integration

- Integrals in geometry: volume, arc length, and surface area [Sections 6.2, 6.3, 6.4, and 8.2]
- Integrals in physics: work and energy [Sections 6.5]
- Solving differential equations by separation of variables [Sections 9.1 and 9.4]

Infinite Series

- Sequences and series [Sections 10.1 and 10.2]
- Convergence tests for series [Section 10.3, 10.4, and 10.5]
- Power series [Section 10.6]
- Taylor polynomials and Taylor series [Section 10.7 and 10.8]
- Complex numbers and Euler's formula [Section 10.8]