Math 10a: Techniques of differential calculus

Summer 2019: Session 1

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Prerequisites: A solid grasp of Precalculus mathematics. You should have some basic knowledge of sets, functions, polynomials, trigonometry, exponentials and logarithms. For example, we will work with expressions of the form:

$$
\ln(3\sin(t)) \quad \sec\left(\frac{\ln(x+2)}{x+2}\right) \quad a^{-2}\log_a 2
$$

$$
\ln\left(\frac{1}{\sqrt{e}}\right) \quad e^{2x} - 5e^x + 6 \quad \ln(x^2 - 1) - \ln(x + 1)
$$

Syllabus: We will cover most of the topics from chapter 2, 3 and 4 of the book. Specifically, we will learn:

- The concept of limits and methods for computation.
- Continuity of functions
- The concept of a derivative, its interpretation as slopes or instantaneous rate of change
- Computing derivatives for naturally occurring functions
- Using derivatives to sketch graphs of functions
- Using derivatives in optimization problems
- Basics of anti-derivatives, differential equations and integration (time permitting)

Grades: Your grade in the course will be based on the following:

1. **Homework (20% of your grade)**
   - Homeworks will be collected about twice every week.
   - No late homeworks will be accepted, but your lowest three scores will be dropped.
   - You are encouraged to discuss the homework with your classmates however you should write it down independently.

2. **Quizzes (20% of your grade)**
   - We will have about five quizzes in the course. Your lowest quiz score will be dropped.

3. **Midterm and final exam (each 30% of your grade)**

LATTE: Important dates, homework, etc. will be posted regularly on LATTE. Please check in periodically.
**Calculators:** You should have access to a scientific calculator for purpose of the homeworks (an online one is ok). Use of calculators will **not** be allowed on exams and quizzes.

**Four-Credit Course:** Success in this four credit hour course is based on the expectation that students will spend a minimum of 9 hours of study time per week in preparation for class (homeworks, readings, exam or quiz preparation, etc.).

**Students with disabilities:** Brandeis seeks to welcome and include all students. If you are a student who needs accommodations as outlined in an accommodations letter, please talk with me and present your letter of accommodation as soon as you can. I want to support you.

In order to provide test accommodations, I need the letter more than 48 hours in advance. I want to provide your accommodations, but cannot do so retroactively. If you have questions about documenting a disability or requesting accommodations, please contact Student Accessibility Support (SAS) at 781.736.3470 or access@brandeis.edu.

**Academic integrity:** You are expected to follow the University’s policy on academic integrity which is distributed annually as Section 4 of the Rights and Responsibilities Handbook (see http://www.brandeis.edu/studentaffairs/srcs/rr/index.html). Instances of alleged dishonesty will be forwarded to the Department of Student Development and Conduct for possible referral to the Student Judicial System. Potential sanctions include failure in the course and suspension from the University. If you have any questions about how these policies apply to your conduct in this course, please ask.