

MA241 Recorded Lectures: (from Spring 2016)

- 1.) Course Introduction; Chapter 0 (Limits)
- 2.) Chapter 0 (Continuity; Derivatives)
- 3.) Chapter 0 (Derivatives of trig, e^x ; Increasing/decreasing)
- 4.) Chapter 0 (Antiderivatives; Areas; Volumes; Subst; By Parts)
Chapter 1 (Begin 1.1: Arc Length)
- 5.) Chapter 1 (1.1: Arc Length)
- 6.) Chapter 1 (1.1: Arc Length; 1.2: Average Value of a Function)
- 7.) Chapter 1 (1.2: Average Value of a Function)
- 8.) Chapter 1 (1.3: Work: Spring)
- 9.) Chapter 1 (1.3: Work: Move "Slices")
- 10.) Chapter 1 (1.3: Force Due to Hydrostatic Pressure)
- 11.) Chapter 1 (1.3: Force Due to Hydrostatic Pressure)
- 12.) Chapter 1 (1.3: Moments and Centers of Mass)
- 13.) Chapter 1 (1.3: Centers of Mass)
- 14.) Review for Test #1
- 15.) Chapter 2 (2.1: Trigonometric Integrals: Powers of sin/cos)
- 16.) Chapter 2 (2.1: Trigonometric Integrals: Powers of sec/tan)
- 17.) Chapter 2 (2.2: Trigonometric Substitution)
- 18.) Chapter 2 (2.2: Trigonometric Substitution)
- 19.) Chapter 2 (2.2: Trigonometric Substitution: Completing the Square; 2.3: Partial Fractions: Linear Factors)
- 20.) Chapter 2 (2.3: Partial Fractions: Repeated Linear Factors, Irreducible Quadratic Factors)
- 21.) Chapter 2 (2.3: Partial Fractions: Divide First; Repeated Quadratic Factors)
- 22.) Chapter 2 (2.4: Table of Integrals)
- 23.) Chapter 2 (2.5: Numerical Integration: Trapezoidal Rule)
- 24.) Chapter 2 (2.5: Numerical Integration: Trapezoidal Error, Begin Simpson's Rule)
- 25.) Chapter 2 (2.5: Numerical Integration: Simpson's Rule, Error)
- 26.) Chapter 2 (2.6: Improper Integrals: Infinite Limits)
- 27.) Chapter 2 (2.6: Improper Integrals: Vertical Asymptotes)
- 28.) Chapter 2 (2.6: Improper Integrals); Chapter 3 (3.1: Differential Equations: Intro and Verify Solutions)
- 29.) Chapter 3 (3.1: Euler's Method); Review for Test #2
- 30.) Chapter 3 (3.1: Slope Fields)



- 31.) Chapter 3 (3.2: Separable Differential Equations)
- 32.) Chapter 3 (3.2: Orthogonal Trajectories)
- 33.) Chapter 3 (3.3: Tank Problems)
- 34.) Chapter 3 (3.3: Growth and Decay)
- 35.) Chapter 3 (3.3: Newton's Law of Cooling; Logistic Growth)
- 36.) Chapter 3 (3.3: Logistic Growth)
- 37.) Chapter 3 (3.4: Second Order DEs: Homogeneous: 2 Real Roots)
- 38.) Chapter 3 (3.4: Second Order DEs: Homogeneous: Double Root)
- 39.) Chapter 3 (3.4: Second Order DEs: Homogeneous: Complex Roots)
- 40.) Chapter 3 (3.5: Second Order DEs: Nonhomogeneous: Exponential; Polynomial)
- 41.) Chapter 3 (3.5: Second Order DEs: Nonhomogeneous: Sin/Cos)
- 42.) Chapter 3 (3.5: Second Order DEs: Nonhomogeneous: Products and Sums)
- 43.) Chapter 3 (3.6: Second Order DEs: Applications: Circuits)
- 44.) Chapter 3 (3.6: Second Order DEs: Applications: Vibrations); Review for Test #3
- 45.) Chapter 4 (4.1: Sequences)
- 46.) Chapter 4 (4.2: Series: Infinite Geometric Series)
- 47.) Chapter 4 (4.2: Series)
- 48.) Chapter 4 (4.2: Series: Telescoping; Harmonic)
- 49.) Chapter 4 (4.2: Series: Test for Divergence; 4.3: Convergence Tests: Integral Test)
- 50.) Chapter 4 (4.3: Convergence Tests: p-Series)
- 51.) Chapter 4 (4.3: Convergence Tests: Comparison Test; Limit Comparison Test)
- 52.) Chapter 4 (4.3: Convergence Tests: Estimation of the Sum; 4.4: Alternating Series)
- 53.) Chapter 4 (4.4: Alternating Series: Alternating Series Estimation Theorem)
- 54.) Chapter 4 (4.5: Absolute Convergence; Conditional Convergence)
- 55.) Chapter 4 (4.6: Power Series: Ratio Test: Interval of Convergence)



- 56.) Chapter 4 (4.6: Power Series: Ratio Test: Interval of Convergence; 4.7: Functions as Power Series)
- 57.) Chapter 4 (4.7: Functions as Power Series)
- 58.) Chapter 4 (4.8: Taylor Series; Maclaurin Series)
- 59.) Chapter 4 (4.8: Taylor Series; Maclaurin Series: e^x , $\sin x$)
- 60.) Chapter 4 (4.8: Taylor Series; Maclaurin Series: $\cos x$, Derivatives of Taylor Series); Review for Test #4
- 61.) Chapter 4 (4.8: Binomial Series)
- 62.) Chapter 4 (4.8: Algebra of Power Series)
- 63.) Chapter 4 (4.9: Taylor and Maclaurin Polynomials: Error; Examples from Physics)
- 64.) Chapter 4 (4.9: Taylor and Maclaurin Polynomials: Examples from Physics); Review for Final Exam

