

Mathematics 112

Winter Semester 2013

Section 01: MWF from 10:00-10:50 am in 3108 JKB
TTh from 8:00-8:50 am in 136 TMCB

Section 03: MWF from 10:00-10:50 am in 3108 JKB
TTh from 10:00-10:50 am in 136 TMCB

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TA Information

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Hours:

Texts & Materials

Required

SINGLE VARIABLE CALCULUS EARLY TRANS 7E VOL 1
By Stewart, J
ISBN: 9781133529552

Description

Calculus is the foundation for most of the mathematics studied at the university level. The mastery of calculus requires well-developed skills, clear conceptual understanding, and the ability to model phenomena in a variety of settings. Math 112, Calculus 1, develops the concepts of limit, derivative, and integral, and is fundamental for many fields of mathematics, science, and engineering.

Prerequisites

Students are expected to know the material in Math 110 and 111 or the equivalent. This includes College Algebra and Trigonometry, but could also be satisfied with a good course in Precalculus. Students will also be required to take a pretest in order to exhibit competency in these areas.

Pretest

Successful completion of Math 112 requires a solid background in both College Algebra and Trigonometry. Students are required to take a pretest on these topics. Review for the pretest by working through the **Diagnostic Tests** at the front of your textbook. If you have difficulty with any of these tests, the textbook lists additional resources you may want to study.

The pretest can be taken up to **three** times in the BYU Testing Center. You may take the pretest during regular Testing Center hours without paying a fee from **Monday, January 14 through Wednesday, January 16**. You may also pay a fee to the Testing Center and take the exam on the late day, during regular Testing Center hours on **Thursday, January 17**. No pretests will be given after January 17.

If your score is below 75% then you do not have the necessary skills to succeed in Calculus. Talk to your instructor about your options, and what you can do to better prepare yourself.

Preparation time

Adequately prepared students should expect to spend a minimum of three hours of work for each credit hour. This adds up to a minimum of 12 hours per week for math 112. A minimal time commitment is likely to lead to an average grade B-/C+ or lower. Much more time may be required to achieve excellence.

Learning Outcomes

Differential and integral calculus

This course is designed for students majoring in the mathematical and physical sciences, engineering, or mathematics education and for students minoring in mathematics or mathematics education. Calculus is the foundation for most of the mathematics studied at the university level. The mastery of calculus requires well-developed skills, clear conceptual understanding, and the ability to model phenomena in a variety of settings. Calculus 1 develops the concepts of limit, derivative, and integral, and is fundamental for many fields of mathematics. This course contributes to all the expected learning outcomes of the Mathematics BS. For more detailed information, visit the Math 112 Wiki page.

Limits

Students will be able to work with limits. In particular, they will:

- compute limits of functions described algebraically and graphically, including recognizing when and how a limit doesn't exist,
- determine when a function is continuous or fails to be continuous, and use tools such as the Intermediate Value Theorem to obtain information on continuous functions,
- write the definition of a derivative or integral as a limit, and use the limit to compute the derivative or integral.

Differentiation and Integration

Students will be able to find derivatives and integrals fluently. In particular, they will:

- know and apply differentiation rules to compute derivatives, and explain interpretations of the derivative as slope and rate of change,
- use geometry, the fundamental theorem of calculus, and u-substitution to compute integrals.

Applications

Students will be able to use derivatives and integrals to solve common problems, including:

- optimization, related rates, root finding, approximation, and curve sketching for derivatives,
- net change and area problems for integrals.

Homework Assignments

Assignments will be due on Mondays, Wednesdays, and Fridays. Late homework will not be accepted. The lowest **three** homework scores will not be figured into your final grade. This accommodates for minor illnesses or other disruptions to your regular schedule that might prevent you from turning an assignment in on time. Each assignment consists of two parts, online and written, which will be turned in separately.

Online homework can be found at <http://online.byu.edu>. Login with your net ID and password, and select your class. The first time you log in, you will need an enrollment key, which is your instructor's last name, in all lowercase letters. Homework assignments are listed, click on one to begin. Submit your answers anytime before the assignments close. Assignments typically close at 5:00 am on Monday, Wednesday, and Friday (the deadlines are listed in the right-hand column under "Upcoming Events"). If you get a problem wrong, you may resubmit repeatedly until you get the correct answer, until the online assignment closes.

Written assignments will generally be collected in class on Mondays, Wednesdays, and Fridays (two days after the class in which it is assigned). Solutions should be clearly labeled and in order. The style of your written solutions should be very much like that of a text book example; solutions should contain enough explanation so that one of your classmates would be able to easily understand what you have done. Generally, it is inadequate to merely write down a final answer.

You are strongly encouraged to study together and work together on homework assignments. However, you each must submit your own assignment. Everything you turn in should be in your own words, and you should thoroughly understand everything you write down or submit to the computer.

Grading Policies

Your final grade will be determined as follows:

Pretest: 5%

Homework, quizzes: 30%

3 Midterm Exams: 45%

Final exam: 20%

Common final exam

A common final exam is given to all students in all sections of Math 112. This allows the Mathematics Department to fairly assess students' knowledge of calculus and to assign grades fairly. The percentile ranking of each student relative to all students in all sections will be computed based on the final exam scores. Using this information the Calculus Committee will compute an average grade for each section. It is department policy that the average grade for each section should match its average grade on the common final exam. No calculators, books, or notes will be permitted during the final exam. The final exam will be given on **Friday, April 19 from 3:00 to 6:00 pm**. The room assignment for your section will not be given until later in the semester. It will likely not be your assigned classroom.

BYU Honor Code

In keeping with the principles of the BYU Honor Code, students are expected to be honest in all of their academic work. Academic honesty means, most fundamentally, that any work you present as your own must in fact be your own work and not that of another. Violations of this principle may result in a failing grade in the course and additional disciplinary action by the university. Students are also expected to adhere to the Dress and Grooming Standards. Adherence demonstrates respect for yourself and others and ensures an effective learning and working environment. It is the university's expectation, and my own expectation in class, that each student will abide by all Honor Code standards. Please call the Honor Code Office at 422-2847 if you have questions about those standards.

Preventing Sexual Discrimination and Harassment

Title IX of the Education Amendments of 1972 prohibits sex discrimination against any participant in an educational program or activity that receives federal funds. The act is intended to eliminate sex discrimination in education. Title IX covers discrimination in programs, admissions, activities, and student-to-student sexual harassment. BYU's policy against sexual harassment extends not only to employees of the university, but to students as well. If you encounter unlawful sexual harassment or gender-based discrimination, please talk to your professor; contact the Equal Employment Office at 422-5895 or 367-5689 (24-hours); or contact the Honor Code Office at 422-2847.

Students with Disabilities

Brigham Young University is committed to providing a working and learning atmosphere that reasonably accommodates qualified persons with disabilities. If you have any disability which may impair your ability to complete this course successfully, please contact the Services for Students with Disabilities Office (422-2767). Reasonable academic accommodations are reviewed for all students who have qualified, documented disabilities. Services are coordinated with the student and instructor by the SSD Office. If you need assistance or if you feel you have been unlawfully discriminated against on the basis of disability, you may seek resolution through established grievance policy and procedures by contacting the Equal Employment Office at 422-5895, D-285 ASB.