Math 31B: Integration and Infinite Series

https://pabloocal.github.io/Teaching/FMATH31B2021/

Fall 2021

Instructor

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Lectures: MWF 8:00-8:50 am

Office hours:
M: 9:00 to 10:30 am
and by appointment.
Classroom: HAINES 39

Teaching Assistants

Name: Gurkiran Dhaliwal
Discussion 1A: T 8:00-8:50 am
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Discussion 1C: T 8:00-8:50 am
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Classroom: BOELTER 2444

Prerequisites

- You are expected to be familiar with polynomials, trigonometric functions, exponential and logarithm functions, including manipulating them and knowing their graphs.
- You are expected to be familiar with the materials in Math 31A, inlcuding the definition and computation of limits, the definition and computation of derivatives (using the product rule, the quotient rule, and the chain rule), the definition and computation of integrals (using the fundamental theorem of calculus and changes of variable), and the summation notation.

Textbook

Single Variable Calculus (2nd edition) by Jonathan D. Rogawski.

Grading

Your final grade in this class will be computed as the maximum of the following:

Grade 1:	**Grade 2:**	**Grade 3:**
Homework 15%	Homework 15%	Homework 15%
Midterm 1 25%	Max. Midterm 35%	Final 85%
Midterm 2 25%	Final 50%	
Final 35%		

Homework

Homework will be assigned and collected every week in class. It will be assigned on Tuesdays and it will be due the following week on Wednesday. It will be graded and promptly returned to you in your discussion sections. The assignments will be posted on the course website and announced in class. Your score on each homework assignment will be based on a few randomly chosen problems, graded for correctness. The lowest homework score will be dropped. **Late homework will not be accepted**.

Exams

During the exams, you may not use notes, calculators, cell phones, or anything other than pen and pencil. There will be no make-ups for missed midterms. If you miss one midterm for a legitimate, documented reason, your grade will be computed using the second scheme above. You must take the final exam in order to pass the class. Make-ups for the final exam are permitted only under exceptional circumstances, as outlined in the UCLA student handbook. Please bring a photo ID to every exam. The exams are scheduled for the following dates:

- Midterm 1: Monday, October 25.
- Midterm 2: Monday, November 15.
- Final: Wednesday, December 8.

Schedule

- **Sep 24:** Section 7.4, Introduction.
- **Sep 27:** Section 7.1, Derivative of the Exponential Function.

- **Sep 29:** Section 7.2, Inverse Functions.
- **Oct 1:** Section 7.3, Logarithms and their Derivatives.
- **Oct 4:** Section 7.3, Logarithms and their Derivatives (continued).
- **Oct 6:** Section 7.7, L'Hopital's Rule.
- **Oct 8:** Section 7.8, 7.9, Inverse Trigonometric and Hyperbolic Functions.
- **Oct 11:** Section 8.1, Integration by Parts.
- **Oct 13:** Section 8.1, Integration by Parts (continued).
- **Oct 15 :** Section 8.5, The Method of Partial Fractions.
- **Oct 18:** Section 9.1, Arc Length and Surface Area.
- **Oct 20:** Section 9.4, Taylor Polynomials.
- **Oct 22:** Sections 7.1-7.3, 7.7-7.9, 8.1, 8.5, Review.
- **Oct 25:** Sections 7.1-7.3, 7.7-7.9, 8.1, 8.5, Midterm 1.
- **Oct 27:** Section 8.6, Improper Integrals.
- **Oct 29:** Section 8.6, Improper Integrals (continued).
- **Nov 1:** Section 11.1, Sequences.
- **Nov 3:** Section 11.1, Sequences (continued).
- **Nov 5:** Section 11.2, Summing an Infinite Series.
- **Nov 8:** Section 11.3, Convergence of Series with Positive Terms.
- **Nov 10:** Section 11.3, Convergence of Series with Positive Terms (continued).
- **Nov 12:** Sections 8.7, 8.9, 9.1, 9.4, 11.1, Review.
- **Nov 15:** Sections 8.7, 8.9, 9.1, 9.4, 11.1, Midterm 2.
- **Nov 17:** Section 11.4, Absolute and Conditional Convergence.
- **Nov 19:** Section 11.5, The Ratio and Root Tests.
- **Nov 22:** Section 11.6, Power Series.
- **Nov 24:** Section 11.6, Power Series (continued).
- **Nov 29:** Section 11.7, Taylor Series.
- **Dec 1:** Sections 7.1-7.3, 7.7-7.9, 8.1, 8.5, 8.7, 8.9, 9.1, 9.4, 11.1-11.7, Review.
- **Dec 3:** Sections 7.1-7.3, 7.7-7.9, 8.1, 8.5, 8.7, 8.9, 9.1, 9.4, 11.1-11.7, Review.
- **Dec 8:** Sections 7.1-7.3, 7.7-7.9, 8.1, 8.5, 8.7, 8.9, 9.1, 9.4, 11.1-11.7, Final Exam.

Accommodations

If you have a condition that requires accommodation, please contact the Center for Accessible Education (`https://www.cae.ucla.edu`) as soon as possible. hey will determine with you what accommodations are appropriate and communicate them to the instructor. This service is confidential. **If you require accommodation, you will take the exams at the CAE's facilities. It is your responsibility to make sure you have been added to the CAE schedule and that they are expecting you. It is your responsibility to make sure CAE contacts me in time to provide the exams.**

Honor Code

UCLA's Honor Code governs all work in this class. All work submitted for credit must be the student's own and should reflect the student's own understanding of the material.

COVID-19 Policy

The most updated information is available at `https://covid-19.ucla.edu/`.

- Each of us is responsible, regardless of vaccination status, for wearing an approved mask that fully covers our nose and mouth for the duration of class, office hours, or other course-related activity. Disposable masks are available at the Wooden Center for anyone unable to obtain a mask or who has forgotten to bring one to campus. Appropriate masks include two-ply woven fabric masks, surgical masks, non-woven KN95 masks, and N95 respirators. Scarves, balaclavas and ski masks, single-layer fabric masks and neck gaiters, bandanas, and turtleneck collars are not adequate. For those that have a medical reason not to wear a mask, you can contact the Center for Accessible Education to have this exception approved and sent to me.
- Each of us must be fully vaccinated by September 9. Per the COVID-19 Response and Recovery Task Force, unvaccinated students must comply with twice-weekly testing.
- Each of us is required to complete daily symptom checks, regardless of vaccination status.

Please stay home if sick or potentially exposed. Be assured that you will not be penalized for doing so. Be advised that refusal to comply with current campus directives related to COVID-19 mitigation will result in dismissal from the classroom and referral to the Office of Student Conduct. If you have any questions or concerns about UCLA's COVID-19 protocol, go to `https://covid-19.ucla.edu/information-for-students/`.