National University of Computer & Emerging Sciences

Fall-2024

MT 1003- Calculus and Analytical Geometry

Weekly Lectures Schedule

Weeks	Contents/Topics	Exercises
Week 1	Interval, Inequality, Relation and Functions, One-One and onto function.	Appendix E (Q23-44) Appendix F (Q17-36)
Week 2	Vertical line test, Piecewise, Absolute value, Introduction to functions, Domain and Range, Symmetry, Even/odd function, Asymptote	**0.1**(1-04, 7-10, 27,28) **0.2**(5-18,27-34,53-63,66,67) **0.4**(9-16)
Week 3	Concepts of limit. Evaluation of limits. Continuity and points of discontinuity. Types of discontinuity. **Assignment 1**	**1.1** (1-16) **1.2** (1-32) **1.5** (1-6, 11-22, 29, 30, 35, 36)
Week 4	Rules and techniques of differentiation. Product and quotient rule. Derivative of trigonometric and logarithm function **Quiz 1**	**2.3** (1-24, 41-47) **2.4** (1-24) **2.5** (1-24)
Week 5	Chain rule Implicit differentiation. Indeterminate forms, L' Hospital Rule	**2.6** (7-40) **3.1** (3-18,25-28) **3.6** (7-45)
Week 6	**Sessional Exam - 1**	
Week 7	Application of derivatives, Role's and Mean Value's Theorem **Assignment 2**	**3.4** (10-20) **4.8** (1-8)
Week 8	Concavity, Increasing and Decreasing. Relative Extreme (1^{st} and 2^{nd} derivative test) Absolute Maxima and Minima	**4.1** (15-30) **4.2** (7-12, 25-36)
Week 9	Riemann sums **Quiz 2**	**5.4** (35-48)
Week 10	Techniques of integration, Basic Integration, Integration by parts Reduction formula, Trigonometric substitution	**7.1** (1-30), **7.2** (1-30, 61, 62, 63) **7.4** (1-25, 37-48)
Week 11	**Sessional Exam - II**	
Week 12	Area bounded by the curves. Volume by Disk and washer method	**6.1** (1-18) **6.2** (1-26)
Week 13	Integration of Rational function by Partial fraction, u= tan(x/2) substitution, Improper integrals. **Assignment 3**	**7.5** (9-30) **7.6** (65-70) **7.8** (3-32)
Week 14	Infinite Sequences and Series, Introduction to Sequences Infinite series, The integral test	**9.1** (1,7-30) **9.3** (1-14) **9.4** (3-24)
Week 15	Comparison tests, Absolute convergence, The ratio and root test **Quiz 3**	**9.5** (25 to 49)
Week 16	**Revision**	