MATH 54 Linear Algebra and Differential Equations
Tentative Course Syllabus (to be finalized by end of January)

with Professor Zvezdelina Stankova

MWF 11:10 am - 12 noon, in-person

Pimentel 1

Updated 1/11/2024

Contents

1. Questions: Whom, Where, When, and How to Ask 1
2. Instructor, Head GSI, GSIs, and Office Hours 2
3. Enrollment, Section Switching, and General Course/Major Advising 3
4. Online Platforms and Requesting Access 3
5. Prerequisites and Textbooks 3
6. Attendance. Course Capture, Zoom Recordings, and Orientation Event 4
7. Reading Assignments. Outline of Lecture Slides 4
8. Homework (12%): Top 35 out of 38 HW Assignments 4
9. Quizzes (13%): Top 10 out of 14 Quizzes 5
10. Exams (75%): 25% Each Exam. Resurrection Final Exam 5
11. Final Grade Components and Calculation. Final Grade Cut-Offs 6
12. DSP Students and Athletes 7
13. Incomplete Grades 8
14. Letter Grades vs. Pass/No Pass, and More 8
15. Ed Discussion Site 9
16. Academic Integrity 10
17. Conduct Sanctions and Grade Deductions for Illegal Postings 11
18. Disrupted Examinations 11
19. Tentative Topics of the Course 12
20. Appendix: Instructions and Tips on HWs, Lecture Slides, Quizzes, and Exams 13

1. Questions: Whom, Where, When, and How to Ask

For questions regarding the course, please, refer to the list below to find out whom to contact. If you send an email to the "wrong" person or for the "wrong" reason, your email may remain unanswered or you may be redirected to another person, thereby delaying answering your question.

#	**Type of Questions**	**Person to Ask**	**When, Where, How**
1	enrollment and section placement; course and major advising	Thomas Brown, Hanh Tran, Marsha Snow, peer advising	email or appointment (see Section 3)
2	student's scores and performance	the student's GSI (not Ed Disc)	GSI's OH (see bCourses)
3	missed handouts or announcements	bCourses, Ed Disc., classmates	anytime, anywhere
4	administrative questions not addressed in class, bCourses, or syllabus	GSI → Head GSI → Professor (first) → (second) → (third)	office hours (see bCourses)
5	math questions: be prepared to show how you attempted the problem	any GSI, the Professor, the Adjunct Course Instructors	Ed Discussion, sections, OHs (see bCourses)
6	true emergencies that are not caused by you and could not be resolved in OHs	GSI → Head GSI → Professor (first) → (second) → (third)	only emergency e-mail: Mon-Fri 9AM-5PM

In short, keep this table close at hand at all times and follow it with mathematical precision. :)

1.1. **Email to GSIs, head GSIs, or the professor is only for emergencies.**

(E) *What is an "emergency"?* An "emergency" is an urgent and important situation that is *not* caused by a student's procrastination, negligence, or disorganization.

¬ (E) *What is not an "emergency"?* Examples of "non-emergencies" are math, syllabus, or grading policy questions, routine inquiries, asking for exceptions to the syllabus, etc.

(EE)′ *How long is an "emergency email"?* An "emergency email" is *at most 5 lines*! If you are in an emergency, you cannot write long emails!

(✗) *Attachments* are dangerous! ;(No attachments should be emailed to the professor or GSIs until the student has talked to them and they have requested more info as an attachment.

1.2. **Office hours:** Any student is welcome to visit any GSI's office hours with questions. The GSIs and Professor's office hours do not overlap: there are lots of office hours during the week when one can get answers to questions. You do *not* have to go only to the Professor's or your own GSI's office hours with questions: all GSIs are qualified to answer math questions related to the course.

Some of the *Head GSI's office hours* may overlap with other GSIs OHs. The Head GSI's office hours OHs are specifically dedicated to *administrative* questions only.

1.3. **Be organized, responsible, and hard-working:** these traits will take you half of the way to performing well and getting a lot out of this course.

2. Instructor, Head GSI, GSIs, and Office Hours

2.1. **Instructor:** Professor Zvezdelina Stankova (Zvezda)

- *Office:* Evans 713[†]; *Phone:* (510) 642-3768
- *Office hours:* (to be finalized by 1st week of February, will be split btw MATH 54 and 74):
  - 12:15pm-12:55pm: MWF (V&A Cafe/Etchevery Hall 3108)
  - 2:10-3:30pm: Mon (Evans 713 or TBA), Wed (zoom).
- *Email:* stankova@math.berkeley.edu ⟶ ONLY FOR TRUE EMERGENCIES that could not be resolved by the student's GSI and by the Head GSI; NOT for inquiries.
- *Personal page:* http://math.berkeley.edu/∼stankova
- *Berkeley Math Circle:* http://mathcircle.berkeley.edu

2.2. **Head student instructor:** Matthew Liu

- *Office:* Evans TBA
- *Office hours:* Tue 6-7pm (zoom), Wed 3:30-4:30pm, Thur 5-6pm (in person)
- *Email:* matthew_liu@berkeley.edu ⟶ ONLY FOR EMERGENCIES that could not be resolved in OHs or by the student's GSI; NOT for inquiries.

2.3. **GSIs contact information and office hours:** will be posted and updated on bCourses.

- Professor's and GSIs' OHs cover a big part of the entire week, for 5.5 hrs/day.
- With urgent questions, you need to come to OHs. The common excuse: "I could not make it to office hours and hence I am writing an email." is *not* acceptable. If your issue is important, you need to make time to come to OHs. Anything that can be resolved in OHs will be resolved in OHs, and *not* on email.
- Administrative (non-enrollment) questions should be first directed to the student's GSI, and then to the Head GSI in his dedicated administrative OHs. If the question has not been resolved, the Head GSI will contact the Professor for help.

[†]How to remember my office number and why come to office hours? Have you carefully read Harry Potter, Book 1?! Vault 713 is a high security vault at Gringotts Wizarding Bank in London, England. It is located hundreds of miles underground and requires a Gringotts goblin to pass its finger along the length of the door, in order for the door to melt away. It hosted the Philosopher's Stone. Conclusion: there must be something very valuable in Evans 713. Fortunately, you won't need such a high security protocol to enter. Come to office hours! ☺

3. Enrollment, Section Switching, and General Course/Major Advising

3.1. **For enrollment questions:** e.g., how to get into math classes/sections, etc.,

- *visit*: math.berkeley.edu/programs/undergraduate/advising#Enrollment%20Questions
- *email*: enrollment@math.berkeley.edu

3.2. **For *quick* advising questions:** email ug-advising@math.berkeley.edu or your adviser:

- *Thomas Brown:* Last Name "A-K" students, thomasbrown@berkeley.edu
- *Hanh Tran:* Last Name "L-N" students, hanhmtran@berkeley.edu
- *Marsha Snow:* Last Name "O-Z" students, snow@math.berkeley.edu
- *Peer Advising:* peeradvisors@math.berkeley.edu

3.3. **For *in-depth* advising:** make an appt M-F 10AM–12Noon & 1–4PM via Google Hangouts:

- Current UCB students: schedule an appt via Cal Central's "My Academics" tab.
- Prospective UCB students: email directly your adviser above (by your last name).

3.4. **To switch discussion sections,** go to CalCentral at *https://calcentral.berkeley.edu*

- The switch will be possible only if there is room in the section.
- *No access to enrollment:* Do *not* ask the Professor or GSIs to switch you to another section or to enroll you in the class. We have no control over enrollment in the class/sections.

4. Online Platforms and Requesting Access

4.1. **Five online platforms in MATH 54.**

- *bCourses:* HW assignments, course materials, and administrative announcements.
- *Gradescope:* HWs and grading of exams.
- *Ed Discussion:* math and light admin. questions, answered by GSIs and classmates.
- *Poll Everywhere:* lecture polls (optional, possibly for a few bonus points – TBA later)
- *Zoom:* half of the office hours and reviews for exams. Zoom links will be listed on bCourses.

4.2. **Which platforms are for communication by students?**

- *Ed Discussion* is the primary online communication platform for students.
- *Warning:* bCourses will be used only by Professor and GSIs to run the course, *not* by students for communications. To ask questions online, follow the guidelines of Ed Discussion and ask questions there, or better: ask them in office hours!

4.3. **Access to bCourses and other platforms:** will be given only to officially registered students in the MATH 54 classes (including the waitlist up to the 4th week of classes, when the waitlist will be cleared) or in MATH 49. Auditors will *not* be added to the bCourses or other platforms. Until officially registered, you need to ask a classmate to share with you their class materials.

- The course team will *not* be sharing course materials with individual students who are not officially registered for the class, join late, miss part of the class, lose materials, etc.

If you are registered for MATH 54 or MATH 49 but not added to a course platform, ask your GSI and/or the Head GSI to add you to the platform.

5. Prerequisites and Textbooks

5.1. **Required prerequisite:** Math 1B, N1B, 10B, N10B, or equivalent.

5.2. **Required textbook:** *"Linear Algebra and Differential Equations"* by Lay-Nagle-Saff-Snider, Pearson Learning Solutions; 2nd Custom Edition for UC Berkeley. This special version is prepared exclusively for the UCB Math Dept, ISBN 10: 0-137-11403-6, ISBN 13: 978-0-137-11403-0. You need this exact edition to get the correct exercises in the assigned HW.

So, if you get another edition, you take full responsibility for matching the problems.

5.3. **Recommended textbook:** *"A Decade of the Berkeley Math Circle,"* volume I, edited by Stankova and Rike, MSRI/AMS, for learning proofs and problem-solving techniques, to prepare you for higher-level courses and help you understand the logic of reading, solving, and writing in a mathematically coherent and correct way, as well as to think imaginatively about mathematics.

6. Attendance. Course Capture, Zoom Recordings, and Orientation Event

6.1. **Enrollment:** Each student must enroll in a discussion section for their lecture time. Every week, quizzes will be given in sections in person and no other quiz options will be available. Thus, sign up for a section that you can attend in person.

6.2. **Attendance:** Lectures and discussion sections are mandatory and must be attended *in person*. Attendance checks will *not* be taken. There are no online lectures, discussions, quizzes, or exams.

6.3. **Course Captures:** of lectures, if recorded, may be posted on bCourses (barring any tech difficulties) up to 7 days after lecture, depending on any Federal, UCB, DSP requirements for editing and at the discretion of the instructor. As lectures will be a mixture of boardwork, iPad, screen presentation and discussion, not all lecture content may be suited for viewing or easily seen on course capture. Do not rely on course capture to learn the material: come to lectures in person.

No course capture or recordings of discussion sections will be posted, regardless of whether the sections are in person (default mode) or online (in emergency). Thus, go to your discussion sections!

6.4. **Zoom Recordings.** Recordings of several events will be posted on bCourses (barring any tech difficulties) after they have been edited and processed, including Federal, UCB, DSP requirements for editing. The instructor reserves the right to delay or not post these zoom recordings. Thus, plan on attending these few zoom events synchronously:

- *MATH 54 Orientation zoom meeting:* Jan 15, 11:10am-1pm (zoom links TBA on bCourses);
- *MATH 54 Review for midterms* (zoom links and times TBA on bCourses).

7. Reading Assignments. Outline of Lecture Slides

It is the students' responsibility to read the assigned textbook section(s) carefully and thoroughly and to review their own class notes after each class. If you miss a lecture or a discussion section, ask your classmates for their notes. The instructor may, at her discretion, post a *version* of lecture slides before or after each lecture. However, *not all* of the covered material (e.g., board work) will appear in such outlines of lecture slides. Thus, use such slides only as an outline of what is covered in lecture, and not as a substitute for coming to lecture. Take your own careful notes in lecture.

8. Homework (12%): Top 35 out of 38 HW Assignments

8.1. **Assigned/due:** HW will be posted on bCourses every week, usually by 8AM on Saturdays the previous week. HWs must be submitted to Gradescope by 11:59PM (PST) the following Monday. HW Solutions are posted 12:01am (PST) on Wednesdays, and quizzes are usually on Fri. Thus, NO late HW will be accepted, as the solutions will be posted for everyone to see. No exceptions: Gradescope closes promptly. (DSP students with HW accommodations must contact their GSI at least 24 hrs ahead of the HW deadline to work out a procedure for HW accommodation.)

8.2. **HWs in final grade:** The top 35 of about 38 HW scores will be included in the final grade; i.e., a week worth of HW will be dropped. No more HWs will be dropped, for any reason. HW will be graded on completion, out of 12 pts, for a total of 12% of the final grade. Each HW will usually contain 10 written problems and 2 T/F questions. For a perfect completion score, all answers and all reasoning (intermediate steps, calculations, and explanations) for the $10+2=12$ problems must be included in the HW.

8.3. **Most important component of the course:** is undoubtedly the HW, where you will truly practice and solidify the course skills and theory. To cheat on the HW may yield the perfect HW 12% but will likely cost the remaining 88% of the course grade; in contrast, it is much better to "lose" part of the HW 12%, yet gain the remaining 88% by honestly working on all HW assignments.

8.4. **Answer key to homework assignments will be:**

- *Posted on bCourses* at 12:01am (PST) on Wednesdays. Do *not* ask for solutions to be posted earlier: you must attempt to do your homework without help from posted solutions.
- *HW Answer Key* may contain only answers or brief solution or sketches of the solutions. Students need to provide *full solutions* for a perfect completion credit of 12 pts on HWs.
- *Accessible in viewing mode only:* Students will be given only viewing access to solutions. Trying to download, print, make photos or screenshots, or any other ways to take the solutions off bCourses will violate the Student Honor Code.

9. Quizzes (13%): Top 10 out of 14 Quizzes

9.1. **How many and when?** There will be about 14 quizzes in discussion sections in person (no "online" options!), given once a week, usually on Fridays, during the last 10 minutes of section.

9.2. **Quizzes in final grade.** Only the top 10 quiz scores will be included in the final grade; i.e., a month worth of quizzes will be dropped. No more quizzes will be dropped, for any reason.

9.3. **No make-up quizzes.** If you miss the time of your quiz, you cannot retake it at another time or in another section, and your quiz score will be 0. Thus, when you miss your quiz (for whatever reasons, including being sick, having a family emergency or a job interview, etc.), keep in mind that exactly *the top 10* quiz scores will be counted.

Keep the few times when you miss a quiz only for true emergencies. The quizzes to be dropped are not intended as a back-up for slacking off, lagging behind the material, or catching up due to unsatisfactory academic performance on previous quizzes. No further quizzes will be dropped.

9.4. **Joining the course late.** Again, 10 quiz scores will count in the final grade, including some 0s if fewer than 10 quizzes have been taken.

9.5. **Content and grading of quizzes.** Quizzes will be based on the current or previous HWs and class/section problems. They will be graded out of 13 points, and will account for 13% of the final grade. Each quiz will consist of 1 written problem for 10 points (graded on being correct, complete, and clearly written), 3 True/False questions (1 pt for correct, 0.5 pts for blank, and 0 pts for incorrect answer). One T/F question on each quiz may be on administrative matters reflected in the syllabus or discussed in lecture or in section. Thus, you need to read the syllabus and be updated on any administrative announcements and in-class discussions.

9.6. **Cheat sheet on quizzes.** One page (one side of a regular sheet of paper) and hand-written by the student is allowed on quizzes. No copying and pasting of typed text/pictures from anywhere, unless the student has a registered disability that allows for typed or other specially prepared texts.

10. Exams (75%): 25% Each Exam. Resurrection Final Exam

10.1. **Times of the three exams: in person (no "online" options!)**

(a) **Midterm 1:** Wednesday, February 21, in class
(b) **Midterm 2:** Wednesday, April 3, in class
(c) **Final exam:** Tuesday, May 7, 7PM-10PM, in person

DSP students will take all exams in person, proctored by the DSP center or MATH 54 GSIs.

10.2. **No make-up midterms or final exams:** Every student must take the midterms and the final exam on the dates and at the times above, in person.

10.3. **Scheduling or avoiding conflicts with exams?** The three BIG NO-NOs:

- Do *not* buy tickets to travel and do *not* schedule other events during the days of exams: you must take the exams at the announced times.
- Do *not* ask for different dates/times for the final exam due to flight reservations or other reasons: the final exams are assigned campus-wide and there will be no personal exceptions.
- Do *not* take this class if you have a conflict with any of this exam schedule. MATH 54 must be taken in person. You *cannot* sign up for another class during the time of MATH 54.

10.4. **Exam content.** A substantial part of the exams will be based on versions of problems from:

- *Homework:* problems, both regular and bonus.
- *Class:* problems, theory, and ideas discussed in lecture/discussions.
- *Quizzes:* quiz problems from any sections.

10.5. **Are the exams comprehensive?**

- *Midterms:* The topics for each midterm exam will be based on the portion of the course between exams. Thus, formally, midterms are *not* comprehensive. Yet, you cannot forget previous material since parts of it may come up in the solutions to midterm problems.
- *Final Exam:* is comprehensive. Anything covered in the course is fair game on the final.

10.6. **Missing exams.**

- *Missing one or both midterms* will result in no option of an incomplete grade, as the student will *not* qualify for an incomplete grade by university guidelines (see Section 13).
- *Clobber policy:* The Final Exam will replace any missed midterm exam (see Section 11.3).
- *Missing the Final Exam* will result in automatic failure of the course, unless valid reasons are provided for requesting an incomplete grade (see Section 13).

10.7. **Cheat sheet on exams:** Two pages (two sides of a regular sheet of paper) for all exams. No copying and pasting of typed text/pictures from anywhere, unless the student has a corresponding registered disability.

11. Final Grade Components and Calculation. Final Grade Cut-Offs

11.1. **Grading scheme.** The final grades will be computed by taking:

(1) **12% Homework (HW):** Each of the top 35 HWs is worth $\approx 0.34\%$ of the final grade. HW medians of all sections may be uniformized at the end at the instructor's discretion. (Note: In the past, section HW medians were $\approx$ perfect, so no rescaling took place.) Each student is responsible for promptly talking to their GSI on how to improve on HW.

(2) **13% Quizzes (Q):** Each of the top 10 Quizzes is worth $\approx 1.3\% = 0.013$ of the final grade. Quiz medians of all sections will be uniformized at the end (at the instructor's discretion, likely to 10.66/13 points $\approx 82\%$ across all sections).

(3) **25% Midterm 1, 25% Midterm 2, 25% Final Exam (E).**

11.2. **Curving the exams.** If the class median of an exam is $M \geq 82$, the exams scores will stay. If $M < 82$, the scores S for that exam will be rescaled up to scores S^* to shift the median to 82 by:

$$\bullet \text{ rescaled score } S^* = \begin{cases} \dfrac{82S}{M} & \text{if } \ S < M; \\ \dfrac{100(S-M)+82(100-S)}{100-M} & \text{if } \ S \geq M. \end{cases}$$

With this formula, all extreme scores (0s and 100s) will stay fixed, all scores that were equal to the old class median M will be shifted up to 82, and all remaining scores will be linearly rescaled up.

11.3. **Resurrection final and total exam score (E).** If your final exam score is higher than either of your midterms, your final exam score will replace those (lower) midterm scores. Thus, the (rescaled) final exam score F^* will resurrect **one or both** (rescaled) midterm scores M_1^* and M_2^*:

$$\bullet \text{ Total Exam Score E} = 75\%\big(F^* + \max(F^*, M_1^*) + \max(F^*, M_2^*)\big).$$

This means that the final exam F^* may count for 25%, or 50%, or 75% of the final grade.

11.4. **Possible bonus:** We will experiment with 2 polls per lecture on PollsEverywhere. The polls are a great way to evaluate your understanding of the material in real time and to prepare for T/F and M/C questions on the exams. The sheer number of students and the set-up in the lecture hall may present unforeseen technical difficulties. Thus, we will count the polls only as bonus points.

- *Answers to polls* may be seen in course captures (given time to discuss them in class).
- *Remote participation in polls:* If you miss lecture, you can participate in polls remotely as long as you submit the answers during the time the polls are open in your own lecture.
- *Exams may contain* a hard bonus problem. Exam and polls bonus points will *not* be curved.
- **Bonus credit (B):** At the instructor's discretion, bonus credit may be awarded for correct polls (up to 4%), for exam bonus problems (up to 4%), and for post-midterm surveys (up to 1%): the exact bonus % TBD in due time. Bonus points will **not** affect the grade cut-offs or anyone else's final grade. They cannot lower anyone's grade. In the past, 2/3 of students received a final grade increase due to bonus points and/or the exam resurrection policy.

11.5. **Absolute grading system.** *Approximate* final grade cut-offs are given in the table below:

A^+	$\geq 105\%$	B^+	$\geq 87\%$	C^+	$\geq 77\%$	D^+	$\geq 60\%$	
A	$\geq 95\%$	B	$\geq 83\%$	C	$\geq 73\%$	D	$\geq 55\%$	
A^-	$\geq 90\%$	B^-	$\geq 80\%$	C^-	$\geq 67\%$	D^-	$\geq 50\%$	F: $< 50\%$

- The *total score* $\mathbf{T}$ = HW + Q + E + B will be calculated and rounded to the hundredths (e.g., $94.98\% \to A^-$, $89.92\% \to B^+$, $83.00\% \to$ B, $59.99\% \to D^+$, etc.).
- The *exact* final grade cut-offs will be finalized by the instructor at the end of the semester.
- The *minimal* median of total scores is expected to be $\approx 84.16\%$ ($= 12\% + 10.66\% + 3 \times 20.5\%$; i.e., 100% HW, 82% Q, 82% E); Bonus $\leq 9\%$ ($\leq 4\%$ polls, $\leq 4\%$ exams, $\leq 1\%$ surveys).

12. DSP Students and Athletes

12.1. **Timing your DSP request.** If you are a student with *a disability registered by the DSP* on UCB campus and require special arrangements during exams and quizzes, we must receive the official DSP accommodation from the DSP office at least **10 business days** in advance. Given the expected large number of DSP students in the two MATH 54 classes (over 100 students), we will *not* be able to accommodate anyone in less than 10 business days; if late, the student will take the exam along with everyone else under the regular conditions provided for the class. The earlier we are informed of your DSP status, the easier it is to provide appropriate accommodations for you.

DSP students with HW assignments accommodations: you need to inform your GSI in writing at least 24 hrs before the HW submission deadline of Monday midnight (i.e., by Sunday 11:59PM) and specify the HWs due that week for which you request time extension. The GSI can give you a 24-hr extension until Tue 11:59PM. You need to send a pdf file of your HW assignment by email to your GSI by Tue 11:59PM. The GSI will import the HW for you on Grade-scope. As HW solutions appear on bCourses 2 min afterwards, no more extensions can be given.

DSP students with make-up quiz accommodations: you need to inform and arrange with your GSI to take any make-up quiz within 2 weeks of that missed quiz. There will be no make-up quizzes during spring break or Finals week, no "retroactive" make-up quizzes if DSP official accommodations have not been provided in advance of the missed quiz, and no "series" of make-up quizzes at the end of the semester. Thus, plan ahead, be organized, and do not delay.

Questions about your DSP accommodations:

- regarding *quizzes* should be directed to your GSI ahead of time;
- regarding your *exams* should be directed to the Head GSI in the administrative OHs. The Head GSI will arrange for your DSP exams and contact you with the arrangements;
- that were *not* resolved by your GSI/Head GSI should be directed to the Professor in OHs.

12.2. **Taking the final exam "on the road" for athletes.**

- If you have a scheduled athletic competition as a member of an official UCB sports team during the final exam, you must inform the Head GSI in OHs **at least 14 days prior to the final exam**. Given the expected large number of athlete students in the two MATH 54 classes, we will **not** be able to accommodate anyone in less than 14 days; if late, the student will have to take the final exam along with everyone else under the regular conditions provided for the class. The earlier we are informed about the situation, the easier it is to provide the appropriate accommodations for you.
- Final exams "on the road" are **not** automatically granted: certain conditions must be satisfied and the Professor needs to speak with your coach and with the proctoring official (who cannot be associated with the team). Thus, if you do not inform the Head GSI at least 14 days prior to the final exam, you will **not** be granted the privilege of taking the final exams under such special conditions. Take this seriously and act fast and responsibly to ensure that communication has reached the Head GSI ASAP.

13. Incomplete Grades

13.1. **University policies:** Please, consult the university policies regarding incomplete grades.

13.2. **Reasons for Incomplete:** An Incomplete "I" grade is rarely given.
The only justifications for an I grade are:

- **documented serious medical problem,** or
- **a genuine personal/family emergency.**

13.3. **Conditions for giving an incomplete.** When requesting an incomplete, the student must:

- have a passing grade ($\geq C^-$) at that point: $\geq 67\%$ of maximal regular score before Final.
- have completed 2/3 of the course work up to that point, including both midterms, at least 67% of maximal possible HW score in each part (Lessons 1-13, 14-27, 28-38), at least 67% of maximal possible score in top 10 quizzes, and have no outstanding make-up quizzes.
- present a formal document regarding the nature of the emergency or the medical problem.

13.4. **Invalid reasons for requesting an incomplete.**

- Falling behind in this course or a heavy work load in other courses are not acceptable reasons for requesting an incomplete.
- If you miss a midterm (for any reason), you will **not** qualify for an incomplete, as your 0-score will not have been "resurrected" by the final at the time of requesting the incomplete.

14. Letter Grades vs. Pass/No Pass, and More

The grading scheme will tell you what performance will be *approximately* needed to achieve a certain grade. We cannot predict if a student will get, say, B^- or C^+, as that will depend on your final exam score. The decision to drop the course or switch between P/NP and letter grade is entirely yours and you will have to make on your performance up to that point.

Neither the instructor nor the GSIs will reveal the letter grade to a student with P/NP option: you will have to go through other official channels (not through the instructor or the GSIs) for your letter grade to be sent directly to another UCB program. Thus, discuss all of your options (current and future) with your adviser *before* choosing between a P/NP or a letter grade option.

15. Ed Discussion Site

In order to make the site useful and efficient, and not to get into legal issues, below are some rules that need to be followed by all participants in the site, as well as some general information. Before posting anything, you need to carefully read what follows below.

1. Who will moderate Ed Discussion? Several GSIs will be assigned to monitor the Ed Discussion site. Other GSIs may occasionally check the posts on Ed Discussion.

2. For whom is Ed Discussion? The Ed Discussion site is open only for students enrolled in the course, and the topics discussed are restricted mainly to the math content of the course: the Ed Discussion site is a math site. It is not a "political" forum or forum for other classes or subjects.

3. What CAN be posted on Ed Discussion? Posting ideas, partial calculations, and other math discussion is OK. Ed Discussion is for math questions and some quick logistics questions that have not been answered elsewhere (and you have not missed lectures or sections).

4. Posting anonymously or in a private thread on Ed Discussion. If you wish, you can post anonymously to your classmates. While we will disable the ability for students to post anonymously to the MATH 54 staff, we do not wish that to dissuade you from feeling comfortable asking any honest and relevant question. You can also post in a private thread (so that only staff can access your post): this mode is advisable only for personal items that should not be shared with the rest of the class. For example, asking math questions does NOT fall into this category: math questions should NOT be limited to private threads and all students should have access to the ensuing math discussion.

5. What is NOT allowed on Ed Discussion? No full solutions to a problem are allowed. On the other hand, you cannot just ask how to solve a problem without having tried it and without describing where you have difficulty. No "questioning, discussing, or arguing about" the structure and policies of the class: these are the prerogative of the Instructor, they will be equally applied to everyone, and they are not up for discussion.

Questions answered elsewhere are not welcome on Ed Discussion. You should not post questions that have been answered in the syllabus, in lectures/sections, or in the announcements: if you miss something, you must fill in the blanks by watching the lecture recordings, re-reading the syllabus and other course materials and announcements on bCourses, and asking your classmates, instead of publicly asking on Ed Discussion.

6. Illegal postings on Ed Discussion. Any posting of links or references on how to obtain unauthorized or pirated copies of the textbook or other copyrighted materials directly violates the course syllabus about plagiarism. Posting such content is illegal, and any student who does so faces academic and other sanctions.

Students cannot post pictures/images from the textbooks, the HW Solutions, Discussion Worksheets, Exams, etc.: no materials or pictures of these materials from our class can be posted (in whole or in parts) on Ed Discussion, on any other media used by the class, on email, or on the internet. If you want to refer to some problem, say, in the textbook, site the section and number of the exercise, and that will be sufficient.

Since there was some confusion in the past regarding this rule, let's try to phrase it simply as follows: **students cannot embed any images or other media into their postings on Ed Discussion** – do not try to use any of these features. A most common violation of this is trying to post images from your own solutions and asking us where the mistake is, or something along those lines.

7. Use LaTeX editor for math symbols and expressions. Instead of embedding images (which is not allowed in the Math 54 Ed Disc site), write in words and use the LaTeX editor (embedded in Ed Discussion) for any math symbols, expressions, and calculations. LaTeX is used by all Math 54 staff to produce the course materials and it will be used by all of the GSIs moderating Ed Discussion. To engage the LaTeX editor, enclose your math expression in dollar signs, or click on the $\sum$-icon in the menu above your posting and this will engage an interactive editor, or just describe in words what you would like to say without any fancy math symbolics. You can preview by clicking on the eye-icon and you can edit your post as many times as needed.

All students in MATH 54 need to follow the rules outlined here. The GSIs monitoring the site will delete inappropriate posts and warn the student(s), and at a second occurrence, these students will be denied access to the site.

Please, help us keep the MATH 54 Ed Discussion a safe and efficient place to learn and enjoy Mathematics.

16. Academic Integrity

The Mathematics Department, and in particular, the Professor and the GSIs in this course, expect that students in this math course will *not* engage in cheating or plagiarism.

- **Specific Honor Code** in this course will be provided in Quiz and Exam Instructions.
- **Seating scheme:** To ensure academic integrity, the Professor and the GSIs reserve the right to decide on any seating scheme during quizzes and exams.

The following is adapted from the Math Department web page. Read it for general understanding of cheating and honor code and adapt it to the present circumstances by following the Specific Honor Code and Exam Instructions that will be provided by the Professor.

16.1. **What does cheating mean?** Broadly speaking, cheating means violating the policies of a course or of the university in order to gain an unfair advantage over fellow students. A particular kind of cheating is plagiarism, which means taking credit for someone else's work. Cheating and plagiarism hurt your fellow students in the short term, they hurt the cheater in the long term, and they will not be tolerated. On exams, the most basic type of cheating is copying off of someone else's paper. Graders easily spot when two exam papers look unusually similar, or have similar (wrong or correct) answers, calculations, ideas, or thought structure, even if written in different words or order of words. Even glancing at someone else's paper to check your answer is cheating. If you write the correct answer to a computational problem without any justification or with a bogus justification leading to that answer, this raises strong suspicions that you cheated, on top of not receiving any credit anyways due to the lack of correct justification.

16.2. **Electronic devices on exams/quizzes.** Electronic devices such as phones, calculators (electronic, mechanical, or any other type), and other devices* are not allowed on exams/quizzes, not even to tell the time. There are too many ways to cheat using software and the Internet. Exams are not intended to test your ability to find the answer by any means necessary. The questions might be too easy for that! Rather, exams/quizzes test your understanding of the course material, which you will need in order to use math correctly in subsequent courses and in the real world.

16.3. **Expectations on exams, quizzes, and HW.** Exams and quiz papers are expected to be your own work. In this class we encourage collaboration on homework, as it will be graded for "completeness" only; but you are carrying your personal responsibility to learn how to do the HW problems independently so as to be able to solve similar problems on exams and quizzes by yourself. When allowed, if you use proofs or calculations from textbooks or class notes, you need to cite these sources, even if you have rewritten the material in your own words; otherwise it is plagiarism.

16.4. **How to avoid cheating?** It is your responsibility to take reasonable precautions to prevent cheating. In exams, you should sit as far away from other students as the room permits, and hold your exam papers in such a way that they are not easily visible to other students.

16.5. **What to do in a case of cheating?** If you suspect that other students are cheating, you should immediately inform the Professor/GSIs. Students may be cheating in ways that the profes-sor/GSI has never heard of (unlikely, but possible). Even if you don't know any names, the sooner you inform the Professor/GSI what is going on, the sooner they can take measures to put a stop to it. You can further report any cheating at: http://sa.berkeley.edu/conduct/reporting/academic

16.6. **Resolution to cheating.** If you are suspected of cheating, the Professor may pursue a variety of actions depending on the particular nature of the incident. If you accept responsibility for academic miscondict, the matter can often be resolved between you and the Professor with possible academic and administrative sanctions ranging from losing points on an exam/quiz to failing the class, and a report will be sent to the Mathematics Department and/or Center for Student Conduct. It is not necessary for the Professor to determine whether the student(s) has a passing knowledge of the relevant factual material. It is understood that any student who knowingly aids in cheating is as guilty as the cheating student.

In serious incidents, or if you maintain that you are not responsible for academic misconduct, the Professor has the freedom and responsibility to impose any academic sanctions within the course that she deems appropriate, and the case may be forwarded to the Center for Student Conduct. The latter may initiate more stringent actions (e.g., dismissing the student from the university).

*Tablets/ipads are allowed in lectures/sections of MATH 54, but only to take notes, and phones to answer lecture polls. Anyone doing other things on electronic devices will be asked to leave to finish up whatever they are doing.

16.7. **Conclusion.** We hope that the above clarifications will help prevent cheating. If you have any questions about the rules or expectations, you should not hesitate to ask the Professor/GSI, or the vice chair for undergraduate affairs in the Mathematics Department.

17. Conduct Sanctions and Grade Deductions for Illegal Postings

This section concerns what will happen when a student pirates course materials and posts them on-line, including but not limited to coursehero.com, or assists someone else in doing that. Apparently, the problem is pervasive, it encourages plagiarism, and in the long-run it hurts everyone by undermining and jeopardizing their learning process.

Here are the relevant sections from the **University-wide Code of Conduct** and this is what **UCB Student Conduct Committee** will use to apply sanctions to students who have posted course materials on-line or elsewhere without explicit permission from the corresponding Professors:

102.23 Course Materials - Selling, preparing, or distributing for any commercial purpose course lecture notes or video or audio recordings of any course unless authorized by the University in advance and explicitly permitted by the course Professor in writing. The unauthorized sale or commercial distribution of course notes or recordings by a student is a violation of this Code whether or not it was the student or someone else who prepared the notes or recordings.

Copying for any commercial purpose handouts, readers or other course materials provided by a Professor as part of a University of California course unless authorized by the University in advance and explicitly permitted by the course Professor in writing.

As in other classes on campus, any unauthorized by the instructor postings of any course materials, including but not limited to any handouts, syllabus, bCourse pages, quizzes, discussion worksheets, midterm reviews, exams, presentations, lecture notes, pictures, video, etc., will be:

Subject to a letter grade deduction of the final course grade, at the Professor's discretion, and Formally reported to the University Student Conduct Committee.

In case of doubt, before posting any materials related to the course, ask the instructor or your GSIs. As a rule of thumb, anything that the instructor or the GSIs have prepared for the course, anything on the bCourses site, etc., *cannot* be posted by you or anyone else online. Be advised that there is a simple way to track down who has posted materials.

Finally, no one in the classes can take audio or video, or pictures of the boards/screens or anyone in class, without my explicit permission and without the corresponding DSP accommodation presented to the instructor in advance. Such audio, video, or picture materials are subject to the same rules of non-posting and usage strictly by the corresponding DSP student.

18. Disrupted Examinations

The following has been adapted from the Mathematics Department advising materials to faculty.

18.1. **State law during fire alarms.** Over the years, several final examinations have been disrupted by false fire alarms. State law requires that buildings must be evacuated during alarms, and the police department suggests that classes do so in an orderly, efficient fashion so that students can return to work ASAP.

18.2. **Penalties for false alarms.** A false alarm is a misdemeanor, with a penalty of up to $1,000 in fines and up to 1 year in county jail. If the alarm results in bodily injury (e.g., a heart attack), a false alarm can be a felony with a penalty up to $5,000 in fines and 3 years in state prison.

18.3. **When an alarm does sound during an exam,** we will use the following guidelines:

- If an alarm is pulled after the exam has been going on for more than 2/3 of the allotted time, the exam will be considered complete and the grading scale will be adjusted at the discretion of the Professor.
- If an alarm is pulled after the exam has been going on for less than 15 minutes, we will evacuate and the students will leave the exams on their desks. During an evacuation, the Professor and the GSIs will visibly monitor the students to cut down on casual exchanges of exam information. Anyone found carrying his/her exam outside the classroom will not be allowed to continue the exam, and the Professor will be given the freedom to decide how and whether to grade this student's exam. After the alarm has been taken care of, the students will proceed back to the classroom and resume the exam.

• For exams that have been going on between 15 minutes and less than 2/3 of the allotted time, the students will leave their papers in the classroom and evacuate. It will be up to the Professor to decide if there is enough time to resume the exam or to reschedule it.

19. Tentative Topics of the Course

1. **Logistics of the course.** §1.1. Systems of linear equations
2. §1.2. Row reduction and echelon forms
3. §1.3. Vectors and linear systems
4. §1.4. Matrix equations. S1.5. Solution sets of linear systems
5. §1.7. Linear independence. §1.8. Intro to linear transformations
6. §1.8. Linear transformations. §1.9. Matrices of linear transformations
7. §2.1. Matrix operations. 2.2. Inverse of a matrix I
8. §2.2. Inverse of a matrix II. §2.3. Invertibility
9. §3.1. Determinants. §3.2. Properties of determinants I
10. §3.2. Properties of determinants II. §3.3. Cramer's rule. Applications
11. §4.1. Vector spaces and subspaces. §4.2. Linear transformations I
12. §4.2. Kernels, images, and linear transformations II
13. §4.3. Linearly independent sets, spans, and bases. §4.5. Dimension
14. §4.5. Rank and Rank-Nullity Theorem

    Midterm 1: February 21 (in class)

15. §4.4. Coordinate systems. §4.6. Change of bases
16. §5.1. Eigenvectors and eigenvalues. §5.2. Characteristic equation I
17. §5.2. Characteristic equation II. §5.3. Diagonalization
18. §5.4. Eigenvectors and linear transformations. §5.2. Similar matrices
19. §5.5. Complex eigenvalues
20. §6.1. Inner products, length, and orthogonality. §6.2. Orthogonal sets
21. §6.2. Orthonormal sets. §6.3. Orthogonal projections
22. §6.4. The Gram-Schmidt process. QR factorization. §6.5. Least-square problems I
23. §6.5. Least-square problems II. §6.6. Applications to least-square models
24. §6.7. Inner product spaces. Applications I
25. §6.7. Inner product spaces. Applications II. §7.1. Symmetric matrices I
26. §7.1. Diagonalization of symmetric matrices
27. §7.2. Quadratic forms
28. §7.4. Singular value decomposition

    Midterm 2: April 3 (in class)

29. §4.2. Homogeneous 2nd order DEs: the general solution
    §4.3. Auxiliary equations with $\mathbb{C}$-roots I
30. §4.2. The Wronskian and L.I. §4.3. Auxiliary equations with $\mathbb{C}$-roots II
    §4.4. Non-homogeneous 2nd order DEs via undetermined coefficients I
31. §4.5. Method of undetermined coefficients II
32. §4.6. Variation of Parameters
33. §9.1. Introduction. §9.5. Homogeneous linear DE systems with constant coefficients I
34. §9.5. Homogeneous linear DE systems with CCs II. §9.6. Complex Eigenvalues
35. §9.5. Intro to Jordan Canonical Form. Applications to recurrence sequences (optional)
36. §10.3. Fourier series I: Motivation and set-up
37. §10.3. Fourier series II: Extend and operate
38. §10.2, 10.4, 10.6. Musical Fourier III. The Wave equation (optional)

39-41. RRR week: Reviews in class

Final Exam: Tuesday, May 7, 7PM-10PM (in person)

To match the course pace, particular dates for some topics and the topics themselves may be adjusted as the semester progresses. Always refer to the HW assignments on bCourses and other lecture materials for the updated topics and dates.

20. Appendix: Instructions and Tips on HWs, Lecture Slides, Quizzes, and Exams

20.1. **Required HW header.** On top of the first page of each HW, you need to write the 5 items:

(1) MATH 54 Spring 2024, HW# ....., Due Date .....(MM/DD/YY)

(2) HW Topic: .....
(as it appears in the bCourses HW Assignment, legibly handwritten)

(3) Student full name: .....
(as it appears on CalCentral, legibly handwritten)

(4) Section # .....(3-digits), GSI Name: .....

(5) I have followed the MATH 54 HW Honor Code: .....
(sign your name here; the same signature needs to appear on your exams and quizzes)

20.2. **MATH 54 HW Honor Code,** which you must follow on each HW (no need to rewrite it):

*"I have worked on this MATH 54 Homework honestly and to the best of my own capabilities and knowledge. I have provided the full solutions with computations and explanations (and not just answers). I have clearly marked/highlighted the beginning and the ending of each exercise, so it is easy for the grader to find each exercise. I have **not** used the internet or any other sources to rewrite solutions and/or answers. I have **not** included problems from other HWs (whether mine or others', in this or other classes). I have **not** used the work of anyone else, and I have not submitted (parts) of someone else's work. This HW is written only by me and in my own handwriting, which matches how I write on MATH 54 quizzes and exams. I have not cheated in any way. I have followed the Honor Code for Student Conduct at UC Berkeley.*

I understand that if any item above is violated, or if I miss to include anything in the 5-item header above, I will receive 0 points on this HW, and additional points may be subtracted at the discretion of the grader."

20.3. **HW format and submission.** To facilitate quick, easy, and correct grading, and to have your GSI *love* your HWs and give you lots of points, do your HW in the following format:

(a) For each exercise, write and highlight the section # and exercise #; e.g., **Ex.1.2.4.**

(b) For each problem, highlight or circle **the final answer**.

(c) For proof or other types of problems, clearly **indicate the end** of your solution by an "end-of-proof symbol," which could be a box □, Q.E.D., circled smiley face, a picture of a dragon, etc. Be consistent so it is easy to track and see everything in your HW.

(d) **Leave at least one empty line** between problems and between parts of the same problem! Do not crowd two or more parts or two problems in the same paragraph.

Ditto, do not try to squeeze the whole HW onto a single page: the HW is not a cheat sheet that has to fit onto 1 page. Instead, think about how you will **use your HWs later** to review for exams: you will need to have an easy and clear access to each problem. Since details about solving the problems may fade over time, having each HW organized and easy to read and understand will only be an advantage to you down the road in the course.

(e) Use a **professional pdf converter app** to turn your HW into a pdf file suitable for submission on Gradescope. Avoid using phones or turning the HW into other types of files. Make sure that the pages are not turned sideways or upside down. Re-upload to correct any mistakes. Always check that each HW appears in the correct assignment on Gradescope.

(f) **Submit your HW early,** ideally, within 2 days of lecture. Gradescope promptly closes at 11:59PM on Monday evening. There is a lot of traffic on Gradescope in the **last half-hour** before the deadline: avoid tech issues by submitting much earlier, since Gradescope will not re-open regardless of what the issue was that did not allow you to submit on time.

When you follow the above tips, your GSI will immediately see the beginning and the ending of each problem and will know where to look for the justification and the rest of the solution. The GSI then will be certain that you put a lot thought and effort into presenting your HW in a way that makes it easy to read and understand your solutions, and as a result, as any human being and a good teacher, the GSI will be very pleased and will be more inclined to give you full score.

20.4. **Suggested HW Completion Schedule.** All 3 (or fewer) HWs assigned on MWF during a certain week are due the following Monday by 11:59PM on Gradescope. This is done for administrative purposes: to simplify tracking and grading HW assignments, as well as recording scores. However, each HW is closely related to a specific lecture. Since lecture material progresses in level and builds upon itself from lesson to lesson, leaving all 3 HWs until the following Monday (or the weekend beforehand) leads to lagging behind during the week.

The Most Optimal HW Schedule

(a) HW_n assigned to lecture on Monday:
- Review your lecture notes and start HW_n on Mon/Tues.
- Attend your section on Wed, where you will solve problems similar to HW_n.
- Visit Tues/Wed OHs or go to the Student Learning Center to ask questions on HW_n.
- Complete HW_n and submit on Gradescope by Wed, 11:59PM.

(b) HW_{n+1} assigned to lecture on Wednesday:
- Review your lecture notes and start HW_{n+1} on Wed/Thurs.
- Attend your section on Friday, where you will solve problems similar to HW_{n+1}.
- Visit Thur/Fri OHs or go to the Student Learning Center to ask questions on HW_{n+1}.
- Complete HW_{n+1} and submit on Gradescope by Friday, 11:59PM.

(c) HW_{n+2} assigned to lecture on Friday:
- Review your lecture notes, start HW_{n+2} on Fri/Sat.
- Attend your section on Monday, where you will solve problems similar to HW_{n+2}.
- Visit Fri/Mon OHs or go to the Student Learning Center to ask questions on HW_{n+2}.
- Complete HW_{n+2} and submit on Gradescope by Monday, 11:59PM.

This way you will spread out the HW load over the whole week (instead of cramming everything before the deadline) and you will have a smoother, more robust, and generally, better way to learn, absorb, and practice the material taught throughout the week. In the long run, this is a mature way to ensure performing well in the course with a high probability!

In the past, some students criticized the Monday deadline for all 3 HWs and requested that the Gradescope HW deadline is 2 days after each lecture, so that they would be forced to do and submit HWs shortly after each lecture. We do not have to force the above schedule on anyone, and we will leave the weekly deadline for all 3 HWs intact, to help with exam preps and occasional emergencies during the week. Life is full of priorities: choose your priorities wisely, act maturely, and keep in mind that Gradescope will not open beyond the Monday 11:59PM deadline for any reason.

20.5. **Lecture slides vs. student lecture notes.** The Lecture Slides are written by the instructor for the sole purpose of presenting during live lecture on an iPad. They are **not** (and are not meant to be) what one might traditionally call lecture "notes."

• **The Lecture slides are not designed as "independent" material** to be read after (or before) lecture. The full meaning of the Lecture slides can be gleaned only during lecture itself. Think of the slides as if you are watching a movie (or a course capture) but without sound: that will be more-or-less equivalent to trying to decipher the lecture material by not coming to lecture and then trying to comprehend the slides on your own. If someone misses lecture and attempts to reconstruct the lecture by reading the slides, the slides may look "cryptic," "disorganized," or even "incomprehensible" to them: this is no surprise since the slides contain only about 50%-60% of the material, remarks, derivations, problem-solving ideas, polls, and discussion that occur during live lecture. In addition, what happens in lecture is dynamic: on the same screen, you will see, written or appearing, various layers of information (numbers, calculations, words, pictures, diagrams). In contrast, what you see on the pdf slides is only the final version of each screen in a "frozen" frame version, where the order and dynamics of the in-person lecture are lost and can be partially recovered only by carefully watching the whole course capture and simultaneously taking notes.

• The Lecture slides in a pdf format are provided at the discretion of the instructor and at the request of many students, as **an optional extra resource to those who come to lecture** and would like to use afterwards the slides for a quick review of the material as it occurred in lecture.

• **If you do not come to live lecture, you should not use the slides:** they are an optional extra resource, intended to be used only as a review of what happened in lecture in-person, and not as a substitute for when you miss lecture and not as a substitute for reading the textbook.

• If the Lecture slides in pdf format work for you outside of class, use them wisely: they are tightly related to lecture but, as any media, they capture only a portion of what happens in lecture and are not a "stand alone" material.

• Each student is responsible for making their own lecture notes.

20.6. **First page with instructions of a Sample Quiz in Math 54.**

Student's First and Last Name: Date: 01/19/2024

Sample Quiz 0

Section time 8:00AM-9:00AM[†]

MATH 54 Linear Algebra with Professor Stankova

GSI Name: _____

- Time for quiz: 10 minutes.
- You are allowed a one single-sided letter-size cheat sheet. Your cheatsheet must be handwritten by you: no photocopying or printing (unless you have a DSP accommodation).
- No calculators or other notes/books/devices are allowed.
- Try your best! Stay calm and good luck!

True/False(T/F). (3 pts) For each question, you must completely bubble (fill in) one of the circles or leave blank. To discourage guessing, True/False problems will be graded as follows:

- 1 pts for each correct T/F answer.
- 0.5 pt for a blank T/F.
- 0 pt for each incorrect answer.
- If more than one circle is bubbled (or partially bubbled), an answer is not completely erased, or there are any other markings on any of the 2 answer circles (e.g., checkmarks, crossed out or circled answers, etc.), you will get 0 points. Thus, completely fill in one circle answer and leave the other empty, or leave both blank.

For each question, choose the best answer in the context of our class.

(1) Ⓣ Ⓕ There are exactly 2^n subsets of a set of size n.
(2) Ⓣ Ⓕ If A and B are sets, then $|A \cup B| = |A| + |B| + |A \cap B|$.
(3) Ⓣ Ⓕ Lecture polls can be remotely answered at any time they are open in lecture.

Written Problem. (10 pts)

- Provide all relevant work and calculations. You MUST **justify your answer** to undoubtedly convince me that you solved the problem and not guessed it.
- Partial credit will be given to good work and progress even if there is no final answer or the answer is incorrect. On the other hand, bogus justification of a correct answer will receive no credit (and neither will the answer in this case).
- Keep your scratch work separate. Cross out writing you don't want graded and clearly label the parts you want read or graded.
- Points will be deducted for incorrect writings that you "forget to cross out."

Flip over for problem on back.

[†]This Quiz is copyrighted and provided for the personal use of Spring 2024 MATH 54 students only. It may not be reproduced or posted anywhere without explicit written permission from Professor Zvezdelina Stankova.

20.7. **Tentative instructions for midterms in Math 54.**

Math 54 Midterm Exam

Instructor: Zvezdelina Stankova

STUDENT NAME: _____ STUDENT ID: _____

GSI'S NAME: _____ SECTION NUMBER: _____

LEFT NEIGHBOR: _____ RIGHT NEIGHBOR: _____

DO NOT OPEN THE EXAM UNTIL TOLD TO DO SO!

(1) There are 3 written and 5 T/F questions. Do all of them as best as you can. There is an additional bonus problem, which should be attempted only if you are done early and only if you are confident in your solutions to the regular problems.
(2) The exam is approximately 50 minutes long. You may **not** leave early.
(3) Use the provided sheets to write your solutions. **You CAN write** on the back of a page; but you need to put a clear arrow on the front of the page, with the words **"Continued on the back."** Without this, we will not click on the back page, will not grade it, and will not accept any regrade requests about that.
(4) Before the exam, pull out several of your own blank sheets for scratch work.
No extra sheets of paper can be submitted with this exam due to the grading software!
(5) The exam is closed notes and books: **no class, section, or review notes, no textbooks, and no other materials can be used during the exam.** You can use only your **cheat sheet**, this exam packet and additional blank pages that you pulled out before the exam started. The cheat sheet is two sides of 1 regular 8×11 sheet, handwritten only by you. A cheat sheet that doesn't conform to these specifications will be disqualified, and the student's exam may be annulled.
(6) **No calculators and no internet access are allowed during the exam!** You cannot ask for help in any form from other students, look at their exams and copy, or cheat in any way. The exam is an individual assignment and must be done only by you.
(7) **For written problems 1, 2, and 3:** check your reasoning and calculations carefully, justify *all* your answers, and include all intermediate steps and calculations. If you are not sure about how to write something in math notation, explain clearly *in words*.
   (a) **0 points will be given to answers that are** unjustified, insufficiently justified, justified with gaps, or have an incorrect or bogus justification.
   (b) **0 points will be given if more than one solution** on the same problem are found on the student's exam. You need to commit to one way of doing the problem and to one answer. You need to cross out anything else that does not belong to that solution and to that answer, including anything that differs from that answer or contradicts it. If we see more than one attempt or more than one answer that are not crossed out, the whole solution will receive a score of 0.
   (c) **No crossed-out stuff will be graded**. Please, do not ask for regrades about that.

Please, sign the statement below. Exams that are not signed will not be graded.

I, the student whose name and signature appear below, have completed the exam without any outside help from people or other sources. I have used only my cheat sheet conforming to the specifications above. I have not cheated in any way, and I have followed all instructions above.

STUDENT SIGNATURE: _____