Department of Mathematics & Statistics, KFUPM

Math 311 Syllabus (141)

Dr. K. M. Furati

Course Title: Advanced Calculu I

Textbook: Introduction to Real Analysis, Robert G. Bartle & Donald R.

Course Description: The Real Number System, Limits and Continuity, Basic Properties of Functions on R, Elementary Theory of Differentiation, Elementary Theory of Integration, Sequences and series of real numbers.

Wk	Date	Sec.	Topic	HW
1	Aug 31 - Sep 4	2.1	The algebraic and order properties of R	6, 8, 19
		2.2	Absolute value and real line	16, 17, 18
2	Sep 7 - 11	2.3	The Completeness Property of R	4, 6, 10
		2.4	Applications of the Supremum property	4a, 5, 8, 11, 19
3	Sep 14 - 18	3.1	Sequences and their limits	6(a,d), 8, 10
		3.2	Limit Theorems	7, 10a, 18
4	Sep 21 - 25	3.3	Monotone Sequences	2, 6, 7
		3.4	Subsequences and Bolzano-Weierstrass Theorem	4b, 7a, 11, 19
5	Oct 12 - 16	3.5	The Cauchy Criterion	2a, 7, 13
		3.6	Property Divergent Sequences	7, 9b
6	Oct 19 - 23	4.1	Limits of functions	6, 14, 15a
		4.2	Limit Theorems	13, 14
7	Oct 26 - 30	5.1	Continuous functions	3, 8, 12
		5.2	Combinations of Continuous functions	8, 10, 12
		5.3	Continuous functions on Intervals	2, 14, 17
8	Nov 2 - 6	5.4	Uniform continuity	7(hint), 11, 15c,
		5.6	Monotone and Inverse functions	4, 12
9	Nov 9 - 13 E2, R, Dec 11, 7:30 pm, ch 6,7	6.1	The Derivative	10, 12, 14
		6.2	The mean value Theorem	8, 15, 17, 20
10	Nov 16 - 20	6.3	L'Hospital's Rules	4.00
		6.4	Taylor's Theorem	4, 17
11	Nov 23 - 27	7.1	The Riemann Integral	8, 9, 10
12	Nov 30 - Dec 4	7.2	Riemann Integrable Functions	6, 10, 12, 15, 16
13	Dec 7 - 11	7.3	The Fundamental Theorem	2, 4, 10, 14, 16, 19(a,b), 22
14	Dec 14 - 18	3.7	Introduction to Infinite series	10, 11
		9.1	Infinite Series: Absolute convergence	2, 7, 8
15	Dec 21 - 25	9.2	Tests for Absolute Convergence	5, 6, 7d
		9.3	Tests for non-absolute convergence	1d, 4, 5, 15(a,b)

Grading Policy

HW & Quizzes	30%
Exam I	15%
Exam II	15%
Exam III	15%
Final	25%