

MATH 201, Calculus and Analytic Geometry III

Lecture L5, Recitations E17–E20, Fall 2023-2024

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Webpage: <https://sites.aub.edu.lb/kmakdisi/> — there will also be a Moodle page.

Lectures: MWF 1–1:50 in **Science Lecture Hall (SLH)**.

Recitations: These are run by Mr. Z. Khachadourian and Ms. R. Nassif. Make sure you know the recitation for which you are registered. They are: **E17:** W 4–4:50, Nicely 212 (ZK); **E18:** F 11–11:50, Nicely 202 (ZK); **E19:** F 12–12:50, Nicely 417 (RN); **E20:** F 9–9:50, Nicely 417 (ZK); **E30:** W 5–5:50, Nicely 417 (RN).

Office Hours: MW 3–5pm — come in anytime during this period, no matter who else is in my office. Also make full use of the Math Clinic, every weekday afternoon in Bliss Hall.

Textbook: *Thomas' Calculus in SI Units*, 14th edition, by J. Hass, C. Heil, M. Weir, published by Pearson, 2019. ISBN-13: 9781292253220, ISBN-10: 1292253223

Exam dates: The exams are scheduled as follows.

- Exam 1: Monday, September 25, 6–7pm
- Exam 2: Monday, October 30, 6–7pm
- Final exam: to be announced later.

By signing up for this course, you confirm that you have read and accepted the terms and provisions of AUB's Privacy Statement on <https://www.aub.edu.lb/Pages/privacy.aspx>

Grading: Grades will be determined using the maximum of the following two options:

- Option 1: Attendance (5%), Exam 1 (25%), Exam 2 (25%), Final Exam (45%),
- Option 2: Attendance (5%), Exam 1 (15%), Exam 2 (20%), Final Exam (60%).

Important: Final course grades will be assigned based on a curve that will be determined only after the final exam.

Attendance: You are expected to attend the lectures and every recitation session. The exams will strongly reflect material presented during lectures. Attendance will be taken, and contributes 5% to your final course grade.

Prerequisites: Math 102 or its equivalent, such as a good scientific Baccalaureate in school. Be sure to CAREFULLY REVIEW the following sections from the textbook: 1.3, 2.1, 2.2, 3.1, 3.3, 3.5, 3.6, 4.1, 4.3, 4.7, 5.1, 5.3–5.5, 5.6, 7.1–7.3, 7.5, 7.6, 8.1, 8.2, 8.5, 11.1–11.5, during the first two weeks of the semester. If you lack a small part of this background, learn it NOW from the book and come to me with questions in office hours. **If you do not know nearly all of the above material, then you should start with Math 102.**

Homework: Although homework will not be due, some problems from the following list will be solved during lectures, recitation sessions or office hours. Remember that courses at university are fast paced compared to school: you will need to spend **three hours** at home or in the library studying for each hour of lecture. In case you need extra work, please meet me during my office hours, and/or go to the Math Clinic.

<i>Section</i>	<i>Suggested problems</i>
9.1	1, 5, 7, 10, 13, 16, 20, 21, 24, 28, 31, 32, 41–55, 65–67, 78–82, 87–91, 97, 98
9.2	9, 11, 13, 16, 19, 23, 25, 28, 34, 36–40, 43, 44, 47–70, 79
9.3	6, 9, 10, 11, 16, 21, 22, 25–28, 32–38, 43, 55, 56, 61, 62
9.4	6–14, 18, 25–32, 34, 42, 43, 47, 55, 56, 58, 60, 63, 65, 67
9.5	8, 11, 12, 14, 18, 20, 22, 23, 25, 27–40
9.6	8–14, 18, 21–23, 26, 29, 30, 34, 36, 40, 44, 49–51, 53, 66, 71, 79
9.7	4, 8, 10, 14, 18, 20, 22, 25, 29, 31, 33, 34, 36, 39, 41, 42, 53–60.
9.8	3, 5, 11, 21, 23, 26, 29
9.9	1, 5, 8–13, 15, 18–20, 22, 23, 25, 28, 35–50.
9.10	2, 3, 5, 12, 15–24, 53–55
10.3	1, 3, 6, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 28, 33–38, 63, 68
10.4	1, 3, 5, 6, 25–28
11.6	1–12
12.1	1, 3, 5–9, 12–17, 19, 21, 23, 25, 26
12.3	1, 3, 5, 7, 9, 11, 14, 15, 17, 21
13.1	2, 6–8, 13–15, 22–30, 49, 51, 62, 63
13.2	3, 6, 17, 18, 27, 35, 36, 39, 41–48, 50, 58–62, 64
13.3	1, 7, 12, 17, 19, 21, 22, 25, 26, 30, 43, 49, 51, 55
13.4	1, 3, 4, 7–9, 25–27, 30–33, 35, 37, 43
13.5	5, 7, 12, 16, 17, 20, 23, 26, 29, 31–33, 35, 36
13.6	1, 3, 8, 9, 12, 13, 17, 19–22
13.7	1, 3, 7, 9, 12, 30, 31, 41, 49
13.8	1, 9, 11, 12, 17, 21, 23, 25, 27, 29
14.1	6, 7, 10–12, 15, 16, 21, 22
14.2	9–25, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 83
14.3	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21
14.4	3, 5, 7, 13, 15, 17, 19, 20, 22, 28, 31, 32, 41
14.5	3, 5, 8–10, 13, 15, 17, 21, 22, 25, 31, 33, 34, 41, 43
14.6	1, 3, 5, 13
14.7	3, 5, 7, 9, 11, 15, 17, 21, 23, 27, 29, 31, 33, 34, 37, 43, 50, 61
14.8	1, 3, 5, 7, 9, 13, 18–24
15.1	1–9, 11, 13, 15–17, 19, 21, 23, 25, 26–28, 33

Some advice for university study:

Courses at university move much more quickly than in school. It is important to keep up with the material while it is being presented. One cannot postpone the regular work and hope to study for the exams at the last minute. You should expect to spend 9–10 hours per week outside class studying and absorbing the material. Here are a few tips:

Before a lecture, read the section of the book that will be covered, and try to understand as much as you can. This will help you follow the lecture a lot better.

During the lecture, take careful notes of the main topics, but please remember that lectures are not dictation. You should hope to get most of the general idea of the material, but you need to study further to fully understand all the concepts presented.

Shortly after the lecture, you should then rework out the rough notes you took in class, filling in any missing details and thinking more about the concepts that you did not get the first time.

Before the next lecture, carefully read and review the book and your notes, and work through all the assigned exercises in this syllabus **as a minimum**. If you need more work to absorb a section, come get help in office hours and the Math Clinic. Then go back to the top of this list.

University Policies:

- Please refer to AUB Student Code of Conduct, in particular section 1.1, which concerns academic misconduct including cheating, plagiarism, in-class disruption, and dishonesty. Please be aware that misconduct is vigorously prosecuted and that AUB has a zero tolerance policy. Course policy is that **credible evidence of cheating will result in course failure**.
- AUB strives to make learning experiences as accessible as possible. If you anticipate or experience academic barriers due to a disability (including mental health, chronic or temporary medical conditions), please inform me immediately so that we can privately discuss options. In order to help establish reasonable accommodations and facilitate a smooth accommodations process, you are encouraged to contact the Accessible Education Office (accessibility@aub.edu.lb , extension 3246, West Hall 314).
- In line with its commitment to the principle of equal opportunity in education and employment, AUB policies protect you from discrimination on the basis of protected characteristics, including discriminatory harassment and sexual harassment. Protected characteristics include: race, color, religion, age, national or ethnic identity, sex, gender or gender identity, sexual orientation, pregnancy, marital status, disability, genetic predisposition or carrier status, alienage or citizenship status, and political affiliation.

The policies are applicable to all the AUB Community. If you think you have experienced discrimination, discriminatory harassment, or sexual harassment, we encourage you to inform the Equity/Title IX Coordinator, Mitra Tauk at extension 2514, titleix@aub.edu.lb , report to a Title IX deputy at your faculty or at any other faculty (www.aub.edu.lb/titleix), or report online (www.aub.ethicspoint.com). Reports may be submitted anonymously or not. Please know that the University will maintain the confidentiality of the complaint and privacy of the persons involved to the greatest extent possible, consistent with its goal of conducting a thorough and complete investigation and to the extent permitted by law. For the full Title IX syllabus statement, please visit <https://www.aub.edu.lb/President/TitleIX/Pages/syllabus.aspx>

Chart of orders of growth

n	logarithmic growth	polynomial growth			exponential growth		factorial growth	
	$\ln n$	$n^{0.1}$	$100n$	n^2	n^{100}	1.01^n	2^n	$n!$
1	0.00000	1.00000	100	1	1	1.01000	2	1
2	0.69315	1.07177	200	4	1.27E+30	1.02010	4	2
3	1.09861	1.11612	300	9	5.15E+47	1.03030	8	6
4	1.38629	1.14870	400	16	1.61E+60	1.04060	16	24
5	1.60944	1.17462	500	25	7.89E+69	1.05101	32	120
6	1.79176	1.19623	600	36	6.53E+77	1.06152	64	720
7	1.94591	1.21481	700	49	3.23E+84	1.07214	128	5040
8	2.07944	1.23114	800	64	2.04E+90	1.08286	256	40320
9	2.19722	1.24573	900	81	2.66E+95	1.09369	512	362880
10	2.30259	1.25893	1000	100	1.00E+100	1.10462	1024	3628800
20	2.99573	1.34928	2000	400	1.27E+130	1.22019	1048576	2.43E+18
50	3.91202	1.47876	5000	2500	7.89E+169	1.64463	1.13E+15	3.04E+64
100	4.60517	1.58489	10000	10000	1E+200	2.70481	1.27E+30	9.33E+157
1000	6.90776	1.99526	100000	1000000	1E+300	20959.16	1.07E+301	>1E+2567
10000	9.21034	2.51189	1000000	100000000	1E+500	1.64E+43	>1E+3010	>1E+35659
100000	11.51293	3.16228	10000000	1E+10	1E+600	>1E+432	>1E+30102	>1E+456573
1E+100	230.2585	1E+10	1E+102	1E+200	1E+10000	>1E(10^97)	>1E(10^99)	>1E(10^101)