

Math 1A-21 (MW 1:30-3:45)

Fundamentals of Differential Calculus

Winter 2020

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Phone	408-864-5382 (for voice messages only, as I'm unlikely to be in my office, except during office hour)
Office Hours	Monday – Friday 10:30-11:20 a.m. or by appointment

Required Materials:

- Textbook: Stewart, **Calculus: Early Transcendentals**; 8th edition. We will **not** be using software-based homework on WebAssign.
- A scientific calculator is required for this class. On quizzes and exams, you may **not** use a graphing calculator of any type.

Attendance: I expect each student to attend every class. If you need to miss a class for an important reason, please know that you are responsible for learning the missed material, finding out any announcements or assignment changes made in class. Stay in touch with your classmates and me. Let me know what I can do to help you stay on top of the material. If you exceed more than one week's worth of absences, you should consider dropping the class. If you stop coming to class, you are responsible for dropping yourself or you will receive a grade of 'F'.

Homework: The best way to succeed in any math class is doing all of the assigned homework correctly and in a timely manner, making sure you really understand what you are doing! Time spent on the homework will directly benefit you on quizzes and exams.

We will have two types of homework assignments:

1. **Practice problems from the textbook:** You should work on these every day to stay on top of the material. You can submit these problems for extra credit at the end of the quarter at the final exam. **IMPORTANT:** If you wish to do these for extra credit, you **MUST** do them in a bound notebook (wirebound, for example) for ease of submission at the end of the quarter. Each section and each problem must be clearly labeled. Each section must start on a new page. If I can't follow your organization, you won't get extra credit. Total available extra credit: 15 points
2. **Problems sets for submission:** Five times during the quarter, I will post a problem set that you are to write up and submit. These sets will include problem solving, critical thinking and applications exercises. Write these problem sets out in full detail, as modeled in the textbook and in class. A subset of these exercises will be graded for correctness. The entire set will also be graded for completeness (checked to see if you have made a thoughtful and coherent attempt on each problem).

Problem Sets Guidelines:

- *Do the problems in order, showing all work neatly, clearly and completely*
- *Label each problem clearly – use highlighter to mark the number*
- *STAPLE your homework – no “dog ears” or paperclips*

All assignments will be due at the beginning of class. Late homework will not be accepted. If you cannot be in class on a day that the homework is due, send it in with a classmate or email it to me before the class starts. If there's an unusual situation out of your control, let me know. Homework questions (of each type) with enough demand will be answered at the beginning of class on Mondays. Please put the problems up on the board before class. If a problem you need help on is already on the board, put a check mark next to it.

Entrance Cards: Entrance cards consist of a problem similar to the previous days' material, and may be posted at start of class on any day! They will be unannounced and graded. Notes will be allowed on entrance cards. Missed entrance cards cannot be made up, but at least two lowest entrance cards will be dropped. *Please keep several neatly cut half sheets of paper ready in your binder for when they are given. You will lose points for turning in untidy sheets of paper.*

Quizzes: We will also have the several 20-minute, in-class quizzes. See the calendar. The **lowest** quiz score will be **dropped**. There will be **NO MAKEUPS** for the quizzes.

Midterm Exams: We will have three 50-minute midterm exams. There will also be a cumulative final exam. All exam dates are on our calendar. There will be **NO MAKEUPS** for any of the exams – before or after the scheduled date. The final exam percentage will replace your lowest midterm exam score if the final exam score is higher than it. This rule will also apply in case of a missed midterm exam. *This rule will NOT be applied if cheating was involved on any of the exams.*

Special Note about final exam: Please note that the final exam is a requirement for the class. As with the midterm exams, the final exam cannot be made up or rescheduled. The only exception to this is with an 'Incomplete', which can be given in case of an unforeseen emergency or illness, due to which you cannot take the final exam. An 'Incomplete' requires sufficient documentation.

Evaluation: Your overall grade will be computed as follows.

Homework: 6 sets @ 10 points each	60 points
Entrance cards: Top 5 @ 4 points each	20 points
Quizzes: Top 6 @ 20 points each	120 points
Midterms: 3 @ 100 points each	300 points
Final Exam	150 points
TOTAL	650 points

Overall percentage	Your grade will be at least
97 % or greater	A+
92 – 97%	A
89 – 92 %	A-
87 – 89 %	B+
82 – 87 %	B
79 – 82 %	B-
75 – 79 %	C+
70 – 75 %	C
55 – 70 %	D
less than 55%	F

Help: There is help available to you throughout the quarter. You are welcome to come to my office hours. If you cannot make it and need help on other days or at other times, email me and we can make an appointment. I can often answer many questions over e-mail. For homework questions over email, for a quicker response, please write down the question rather than giving the question number, tell me briefly what you have tried and what your specific question is. Also, don't forget the Math Science Tutorial Center in S-43! The tutorial center is staffed with people highly qualified to help you in many subjects. There will be group tutoring for your class – details will be given in class.

Academic Integrity: All students in this class are expected to exercise academic integrity throughout the quarter. Any instances of cheating or plagiarism will result in disciplinary action, which may include recommendation for dismissal. You are encouraged to work together on homework but simply copying down answers from another student's homework or from some website is simply wrong. Also, it will be of no help to you on the quizzes and exams! Cheating on a quiz or an exam will result in getting a 0 on it, an 'F' in the course and/or dismissal from the class. Also, **each incident of cheating** will be reported to the **Dean** of the Physical Science, Mathematics and Engineering Division.

Disability Notice: If you feel that you may need an accommodation based on the impact of a disability, you should contact me privately to discuss your specific needs. Also, please contact Disability Support Services (864-8753) or Educational Diagnostic Center (864-8839) for information or questions about eligibility, services and accommodations for physical (DSS), psychological (DSS) or learning (EDC) disabilities.

Tips for Success:

- Form a study group.** Exchange contact information with at least 3 people in the class. This will come in handy if you miss a class, or if you want to work with your classmates on homework or while studying for an exam.
- Read the textbook!** Ideally, you should read the book before class, but most certainly, it must be read after class. Attending lectures is not enough to give you a complete idea of the material. The textbook is quite excellent, by the way!
- To succeed in any math class you must **practice diligently**. This class requires a serious commitment – to attend every class, and to spend 10-15 hours per week outside of class. I am aware that there are many sources that can provide you with worked solutions to many problems; however, such resources will be of only so much use if you don't truly struggle to understand the content. **Productive struggle** is critical to learning anything, especially math! Taking shortcuts on homework will ultimately affect your preparation, and therefore confidence, on quizzes and exams. Most importantly, though, there is a great joy in learning mathematics, especially Calculus – which is one of the greatest achievements of the human mind – don't deny yourself that joy!
- Ask questions!** If you have a question or comment, just bring it up during class. Others benefit from your questions too, so never think of asking questions in class as a waste of anyone's time! There will be several others in the class who are probably stuck on that point at that moment and will be glad you asked about it.
- Review your notes** soon after class to identify any questions or comments about the lecture. Get such points cleared before the next class.
- As you progress through this class, keep in mind that this is not a "learn and forget" class. You will be expected to know the material covered in this class later in this class, in Math 1B, 1C, 1D, 2A and 2B, as well as physics courses. Hence, **understanding** the material is extremely important.
- Communicate with me in a **timely manner** regarding any relevant personal, administrative or academic issues. The quarter often passes by quite fast and it's hard to appropriately address issues, especially at the end of the quarter.

Math 1A (1:30 – 3:45 MW) - Tentative Calendar – Winter 2020

	Monday	Tuesday	Wednesday	Thursday	Friday
Week 1 Jan	Introductions Syllabus; 2.1 6	7	2.2, 2.3 8	9	10
Week 2 Jan	Review/Catch-up 2.4 (brief), 2.5 13	14	HW Set 1 due Quiz 1 2.5, 2.6 15	16	17
Week 3 Jan	HOLIDAY: MLK Day 20	21	Review/Catch-up Quiz 2 2.7, 2.8 22	23	24
Week 4 Jan	Review/Catch-up 2.8, 3.1 27	28	HW Set 2 due Midterm Exam 1 3.2 29	30	31
Week 5 Feb	Review/Catch-up 3.2, 3.3 3	4	Quiz 3 3.4, 3.5 5	6	7
Week 6 Feb	Review/Catch-up 3.6, 3.7 10	11	HW Set 3 due Quiz 4 3.9, 3.10 12	13	HOLIDAY: Presidents' Day 14
Week 7 Feb	HOLIDAY: Presidents' Day 17	18	HW Set 4 due Midterm Exam 2 4.1 19	20	21
Week 8 Feb	Review/Catch-up 4.2, 4.3 24	25	Quiz 5 4.3 26	27	28
Week 9 Mar	Review/Catch-up 4.4 2	3	HW Set 5 due Quiz 6 4.5 4	5	6
Week 10 Mar	Review/Catch-up 4.7 9	10	HW Set 6 due Midterm Exam 3 4.8 11	12	13
Week 11 Mar	Review/Catch-up 4.9, 10.1 16	17	Quiz 7 10.2, Review 18	19	20
Finals Week Mar	Final Exam 1:45 – 3:45 23	FINALS WEEK NO CLASS 24	FINALS WEEK NO CLASS 25	FINALS WEEK NO CLASS 26	FINALS WEEK NO CLASS 27

Math 1A Practice Problems

Stewart Calculus (Early Transcendentals) 8th edition

Instructions: Do as many of these problems as you can, or need to, for practice in a bound notebook. You can turn them for extra credit at the end of the quarter. The amount of extra credit will depend on the quantity and quality of the problems you complete. Each section and each problem must be clearly labeled. Each section must start on a new page.

Section	Problems
2.1	1-9 odd
2.2	1, 3, 7-21 odd, 27, 31-43 odd
2.3	1, 3, 5, 9, 11-31 odd, 35-41 odd, 45, 49, 53, 59
2.5	3-9 odd, 13, 17, 21, 23, 25, 31, 39, 41, 45, 49, 55, 69
2.6	3-11 odd, 15-43 odd, 47, 51, 57, 63
2.7	3, 5, 7, 11-27 odd, 33-45 odd, 49, 53, 55, 57
2.8	1-15 odd, 21-29 odd, 39, 41, 43, 47, 49, 51, 57
3.1	3-31 odd, 35, 37, 45, 49, 51, 57, 61, 67, 71, 83
3.2	1-33 odd, 41-51 odd
3.3	1-23 odd, 29, 31, 37-51 odd
3.4	1-37 odd, 47, 53, 59, 61, 65, 67, 73, 77, 79, 87
3.5	1-21 odd, 23-31 odd, 37, 39, 43, 49-59 odd, 63
3.6	3-33 odd, 45-51 odd
3.7	1-7 odd, 13, 15, 17, 21, 23ab, 31, 33, 35
3.9	1-25 odd, 29, 33, 37, 43, 45
3.10	1-31 odd, 37a, 43
4.1	1-35 odd, 47-61 odd, 77
4.2	1-13 odd, 17, 21, 23a, 25, 27, 37
4.3	1-19 odd, 23, 25, 29, 31, 35, 41, 45-55 odd, 67, 71, 85
4.4	1-4, 7, 9-65 odd, 79, 81
4.5	1-53 every other odd, 55, 57, 65, 69
4.7	3-11 odd, 15, 23, 25, 27, 31, 37, 41, 61, 63, 75
4.8	1, 5-11 odd, 15, 21, 27
4.9	1-47 odd, 51, 53, 59-65 odd, 69
10.1	1-27 odd, 31, 33, 37, 41, 43, 45
10.2	1-21 odd, 25

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.