King Abdul-Aziz University
Department of Mathematics

Academic year 1432/1433
2011/2012

Math 110 (S & E) Syllabus / Term (2)

		Lectures				
Chapter Title	Section	Theoretical (Definitions & Theorem)	Exam.	Exer.	HW	Due to (end of)
Ch1: Elementary Algebra	1.1 Basics of Sets	Main Sets of Numbers, kinds of intervals.		-	-	First week
	1.2 Equations and Inequalities	Linear Equations of one Variable, Second Degree Equations of one Variable, Inequalities, Absolute Value.	6 , 7, 8 Read(2-5) Delete 9	-	-	
	1.3 Lines	The Slope, equation of line. Four Kinds of Lines in the Plane.	2,3,4,5	1,6	2,3	
Ch2: Functions	2.1 Functions and Their Graphs	Definition 2.1.1, Domain and Range of a Function, Piecewise Functions, vertical line test, summary of standard curves.	3-5,12	10,22,24 , 26	1,2,3,4,5,7,9, 14,15,17, 23,25	Second week
	2.2 Identifying Functions, Mathematical Models	Linear Functions, Polynomial Functions, Power Functions, Algebraic Functions, Rational Functions, Trigonometric Functions, Exponential Functions, Logarithmic Functions, Transcendental Functions, Increasing, Decreasing Functions, Even and Odd Functions.	1,2	2-16 (even),25, 26,27	17,18,19,20,21, 22,23,24,28,29, 30	Third week
	2.3 Combing Function, Shifting and Scaling Graphs	Composite Functions, Shifting and reflecting Graphs of a Functions.	1-3,5,6	3,9,13,23	1,8,10, 11,12	

Ch2: Functions	2.4 Trigonometric Functions	Converting formula, the Six Basic Trigonometric Functions, Periodicity and Graphs of Trigonometric Functions, identities.	1,3	2,5,9,16, 17,27,31 , 33	1,2,8,12,14,1 5, 18,28,32	Fourth week
	2.5 Exponential Functions	Laws of Exponents, The Number e.	1-3	2,6,8	3,4,5,7	
	2.6 Inverse Functions, Logarithms Function and Inverse Trigonometric Functions	Inverse Functions, Logarithms Function, Natural Logarithms, Inverse Trigonometric Functions.	1,2,6 – 15 12(a) Read(3-5)	3,4,5,16, 19,20,23 ,27, 32,36,39	1,2,6-12, 15,21,22, 24,25,29,33,3 4	Fifth week
Ch3: Limits and Continuity	3.1 Limits of Real – Valued Functions	Numerical Introduction to Limit	1,3 Read(2)			Sixth week
	3.2 Calculating Limits Using the Limits Laws	The Limits Laws, Eliminating Zero Denominators Algebraically, The Sandwich Theorem.	2-4,7,8, 11-15 Read(1,5,6, 10,16,17)	10,17,34	2,4,5,6,7,12,1 3,14,16, 21,22,23,25,2 6, 27,33,35,36,3 7	
	3.3 One Side Limits and Limits at Infinity	One Side Limits, Limits of Trigonometric Functions, Limits at Infinity and Horizontal Asymptotes, Limits at Infinity of Rational Functions & Polynomials.	1,4,7,8,11,13-24 Read(2,3,5,9, 12)	26, 44,49 58	1,7,9,20,21,5 0, 51,59	Seventh Week
	3.4 Infinite Limits and Vertical Asymptotes	Infinite Limits, Vertical Asymptotes.	1-4	4,9,19, 31	1,2,20, 27	
	3.5 Continuity	Continuity at A Point, Properties of Continuous Functions.	1,3-11, 14-16,18 Read(2,13)	10,25	5,8,9,23,28	Eighth Week
Ch4: Differentiation	4.1 The Derivative as Function	Alternative Formula for the Derivative, One-Sided Derivative, The relationship between Differentiability and Continuity.	1,2,5,6	8	-	Ninth Week
	4.2 Differentiation Rules	Differentiation Rules	1-4, 7-13,15 Read(5,6,14)	14,18	4,13,19,25	
	4.4 Derivatives of Trigonometric Functions	Derivative of Sine Function, Derivative of Cosine Function, Derivative of other Basic Trigonometric Function.	1-4	19	11,13,20,33	Tenth Week

	4.5 The Chain Rule and Parametric Equations	The Chain Rule.	1-9 9 (a)	7,23,28	10,19,25	
	4.6 Implicit Differentiation	Implicit Differentiation, Derivatives of Higher Order, Derivatives of Inverse Trigonometric Functions.	2-6 Read(1)	15,16,24 , 34	9,13,17,25,27 ,29	Eleventh Week
	4.7 Derivatives of Logarithmic Functions	Derivatives of Logarithmic Functions, The Power Rule.	1-4, 5(2) ,6,8,9(1)	12	5,7,13, 20,21,24,26	
Ch5: Applications of Derivatives	5.1 Extreme Values	Extreme Values, Critical Number, Rolle's Theorem, The Mean Value Theorem.	1-5,7	10,18	2,12,20	twelfth Week
	5.2 Monotonic Function and Concavity	Monotonic Function and Concavity, First Derivative Test For Monotonic Function, Derivative Test For Local Extreme, Concave Up and Concave Down, The Second Derivative Test for Concavity.	2-4 Read(1,6)	5	2,8	Thirteenth Week
	5.3 Intermediate Forms and L'Hôpital's Rule	L'Hôpital's Rule.	1-4, 6-10 Read(5)	7,8,18	1-3,6, 9-14 17,19,27	

Delete examples:-

Chapter 2	Chapter 3	Chapter 4	Chapter 5
2.1 exp.1,2, 13.	3.1 : exp. 4,5,6,7	4.1 : exp. 3,4	5.1 : exp. 6
2.2 ---	3.2 : exp. 9,18,19	4.2 : exp. ---	
2.3 exp. 4	3.3 : exp. 6,10	4.4 : exp. ---	5.2 : exp. ---
2.4 exp. 2	3.4 : exp. ---	4.5 : exp. 10,11	
2.5 exp. 4	3.5 : exp. 12,17,19	4.6 : exp. ---	5.3 : exp. ---
2.6 exp. ---		4.7 : exp. 7	

Marks distribution :-

First Exam (120 min; 30 marks); Second Exam (120 min; 30 marks); Final Exam (120 min; 40 marks);