

MATH 1271
Calculus I
Fall 2014

Lecture 020: MWF 10:10 – 11:00, MCB 3-120

Lecturer: Bryan Mosher

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Website: <http://www.math.umn.edu/~mosher/math1271>

The Moodle site for the course is linked at the site above.

Discussion TAs and TA offices:

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TAs will hold office hours at complementary times, to be announced, and are available to all students of MATH 1271 LEC 020.

Required text: Stewart, *Calculus: Early Transcendentals*, volume 1, custom 7th edition. The core material of the course is contained in sections 2.1 – 2.8; 3.1 – 3.6, 3.9, 3.10; 4.1 – 4.5, 4.7 – 4.9; 5.1 – 5.5; 6.1 – 6.3, 6.5. It is important to read the textbook sections in advance in order to make the most of lecture and discussion time, but it is even more important to work as many exercises as possible. Calculus is not a spectator sport! Suggested exercises are listed at the end of this document.

Grading:

15% Eleven weekly quizzes, in discussion on Thursdays that are not exam days. No make-ups, highest eight scores count.

45% Three 50-minute exams, in discussion:

Thursday 2 October, Thursday 6 November, Thursday 4 December

40% Final exam: **Friday 12 December, 1:30 – 4:30 p.m.**, locations TBA

The final grade distribution for each discussion in all lectures of MATH 1271 will be determined by its students' performance on the common final exam. An individual student's final grade within that distribution depends on all of the work of the course, including the work graded individually by that discussion's TA.

By University policy, a grade of A represents achievement that is outstanding relative to the level necessary to meet course requirements. A grade of B represents achievement that is significantly above the level necessary to meet course

requirements. A grade of C represents achievement that meets the course requirements in every respect. A grade of D represents achievement that is worthy of credit even though it fails to meet fully the course requirements.

Earning 90%, 80%, and 70% of the total points will result in final grades in the A, B, and C ranges, respectively, though the boundaries between grades may be relaxed at the lecturer's discretion.

Calculator policy: Only scientific calculators are allowed on quizzes, exams, and the final exam. Scientific calculators are inexpensive, have one-line displays and cannot display graphs of functions, perform symbolic manipulations, or store text in memory. If you are unsure whether your calculator is allowed, check with the lecturer or with your TA before the day of the quiz or exam. Cellphones and internet-connected devices are not allowed on quizzes, exams, and the final exam.

Student Learning Outcomes: A student in MATH 1271, as in any mathematics course, will develop the following skills, identified in the University's Student Learning Outcomes:

- identify, define, and solve problems
- locate and critically evaluate information
- master a body of knowledge and mode of inquiry
- communicate effectively

Goals for the course: Specifically, students will develop these skills in the context of differential and integral calculus, applying the techniques of calculus to investigate *how quantities change*. These quantities are modeled by functions, including polynomial, rational, exponential, logarithmic, and trigonometric functions. Calculus is a towering achievement of human thought, worthy of study in its own right, but it is also the essential language of technical applications, including economics, physics, biology, psychology... any pursuit in which changing quantities are analyzed.

Liberal education: This course fulfills the Mathematical Thinking component of the Liberal Education requirements at the University of Minnesota. An important part of any liberal education is learning to use abstract thinking and symbolic language to solve practical problems. Calculus is one of the pillars of modern mathematical thought, and has diverse applications essential to our complex world. In this course, students will be exposed to theoretical concepts at the heart of calculus and to numerous examples of real-world applications.

Prerequisites: Mastery of pre-calculus topics, such as trigonometry, algebra, analytic geometry, and functions, is essential preparation for this course. One can demonstrate this mastery via (i) four years of high school mathematics, including trigonometry, (ii) a grade of C- or better in MATH 1151 or 1155 or their equivalent, or (iii) sufficient score on the calculus readiness placement test. Especially

important is comfort with trigonometry in the language of the unit circle; check this in the first week of the course!

Tutoring resources: Aside from the lecturer's and TAs' office hours, students might take advantage of tutoring that is offered through Smart Learning Commons and the Multicultural Center for Academic Excellence. The Undergraduate Office in the School of Mathematics maintains a list of private tutors available for hire.

Academic dishonesty: See the Student Conduct Code, a link to which is posted on the course website, for general information. Academic dishonesty, including use of an unapproved electronic device, will result in a report to the Office for Student Conduct and Academic Integrity, and penalties can include a grade of zero on the task in question and/or a failing grade in the course.

Other policies: A link to other general policy statements – including statements about equal opportunity, disability accommodations, and mental health resources – appears on the course website above.

If you have a letter detailing accommodations, notify the lecturer and your TA as soon as possible.

Tentative lecture schedule

Monday	Wednesday	Friday
	9/3 2.1	9/5 2.2
9/8 2.3	9/10 2.4	9/12 2.5
9/15 2.6	9/17 2.7	9/19 2.8
9/22 3.1	9/24 3.2	9/26 3.3
9/29 3.4	10/1 Review Exam 1	10/3 3.5
10/6 3.6	10/8 3.9	10/10 3.10
10/13 4.1	10/15 4.2	10/17 4.3
10/20 4.4	10/22 4.5	10/24 4.7
10/27 4.8	10/29 4.9	10/31 5.1
11/3 5.1	11/5 Review Exam 2	11/7 5.2
11/10 5.2	11/12 5.3	11/14 5.3
11/17 5.4	11/19 5.4	11/21 5.5
11/24 5.5	11/26 6.1	11/28 no class
12/1 6.2	12/3 Review Exam 3	12/5 6.3
12/8 6.5	12/10 Review Final	(12/12 FINAL EXAM)

Suggested exercises

Homework will not be collected and will not be graded, but quiz and exam problems will be similar to the following suggested **odd-numbered exercises**. Working many exercises is essential for success in the course.

- 2.1 1-9
- 2.2 5-9, 15, 17, 29-37
- 2.3 11-31, 37-45
- 2.4 1-5
- 2.5 5, 7, 41-55
- 2.6 5-9, 13-37, 41-45
- 2.7 5-39, 43-51
- 2.8 3, 13, 15, 21-31, 35

- 3.1 3-35, 43, 47-65
- 3.2 3-33, 41-53
- 3.3 1-23, 29-33, 39-53
- 3.4 7-53, 59-81
- 3.5 5-31, 35-39, 43-59
- 3.6 3-33, 39-51
- 3.9 3-45
- 3.10 11-31

- 4.1 29-43, 47-61
- 4.2 1-11, 15-27
- 4.3 9-21, 33-51
- 4.4 7-65
- 4.5 1-53
- 4.7 3-35
- 4.8 7, 11-21
- 4.9 1-21, 25-47

- 5.1 1-7, 13-21
- 5.2 5-11, 17-25, 33-39
- 5.3 7-43, 55-59
- 5.4 5-17, 21-45, 51-63
- 5.5 1-47, 53-73, 81

- 6.1 5-31
- 6.2 1-17, 31, 33, 47-53
- 6.3 3-19, 37-43
- 6.5 1-7, 13-21