

Text: *Calculus, Early Transcendentals, Fifth Edition* by James Stewart, Brooks/Cole Publishing Co. (You need the complete version of the text if you plan to take Math 13; the single variables version is fine for people who will not take Math 13.)

Course outline: Math 12 covers topics that are important in mathematics, science and engineering. You first learn how to integrate complicated expressions. You learn all about series, what they are, when they converge, and how to express functions using Taylor series. You will learn how to solve elementary differential equations and graph parametric and polar curves. Finally you learn about the imaginary numbers and how you can relate the exponential, sine and cosine functions (Euler's Formula). Along the way, you will become a better mathematician and learn some excellent mathematics.

Examination Dates:

Midterm exams: Monday, February 14, Monday, March 7, and Monday, April 4, 12:00 – 1:20 p.m.

Final exam: Friday, May 6, 8:30 – 10:30 a.m.

Other Important Dates:

Thursday, February 3: Last day to add classes.

Thursday, February 17: Last day to request to take a course pass/fail. Last day for sophomores, juniors, or seniors to withdraw from course without a W.

Thursday, April 7: Last day for first-year students to withdraw from course without a W.

Monday, May 2: Last day to withdraw from course (with a W).

Prior to February 4, all add-drop forms must be signed by Jonathan Bihari and the advisor. Professor Bihari is in BP 208 and his extension is 7-2354. On or after February 4, all add-drop forms must be signed by the instructor and the advisor. The forms must be turned in to Dowling Hall by the dates specified above.

Prerequisites: Math 11, or equivalent.

Homework: Homework is assigned for each lesson. Its purpose is to give you practice in actively working with the material. This is the only way most people can learn mathematics. Starting with assignment 3, homework will be collected and graded. The grader will award one point to an assignment if:

1. Every exercise is honestly attempted, and
2. At least 80% of the exercises are solved correctly. (Answers alone are not adequate. You must show your work.)

You are encouraged to collaborate with your friends and consult your instructor when doing homework. You should check your answers using the back of the book and the solutions manual, which will be available on reserve at Tisch Library. But the final solution that you give to the grader should be written in your own words after you understand how to solve the problem.

If you have n homework points at the end of the semester and $n > 24$, then $(n - 24)/5$ points will be added to your course grade (see below). Homework is due in the class following the date listed on the syllabus. Note that the graders will not have the time to read your solutions as carefully as we will read your exams; this means that we may be more demanding on exams.

Exams: No calculators, books, notes, or any other form of external help may be used in exams. Once the exam is handed in, it may not be modified. You are required to sign your exam book indicating that you have neither given nor received assistance. Students found violating this pledge will receive an F in the course and be reported to the Dean of Students. Questions about the grading of a midterm exam must be written on the cover of the exam book and returned to the instructor during the class in which you get the exam back. There will be no make-ups for the three in-term exams. If you miss one, that will be the one crossed off in determining the final grade (see below).

Grading: All exam grades will be written down with the final grade appearing twice. The lowest grade will be crossed out and the other four averaged. Let n be the number of homework points you have earned for this semester. If $n > 24$, the course grade will be increased by $(n - 24)/5$ points. An A+ is awarded if the score before rounding is at least 98.0. If the unrounded score is less than 98.0, round the score to the nearest integer, and compute the final grade as follows: at least 93=A, 90-92=A-, 87-89=B+, 83-86=B, 80-82=B-, 77-79=C+, 73-76=C, 70-72=C-, 67-69=D+, 63-66=D, 60-62=D-, below 60 = F.

Math 12 Syllabus Spring 2005

No.	Date	Topic	Section	Assignment
1.	1/20	Integration by parts	7.1	480/ 1,2,4,5,7,9,10,13,16,41
2.	1/21	Trigonometric Integrals	7.2	488/ 1,2,4,7,8,14,15,17,25,26,29,31,33,36
3.	1/25	Trigonometric Substitution	7.3	494/ 2,4,7,11,15,20,23
4.	1/27	Tangent and Sec. Subs.	7.3	494/ 1,3,5,6,9,22,24,27
5.	1/28	Partial Fractions	7.4	504/ 2a,3a,8,9,15,16,17,35
6.	2/1	More Partial Fractions	7.4	504/ 4,5,21,25,31,36,38
7.	2/3	Strategy for Integration	7.5	510/ 3,5,7,11,12,15,17,22,37,42,48,61
8.	2/4	Improper Integrals	7.8	537/ 5,6,7,9,13,18,21,22
9.	2/8	Improper Integrals	7.8	537/ 27,28,30,31,34,35,49,53
10.	2/10	Sequences	11.1	710/ 4,5,8,9,11,13,17,19,21,29,30,31
11.	2/11		REVIEW	Covers lectures 1-9

EXAM 1: Monday, February 14, 12:00-1:20

12.	2/15	Sequences and Series	11.1,2	710/ 49,54,57,58,59; 720/ 11,13,15,17
13.	2/17	Series	11.2	720/ 21,23,25,27,29,31,37,41,57
14.	2/18	The Integral Test	11.3	729/ 3,4,5,7,9,10,11,15,19,21
15.	2/22	Comparison Tests	11.4	734/ 3,5,7,11,13,15,23,25,27
16.	2/25	Alternating Series	11.5	739/ 3,4,5,7,9,11,14,23,24
17.	3/1	Absolute Convergence	11.6	745/ 3,4,5,7,9,10,11,12,15,25
18.	3/3	Strategy for Testing Series	11.7	748/ 1,2,3,5,7,8,10,16,17,19,29
19.	3/4		REVIEW	Covers lectures 10-18

EXAM 2: Monday March 7, 12:00-1:20

20.	3/8	Power Series	11.8	753/ 3,5,7,9,11,13,21,23
21.	3/10	Power Series of Functions	11.9	759/ 3,5,9,13,14,18
22.	3/11	Power Series of Functions	11.9	759/ 25,27,28,32,38ab
23.	3/15	Taylor and Maclaurin Series	11.10	770/ 3,4,5,6,12,13,15,18
24.	3/17	Taylor and Maclaurin Series	11.10	770/ 19,23,24,27,37,39,43,56
25.	3/18	Taylor Polynomials	11.12	783/ 3*,4*,13ab,15ab,18ab *=-without graph
26.	3/29	Taylor Polynomials	11.12	783/ 5*, 23,25,27* *=-without graph
27.	3/31	Summary	11.8-11.12	787/ 40,42,43,47,49,50,52,57ac,59
28.	4/1		REVIEW	Covers lectures 20-27

EXAM 3: Monday, April 4, 12:00-1:20

29.	4/5	Areas between curves	6.1	442/ 2,3,4,6,8,12,16,17,20,21,24,30,41,45
30.	4/7	Volumes by Shells	6.3	458/ 3,5,6,15,20,29,39; 481/57
31.	4/8	Differential Equations	9.1, 3	591/ 2,3; 607/ 1,3,7,11,13,37
32.	4/12	Exponential Growth/Decay	9.4	620/ 1,3,5,7,8,11,13
33.	4/14	Series Solns. to ODE	17.4	1167/ 1,3,6,9
34.	4/15	Parametric Curves	10.1	656/ 10,11,15,22,24ab,25,27
35.	4/19	Arc Length, Polar Coordinates	10.2,3	667/ 37,38,41,44; 677/ 1,3,5,7,11,17,18,22
36.	4/21	Polar Coordinates	10.3	678/ 32,33,34,35,37,38,42,44
37.	4/22	Areas in Polar Coordinates	10.4	683/ 5,6,8,10,17,24,29,35
38.	4/26	Complex Numbers	App. G	A56/ 1,3,5,7,8,12,15,16,21
39.	4/28	Complex Numbers	App. G	A56/ 19,20,25,31,33,35,37,39,41,45
40.	4/29		REVIEW	Focuses on lectures 29-39 + prior material

FINAL EXAM: Friday, May 6, 8:30-10:30 a.m. (Final Covers Entire Course)