

King Fahd University of Petroleum and Minerals
Department of Mathematical Science
Semester II, 2005-2006 (052)

Math 101 - Syllabus

Title : Calculus I
Textbook : Calculus (Early Transcendentals): by J. Stewart; 5th edition, 2003
Objectives : To introduce the student to basic concepts and methods of Calculus. Topics include: Limits and continuity of functions of a single variable. Differentiability. Exponential, Logarithmic, Hyperbolic and inverse trigonometric functions. Applications: Related rates, Local linear approximation, Differentials, Curve sketching and Applied optimization problems.

Week	Date	Sec.	Topics
1	Feb 12-16*	2.1 2.2	The Tangent Problem: Example1. The Limit of a Function
2	Feb 18-22	2.3 2.4	Calculating Limits Using the Limit Laws The Precise Definition of a Limit I
3	Feb 25-Mar 01	2.4 2.5	The Precise Definition of a Limit II Continuity
4	Mar 04-08	2.6 2.7	Limits at Infinity; Horizontal Asymptotes Tangents, Velocities, and Other Rates of Change
5	Mar 11-15	2.8 2.9 3.1	Derivatives The Derivative as a Function Derivatives of Polynomials and Exponential Functions
Major Exam 1: Wednesday, March 15			
6	Mar 18-22	3.2 3.3 3.4	The Product and Quotient Rules Rate of Change in Physics: Example 1. Derivatives of Trigonometric Functions
7	Mar 25-29	3.5 3.6	The Chain Rule Implicit Differentiation I
8	Apr 03-05	3.6 3.7	Implicit Differentiation II Higher Derivatives
9	Apr 08-12	3.8 3.9	Derivatives of Logarithmic Functions Hyperbolic Functions
10	Apr 15-19	3.10 3.11	Related Rates Linear Approximations and Differentials I
Major Exam 2: Wednesday, April 19			
11	Apr 22-26	3.11 4.1	Linear Approximations and Differentials II Maximum and Minimum Values
12	Apr 29-May 03	4.2 4.3	The Mean Value Theorem How Derivatives Affect the Shape of a Graph
13	May 6-10	4.4 4.5	Indeterminate Forms and L'Hospital's Rule Summary of Curve Sketching
14	May 13-17	4.7	Optimization Problems
Major Exam 3: Wednesday, May 17			
15	May 20-24	4.9 4.10	Newton's Method Antiderivatives
16	May 27-28		Catch-up and Review
Final Exam: Tuesday, May 30 at 7:00 p.m.			

* Thursday February 16, 2006: Normal Saturday Classes.

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Math 101
Homework & Recitation Problems

Section	Homework Problems	Graded* Homework		Recitation	CAS**
		Problems	Weekly Set		
2.2	6,7,9,14,17,27,30,34,35,38	6,14,30,34,38	# 1	4,13,28,32	-
2.3	2,7,15,18,19,21,26,29,37,41,42,49,56,58	2,18,26,42,58	# 2	1,10,14,22,38,50	-
2.4	3,5,6,28,32,34,36,42,44	28,32,34	# 3	2,13,16,30,39,42	-
2.5	3,7,11,12,15,16,19,29,34,39,42,51,52,59,60	12,34,42		6,10,18,24,38,43,46,54	30
2.6	1(a),3(b)(e),4(c)(e),5,8,12,19,24,26,29,34,37,42,47,49,60	8,34,3749	# 4	4,6,18,33,46,49,53,6	-
2.7	2,6,8,15,18,19,20,24	19,24		2,10,12,25	-
2.8	3,4,8,15,18,19,22,24,26,30	18,22	# 5	1,6,17,21,28	-
2.9	2,4,8,10,13,16,20,27,45	27,45		3,11,18,30,33,43	-
3.1	1(b),23,30,36,40,41,46,47,50,56	47,50		24,33,42,45,52,55	-
3.2	5,9,10,15,17,21,26,32,36,37	10,21,32	# 6	9,20,31,35,38	-
3.4	3,10,15,18,24,25,28,30,33,41,45	24,25,41		7,13,23,26,42	-
3.5	3,9,11,18,27,31,39,40,46,49,52,55(a),58,63(a)	27,40,49,58	# 7	14,38,42,45,54,63(d)	74
3.6	1,11,14,19,20,22,24,25,42,46,55	14,20,46,55	# 8	10,15,21,28,59	-
3.7	2,8,15,26,32,33,36,40,44,54,60	40,54		3,31,37,38,47,61	-
3.8	3,4,6,8,17,22,25,30,31,37,41,48,50	25,31,37,48	# 9	12,19,24,28,32,46,49	-
3.9	3,4,14,17,20,23,29(d),34,37,43,51,53	37,51		6,19,29(b),46,49,52	-
3.10	4,5,8,9,12,18,21,25,37,38	4,8,18,21,37	# 10	1,6,11,15,33	-
3.11	6,8,17,26,28,35,38,43,45,49	35,43,49	# 11	7,23,36,42,50	40
4.1	4,8,10,25,30,42,44,50,58,69	44,58,69		14,38,40,48,70,76	-
4.2	4,6,12,14,18,24,26,28	24,26,28	# 12	2,5,16,20,27,29	-
4.3	1,6,8,16,18,20,44,46,74	20,44,46		11,36,50,64	58
4.4	2,4,14,22,24,19,48,58,68	48,58,68	# 13	3,13,21,30,42,50	-
4.5	19,26,30,34,37,47,50,52,64,69	52,64,69		22,36,65,68	-
4.7	6,10,12,27,33,35,44,52,55,56	33,35,44,52	# 14	22,46,57,61(a)	-
4.9	13,18,19,31,35,38			6,16,37	-
4.10	14,38,42,46,48			40,45,,62	-

* Please do **all** the homework assignments on time, **but turn in only the graded problems**.

** CAS problems require the use of a technology tool (e.g., graphing calculators or computers). You are encouraged to do these problems in order to enhance your understanding of the concepts involved.

Tips on how to enhance your problem-solving abilities:

1. You are urged to practice (but not memorize) more problems than the above lists.
2. You should always try to solve a problem on your own before reading the solution or asking for help.
3. If you find it difficult to handle a certain type of problems, you should try more problems of that type.
4. You should try the recitation problems before coming to class.
5. You are encouraged to solve some of the review problems at the end of each chapter.
6. The practice you get doing homework and reviewing the class lectures and recitations will make exam problems easier to tackle.