Review

Ch6 Differentiation

§6.1 Derivative (Chain rule, Inverse function)

§6.2 Mean value Thm (Rolle's Thm, 1st derivative test for Extrema)

§6.3 L'Hospital's Rules

§6.4 Taylor's Thm (derivative form of remainder, relative extrema, convex function, Newton's method)

Ch7 Riemann Integral

§7.1 Riemann integral (partition, tagged partition, Riemann sum, Riemann integrable, boundedness thm)

(Midterm up to here)

§7.2 Riemann integrable functions (Cauchy Criterion, Squeeze Thm, "classes" of Riemann integrable functions, additivity Thm)

§7.3 The Fundamental Thm (1st form $\int_a^b f = F(b) - F(a)$, 2nd form $\frac{d}{dx}\int_a^x f = f(x)$; substitution Thm, Lebesgue's Integrability Criterion (pf omitted), Integration by Parts, Taylor's Thm with integral form remainder)

§7.4 The Darboux Integral (Upper & lower sums, upper & lower integrals, integrability criterion, equivalence to Riemann integral)

(§7.5 Omitted)

Ch8 Sequences of Functions

§8.1 Pointwise & Uniform Convergence (uniform norm, Cauchy Criterion)

§8.2 Interchange of Limits (Limit & Continuity, Limit & Derivatives, Limit & Integral, Dini's Thm)

§8.3 Exponential & Logarithmic Functions (Definitions & basic properties)

§8.4 Trigonometric Functions (Definitions & basic properties) (Postponed to the end)

Ch9 Infinite Series

§9.1 Absolute Convergence (conditional convergence, grouping, rearrangement)

§9.2 Tests for Absolute Convergence (Comparison Test, Root Test, Ratio Test, and their limit version, Integral Test, Raabe's Test)

§9.3 Tests for Nonabsolute Convergence (alternating series, Abel's Test, Dirichlet Test)

§9.4 Series of Functions (pointwise & uniform convergences, Cauchy Criterion for Uniform convergence, M-Test, Power Series: radius of convergence, uniform convergence when restrict closed & bdd subintervals, continuity, differentiation & integration term-by-term)

(End)

Final exam: | Apr 29 (Tuesday) 6:30-8:30 pm, UC Gym |

(6 questions as in Mid-term) (Approved Calculator allowed)

covers all material including those in lectures, tutorials, homework, & textbook (including all exercises in textbook no matter it's assigned in homework or not) with emphases on those material after mid-term (ie. §7.2 - §9.4).

But those material before mid-term (ie. §6.1 - §7.1) may also be tested directly/explicitly or indirectly/implicitly.