



King Abdul Aziz University  
Department of Mathematics

Academic year 1434/1435  
2013/2014

Math 110 (S & E) Syllabus / Term (1)

		Lectures			
Chapter Title	Section	Theoretical (Definitions & Theorem)	Exam.	Exer.	HW
	1.1 Basics of Sets	Main sets of Numbers ,Kinds of intervals	<b>Read</b> :4	-	-
Ch1: Elementary Algebra	1.2 Equations and Inequalities	Linear Equations of one Variable ,Second degree Equations of one Variable ,Inequalities, Absolute Value.	16(b),17,20(b) <b>Read</b> (1-6),10,13 ,16(a,c),18,19(a,c), 20(a,c)	-	-
	1.3 Lines	The Slope, equation of line. Four Kinds of Lines in the Plane.	1(a),2,3, 10(a), <b>Read</b> 6,9,10(b)		
	1.4 Trigonometry	Converting formula .The Six Basic Trigonometric Functions, identities.	1(1),2(3),4 <b>Read</b> 1(2-6),2(1,2,4,5,6)	2,5,9,16, 17	1,8,15, 18
Ch2: Functions	2.1 Functions and Their Graphs	Definition 2.1.1, Domain and Range of a Function, identifying functions, Piecewise Functions, vertical line test, , Definition 2.1.3 Increasing and decreasing function, summary of standard curves, Rules(1-3)	5(c,e,f),9-13 ,15(a,b),16-19 ,22, 24 <b>Read</b> 4,5(b,d),6,7,8	4,10,22,24,29- 43 (odd)	1- 5,7,9,14,15,1 7,23,25
	2.2 Combing Function; Even and Odd	Composite Functions, Even and Odd Functions, Shifting and reflecting Graphs	4-9 10(2,5,6,7) 12,13	3,13,23, 33-35,39,43,45	1,8,10-12,25- 32,36-38

	<b>Functions; Shifting and Scaling Graphs</b>	<b>of Functions.</b>	<b>Read</b> 1-3,10(1,3,4)		
	<b>2.3 Exponential Functions</b>	<b>Laws of Exponents, The Number e.</b>	1-3	2,3,6,8	3,4,5,7
<b>Ch2: Functions</b>	<b>2.4 Inverse Functions, Logarithms Function and Inverse Trigonometric Functions</b>	<b>Inverse Functions, Logarithms Function, Natural Logarithms, Inverse Trigonometric Functions.</b>	1,2,7 -9,11-13,14(a),15,17,18 <b>Read</b> (3-5),10,16	3,5,11,19,20,23,27,32,34,36,39	1,2,6-12,15,21,22,24,25,29,33,34
<b>Ch3: Limits and Continuity</b>	<b>3.1 Limits of Real – Valued Functions</b>	<b>Numerical Introduction to Limit</b>	1,3,4		
	<b>3.2 Calculating Limits Using the Limits Laws</b>	<b>The Limits Laws, Eliminating Zero Denominators Algebraically, The Sandwich Theorem.</b>	4,6,8,10(d),11,15-18,21,23-25 <b>Read</b> :2,5,12,13,14,19,20,22,26,27	10,34	2,4-7,12-14,16,21-23,25-27,33,35-37
	<b>3.3 One Side Limits and Limits at Infinity</b>	<b>One Side Limits, Limits of Trigonometric Functions, Limits at Infinity and Horizontal Asymptotes, Limits at Infinity of Rational Functions &amp; Polynomials.</b>	1,6,8-10,14-17,19-22,24-26,28,29,31,34 <b>Read</b> :2-5,7,18,23,27,30,33	21,44,49,56,58	1,7,9,20,21,50,51,59
	<b>3.4 Infinite Limits and Vertical Asymptotes</b>	<b>Infinite Limits, Vertical Asymptotes.</b>	5,9,10,12,13	4,9,19,18	1,2,20,27
	<b>3.5 Continuity</b>	<b>Continuity at A Point, Properties of Continuous Functions.</b>	1,5-8,14-16,21,22,25,29-31,33-35,37 <b>Read</b> :2-4,9-11,13,18-20,24	25	5,8,9,23,28
<b>Ch4: Differentiation</b>	<b>4.1 The Derivative as Function</b>	<b>Alternative Formula for the Derivative, One-Sided Derivative, The relationship between Differentiability and Continuity.</b>	1,4,5	8	-
	<b>4.2 Differentiation Rules</b>	<b>Differentiation Rules</b>	1,3(i-iii),6,8-13,15 <b>Read</b> :2,3(iv-viii),4,5,7,14	14,18	4,13,19,25
	<b>4.3 Derivatives of Trigonometric Functions</b>	<b>Derivative of Sine Function, Derivative of Cosine Function, Derivative of other Basic Trigonometric Function.</b>	1-4,6 <b>Read</b> : 5	-	11,13,20,33

	<b>4.4 The Chain Rule and Parametric Equations</b>	<b>The Chain Rule.</b>	<b>1-7,9-11(i)</b> <b>Read: 8</b>	<b>7,23,27</b>	<b>10,19,25</b>
	<b>4.5 Implicit Differentiation</b>	<b>Implicit Differentiation, Derivatives of Higher Order, Derivatives of Inverse Trigonometric Functions.</b>	<b>2-4(iii,iv),5,6</b> <b>Read:1,4(i,ii)</b>	<b>15,16,24,34</b>	<b>9,13,17,25,27,29</b>
	<b>4.6 Derivatives of Logarithmic Functions</b>	<b>Derivatives of Logarithmic Functions, The Power Rule.</b>	<b>2-6,8-10(sol.1)</b> <b>Read: 7</b>	<b>12</b>	<b>5,7,13,20,21,24,26</b>
<b>Ch5: Applications of Differentiation</b>	<b>5.1 Extreme Values</b>	<b>Extreme Values, Critical Number, Rolle's Theorem, The Mean Value Theorem.</b>	<b>1-3,5,7,10</b> <b>Read: 4,6,8,11</b>	<b>10,16,18</b>	<b>2,12,20</b>
	<b>5.2 Monotonic Function and Concavity</b>	<b>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.</b>	<b>2,4,5(a),6,8</b> <b>Read: 1,3,5(b),7</b>	<b>5</b>	<b>2,8</b>

**Marks distribution :-**

**First Exam (90 min; 30 marks); Second Exam (90 min; 30 marks); Final Exam (120 min; 40 marks)**