Math 1A – 11Y – Calculus I - Winter 2025

Class Modality:

This class meets in-person on **Monday, Tuesday, Wednesday, Thursday** in Room **MLC 260**. We also have one asynchronous hour per week.

Course Description:

This course covers the fundamentals of differential calculus. Specifically, the course includes the basic concepts of analytic geometry, limits, derivatives, and their applications. The topics covered will include graphs and derivatives of algebraic, trigonometric, exponential, logarithmic, and hyperbolic functions. Applications, such as, motion, differentials, related rates, graphing, and optimization, will be covered. There will be a greater focus on mathematical rigor than is often present in precalculus courses, with extra emphasis on definitions, precise notation and logic.

Student Learning Outcomes:

Upon successful completion of the course, students will be able to:

- Analyze and synthesize the concepts of limits, continuity, and differentiation from a graphical, numerical, analytical and verbal approach, using correct notation and mathematical precision
- Evaluate the behavior of graphs in the context of limits, continuity and differentiability
- Recognize, diagnose, and decide on the appropriate method for solving applied real world problems in optimization, related rates and numerical approximation

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Course Content:

- Introduction to limits, definition of limits, theorems on limits, one-sided limits, computation of limits using numerical, graphical, and algebraic approaches, delta-epsilon definition of limit

- Continuity and differentiability of functions, determining if a function is continuous and differentiable at a real number
- Limits involving infinity and asymptotes
- Introduction to derivatives, and the limit definition of the derivative at a real number and as a function
- Use of differentiation theorems, derivatives of algebraic, trigonometric, inverse trigonometric, exponential, logarithmic, and hyperbolic functions, the chain rule, implicit differentiation, differentiation of inverse functions, higher order derivatives
- Use of derivatives for applications including equation of tangent lines, related rates, differentials, and Newton's Method
- Local/relative and global/absolute extrema of functions
- Rolle's theorem and the Mean Value Theorem
- The first derivative test, the second derivative test and concavity
- Graphing functions using first and second derivatives, concavity, and asymptotes

- Applications of extrema including optimization
- Indeterminate forms, and L'Hopital's Rule
- Antiderivatives

Interaction Expectations:

What you can expect of me:

- I will provide direct instruction aligned with this class' learning objectives either during lecture or through videos recorded by me.
- I will respond to your emails, Canvas messages and MyOpenMath messages within 24 hours.
- I will grade and provide feedback on your submitted coursework within 1 week.
- I will post announcements every Thursday, outlining the activity for our 1 weekly TBA hour.
- I will be available during office hours to address your questions and concerns.

What I expect of you:

- I expect you to attend every lecture and be an active participant.
- I expect you to complete each weekly TBA hour activity within 2 days of its posting Thursday afternoon.
- I expect you to aim to meet all due dates.
- I expect that you maintain an open line of communication with me and seek support as needed, contacting me with any questions about content, specific assignments and other issues. You can email me at bambhaniadoli@fhda.edu, send me a Canvas message, or send me a question about online HW using MyOpenMath message.
- I expect that you treat others with dignity and respect, and remain open to collaboration with peers.
- I expect that you give yourself grace. This is a difficult class and making mistakes, reviewing prerequisite materials as needed, are all a part of learning and growing.

Protecting self and others from respiratory viruses:

Since this is an in-person class, should you become sick with a respiratory virus, please familiarize yourself with and follow the guidelines and protocols for De Anza College.

- You can find information and guidelines here: https://www.deanza.edu/covid/protocols.
- Please wear a mask to protect others if you're getting sick or recovering from Covid, the flu or another respiratory virus.
- Don't hesitate to put on a mask (there should be some in the classroom) for your safety at any time.

Textbook and Calculator:

Great news! Your textbook for this class is available for **free** online!
Calculus, Volume 1 from OpenStax, ISBN 1-947172-13-1

You can view online or download the book from the site. You can use whichever formats you want. Web view is recommended -- the responsive design works seamlessly on any device.

You are not required to have any special calculator in this class. While doing your homework and problem sets, you're welcome to use any online (such as Desmos) or handheld calculator. During quizzes and exams, no calculators will be required, but you may bring a **scientific calculator** if you like. Graphing and CAS calculators will not be allowed on quizzes and exams.

Prepared Lecture Notes:

I have put together prepared lecture notes designed to help you keep your lecture contents organized. Here is the file: [Math 1A Prepared Notes (1stEdition).pdf](). Please print the file, or open it on a tablet if you have the ability to annotate electronically. When you attend class, you are expected to take notes on these. Keep all your notes organized in a binder. I strongly recommend that you do this.

Office Hours:

- Monday and Wednesday 10-11am in PST Village (S-55) and on Zoom (https://fhda-edu.zoom.us/j/89884034112.)
- Tuesday and Thursday 12:30-1:00pm in MLC 2nd floor lounge area
- Friday 11:30-12:30pm on Zoom (https://fhda-edu.zoom.us/j/81339900072.)
- Or, by appointment (Send me a Canvas message or email bambhaniadoli@fhda.edu to set up)

Homework and Problem Sets

The best way to succeed in any math class is to do all of the assigned work correctly and in a timely manner, making sure you really understand what you are doing! Focus on how to think mathematically about problems, not just on following a procedure and getting the right answer. Time spent developing ownership of the concepts and skills in the homework and problem sets will directly benefit you on quizzes and exams.

Online Homework: You will have online homework for each section we cover. The homework uses the free software MyOpenMath, and will be graded for correctness. The links and due dates are within the Canvas Modules, but generally speaking, the Online Homework is due twice a week. You will have 5 late passes, each of which will give you a 24-hour extension on the homework for a particular section with 5% penalty. You may ask me questions on the online HW by using the 'Message Instructor' button.

Problem Sets: Each week, we will have a problem set to work on. These problems will be posted as a PDF in the Canvas modules. You are to work them out on paper neatly. These sets include problem-solving and critical-thinking exercises that rely on your conceptual understanding of the material and related skills.

Problem Sets Submission Guidelines:

- *Write out the problems neatly on **separate paper**, or on a blank tablet file. There is not enough room on the Problem Set PDF.*
- *Do the problems in **order**, showing all work neatly, clearly and completely.*
- *Label each problem clearly – use a **highlighter** to mark the number, or put a **box** around it so it's easy to find. You don't need to write the question, just fully-worked out solutions.*
- *Don't squeeze a lot of work into a small amount of space. Leave some white space around your solutions for brief comments.*

- *You are encouraged to use resources such as classmates, tutors and AI, but you must **write up your own solutions independently**!*
- *Write out your solutions in full detail, as modeled in the textbook and in lectures. You should also draw well-labeled, appropriately scaled, and relevant diagrams and graphs.*
- *Submit the Problem Set on paper in class or as a **single PDF document** on Canvas. Use a scanning app such as Genius Scan. Your scanned copy must be **legible** and have **correct orientation**.*
- *Problem sets are **due** on **Tuesdays** typically at the **start of class**. You can have a 24-hour **extension** with 10% penalty.*

Discussions:

There will be some discussion prompts that you will need to respond to spread throughout the quarter. These are worth points, so be sure to complete them.

Participation:

You are expected to **actively participate** in class. I expect you to:

- Ask and answer questions during class.
- Participate actively in any group work during class.
- Post and answer questions in 'Questions Discussion Board' (0.5 point extra credit for posting or answering a question) outside of class.

Quizzes:

We will have **seven** 20-minute in-class quizzes. The quizzes will be based on previous week's material. They are all proctored, in-person quizzes. See the calendar for the dates.

*NOTE: There will be NO MAKEUPS for any of the quizzes, but your **lowest two** quiz score will be dropped to allow for a rare absence on a quiz day.*

Exams:

We will have **three** midterm exams, and a cumulative final exam. All of the exams are proctored, in-person exams. See the calendar for the dates.

*NOTE: There will be NO MAKEUPS for any of the exams, but your **lowest** midterm exam score will be replaced by the final exam score proportionally. If you miss a midterm exam, your grade will be replaced by the final exam score proportionally.*

NOTE: In case of an unforeseen emergency or illness due to which you cannot take the final exam, inform me immediately. If you are unable to take the final exam during finals week, may result in an 'Incomplete' (provided that you supply me with a sufficient proof).

Evaluation:

Your final grade will be computed as follows:

Point Values of Assignments and Assessments		
Category		**Points**
Homework	25 @ 4 points each	100
Problem Sets	Top 10 @ 7 points each	70
Discussions	5 @ 4 points each	20
Participation		20
Quizzes	Top 5 @ 20 points each	100
Exams	3 @ 80 points each	240
Final Exam		100
TOTAL		**650**

Letter Grade based on Overall Percentage	
Overall percentage	**Your grade will be at least**
97% or greater	A+
92% to less than 97%	A
90% to less than 92%	A-
87% to less than 90%	B+
82% to less than 87%	B
80% to less than 82%	B-
75% to less than 80%	C+
70% to less than 75%	C
55% to less than 70%	D
less than 55%	F

Honors Cohort:

This class is offered as an Honors cohort for interested students in the Honors Program. If you are interested in taking this class through the Honors Program, please email me so I can give you the Honors section add code. If you do not know about De Anza's Honors Program, please visit https://www.deanza.edu/honors/ to learn about how it works.

If you take this class as an Honors cohort, you will be required to complete a substantial honors project. Failure to complete the project will result in a reduction of your grade by a full letter grade.

Help:

1. Your classmates are a great resource. Ask for help and provide help to others. You may use the Questions Discussion Board (worth extra credit: 0.5 point per substantial entry)!
2. Message me through Canvas with questions or attend office hours.
3. For online homework questions, message me by using 'Message Instructor' button in the problem.
4. Ask questions during class.
5. Get help from De Anza's Math Student Success Center. See details at http://deanza.edu/studentsuccess/.
6. Use NetTutor for 24-hour chat-based help through Canvas.
7. For help with tech equipment, food and financial assistance, health services, resources for undocumented students, etc at https://www.deanza.edu/services/.

Academic Integrity:

Students are required to comply with all rules and regulations as outlined in the De Anza College Student Handbook http://www.deanza.edu/studenthandbook/index.html. (especially the section on academic integrity). Any instances of cheating or plagiarism will result in disciplinary action, including, at minimum, 0 on the assignment or assessment, but may include recommendation for dismissal. You are encouraged to work together, but simply copying down from someone else's work (human or not), or allowing someone copy your work, is wrong! Cheating on a quiz or an exam is more serious. It will certainly result in getting a 0 on the assessment, but could result in getting an 'F' in the course. Each incident of cheating on an assessment will be reported to the Dean of the Physical Science, Mathematics and Engineering Division and reported to the college as a student code of conduct violation. Please see the De Anza College's page on Academic Integrity: https://www.deanza.edu/policies/academic_integrity.html. Check out this video produced by De Anza College on this topic: https://www.youtube.com/watch?v=4unoOe-I0eY.

A note about Discord: I encourage you to ask and answer questions amongst yourselves to strengthen your understanding of topics in this class using any medium, including Canvas discussion boards and Discord. However, be careful that you don't compromise your academic integrity or entice others to compromise theirs! Never answer a classmate's question about a homework problem by providing a complete, fully worked out solution! There are at least two reasons for this: 1) It would create too much of a temptation to copy - not necessarily for the original question poster but other classmates; and 2) Your solution could be incorrect, in which case you would be hindering the class' understanding of the involved concepts and skills.

Disability Notice:

De Anza College views disability as an important aspect of diversity, and is committed to providing equitable access to learning opportunities for all students.

Disability Support Services (DSS) is the campus office that collaborates with students who have disabilities to provide and/or arrange reasonable accommodations If you have, or think you have, a disability in any area such as, mental health, attention, learning, chronic health, sensory, or physical, please contact DSS to arrange a confidential discussion regarding equitable access and reasonable accommodations.

If you are registered with DSS and have accommodations set by a DSS counselor, please be sure that I have received your accommodation letter from Clockwork early in the quarter to review how the accommodations will be applied in the course.

DSS Location: RSS Building, Suite 141 http://www.deanza.edu/DSS/ Phone: 408-864-8753 Email: DSS@deanza.edu

Tips for Success in this Class:

In any math class, and especially this one, your goal should be to get **ownership** of the material. This means that not only you understand the concepts, and can demonstrate the skills, but also that you can explain them to someone who doesn't have them. The material covered in this class is essential for the next courses in the series. This is not a "learn and forget" class; rather, it's a "learn well so you can succeed going forward" class.

Here are our recommendations for succeeding in the learning community in the online setting:

1. **Do some work for the class every day!** This includes homework, reviewing notes, working on problem sets, studying for exams, and even reading ahead.
2. **Stay on schedule.** Be disciplined about staying on top of the class. Don't allow yourself to fall behind! Always keep your notes up-to-date, clearing up anything confusion along the way. Writing aids memory so you are more likely to retain the material. The quarter passes by faster than expected, and it can be very hard to catch up!
3. **Be fully present in every class.** Allowing yourself to occasionally miss class or multi-task during class is a slippery slope. It can easily turn into a bad habit that will likely cost you the grade you want in this class.
4. **Come to the class prepared and ready to contribute!** Be sure to come to class with all the necessary materials, ready to participate and contribute.
5. **Invite productive struggle.** You must approach any STEM with **diligence** and **honesty**. There are many sources that can provide you the answers and even the worked solutions. However, **productive struggle** is essential in learning and retaining the material, and in gaining the confidence in your problem-solving ability. Find the grit to work through especially challenging ones.
6. **Form a study group.** Exchange your contact information and develop companionship with at least 3 other people in the class community. This will help if you miss a class, you want to work with someone on an assignment, or while studying for quizzes and exams. This is an **essential college skill**, especially for STEM students.
7. **Turn everything in!** Every homework, every discussion, every problem set. Don't allow yourself to skip anything!
8. **Prepare well for assessments.** Preparing well for quizzes will help you retain the material for exams. Create review notes or summaries throughout the quarter. Preparing well for exams will help you retain this material for when you need it for the classes that come next in the sequence. If you are not prepared well for quizzes and exams, you will likely NOT be able to finish them!
9. **Don't wait to ask for help!** Whether it's to your classmates or me, get your questions answered in a timely manner. If you're dealing with an unusual or an unexpected challenge, please let us know so we can work with you to keep the class manageable, if possible.
10. **Practice personal discipline**! Succeeding in a college class requires **personal discipline**. This can be especially tough when first starting out in college. It's quite easy to put things off until later, skip some course activities, distract yourself with social media and other apps while doing class activities, etc. A life skill that is good to practice this quarter: **Be mindful of what you are giving your attention to.** Think carefully about your priorities, and give the most time and attention to your biggest priorities. When working on your homework, turn off all notifications on your devices, and silence them. Calculus requires focus and it will often challenge you. Don't put off working on something because it's hard or unpleasant. Learning anything that's worthwhile requires a sustained effort! And that practice is what ultimately leads to true growth.

Course Calendar:

Math 1A Calculus - Tentative Calendar: Winter 2025

	Monday	Tuesday	Wednesday	Thursday	TBA hour
Week 1	6-Jan Orientation/Questions 2.1	7-Jan 2.1, 2.2	8-Jan 2.2	9-Jan 2.3	2.3
Week 2	13-Jan Questions 2.4	14-Jan 2.4 Problem Set 1 due Quiz 1	15-Jan 2.4	16-Jan 3.1	3.1
Week 3	20-Jan HOLIDAY: MLK Day	21-Jan Questions 3.2	22-Jan 3.2 Problem Set 2 due Quiz 2	23-Jan 3.2, 3.3	3.3
Week 4	27-Jan Questions 3.4	28-Jan Problem Set 3 due **Midterm Exam 1** **(covers 2.1-3.3)**	29-Jan 3.4	30-Jan 3.5	3.5
Week 5	3-Feb Questions 3.6	4-Feb 3.6 Problem Set 4 due **Quiz 3**	5-Feb 3.7	6-Feb 3.7, 3.8	3.8
Week 6	10-Feb Questions 3.9	11-Feb 3.9 Problem Set 5 due **Quiz 4**	12-Feb 7.1	13-Feb 7.2	HOLIDAY: Presidents' Day
Week 7	17-Feb HOLIDAY: Presidents' Day	18-Feb Questions 7.2	19-Feb Problem Set 6 due **Midterm Exam 2** **(covers 3.4-7.1)**	20-Feb 4.1	4.1
Week 8	24-Feb Questions 4.2	25-Feb 4.2 Problem Set 7 due **Quiz 5**	26-Feb 4.3	27-Feb 4.3, 4.4	4.4
Week 9	3-Mar Questions 4.5	4-Mar 4.5 Problem Set 8 due **Quiz 6**	5-Mar 4.5	6-Mar 4.6	4.6
Week 10	10-Mar Questions 4.7	11-Mar Problem Set 9 due **Midterm Exam 3** **(covers 7.2-4.6)**	12-Mar 4.7	13-Mar 4.7, 4.8	4.8
Week 11	17-Mar Questions 4.9	18-Mar 4.9 Problem Set 10 due **Quiz 7**	19-Mar 4.10	20-Mar Review	Review
Finals Week	24-Mar **Final Exam** **11:30 - 1:30**	25-Mar	26-Mar	27-Mar	

Student Learning Outcome(s):

• Analyze and synthesize the concepts of limits, continuity, and differentiation from a graphical, numerical, analytical and verbal approach, using correct notation and mathematical precision.
• Evaluate the behavior of graphs in the context of limits, continuity and differentiability.
• Recognize, diagnose, and decide on the appropriate method for solving applied real world problems in optimization, related rates and numerical approximation.

Office Hours:

M,W	10:00 AM	11:00 AM	In-Person	S-55
T,TH	12:30 PM	01:00 PM	In-Person	MLC 2nd floor lounge
F	11:30 AM	12:30 PM	Zoom	