Exam 2 Study Guide

MA 261 · Fall 2023

> **Exam 2 is Tuesday, Nov 7 at 8:00pm – 9:00pm.**

Exam Format: The exam will be in-person. You will have 1 hour (60 minutes) to complete the exam. It is a multiple-choice exam with a total of 12 questions. Each question is worth 8 points, and you will earn 4 points for filling out the scantron correctly.

Exam Material: The exam will cover Lessons 17 – 28 (Chapters 15.8, 16, and 17.1 – 17.3). Exam 2 will not cover Section 17.4 Green's Theorem. A detailed list of learning objectives, definitions, and practice problems is included in the table below.

Past Exam Archive:
https://www.math.purdue.edu/academic/courses/oldexams.php?course=MA26100

Exam Conflicts: If a student has a conflict with the evening exam, they must provide documentation with the Exam Conflict Form:
https://www.math.purdue.edu/~kthood/docs/MA261_Fall2023/exam_conflict_form_ma261_fa23.pdf

ADA Accommodated Exams: Most students are automatically scheduled for their ADA exam. You should have received an email with details (and you may need to check your spam folder). For those students who were not automatically enrolled, Dr. Hood has sent you an email with further instructions.
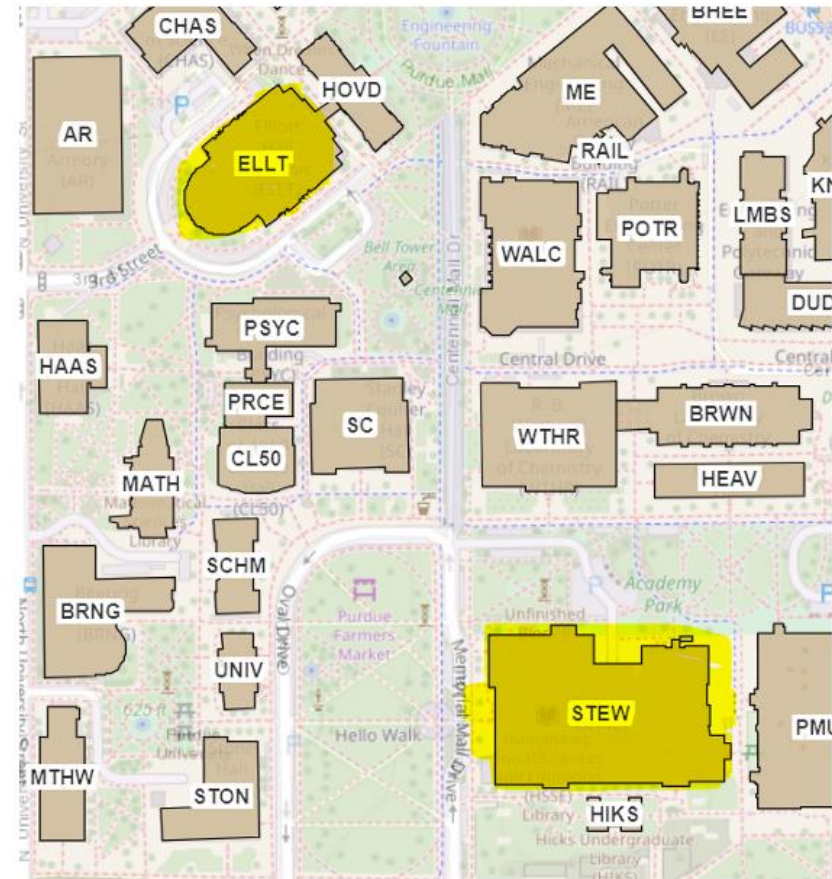
Exam Location: The exam will be in ELLT 116 and in STEW 183 (Loeb Playhouse). You will be assigned a room with your TA. All the students who have the same TA will sit in the same area of the exam room. There should be empty seats to your left and right, and a person in the seat in front of you and the seat behind you.

You can view your room assignment here:
https://www.math.purdue.edu/academic/courses/semester/202410/ma26100/resources/ma261_exam_seating_chart.pdf

Exam Rules:

Test Booklet: There will be a scantron (left) and a test booklet. Students may not open the test booklet until instructed.

Test/Quiz Number: There will be ten versions of the exam, each with a 4-digit "Test/Quiz Number". The student must put the "Test/Quiz Number" on the scantron in order for their scantron to be correctly graded.

Please Bring: A number 2 pencil, your PUID, your REC section number, and your TA's name.

Prohibited Items: Notes, Textbooks, Calculator, Phones, Smart Watches, and all other Electronic Devices. You are not allowed to communicate to anyone else during the exam except, if you have a question, your TA or lecturer.

*If a student uses one of the prohibited items during the exam, it will be considered a violation of the academic honesty policy and reported to the Office of the Dean of Students. All electronic devices should be turned off and put away out of sight.

Late Policy: Students must arrive promptly to take the exam. If a student arrives more than 20 minutes late, they will not be permitted to take the exam. Instead, the student will have to take a make-up exam with a 20% late penalty. Additionally, if a student finishes early, they cannot leave the exam room until after 20 minutes have passed.

Leaving Early Policy: In the last 10 minutes, students may not leave the exam room. This is to minimize noise and distractions for the other students still working on the exam. The student may raise their hand and turn in the exam to the TA or proctor, but they must remain seated.

#	Lesson:	Sec:	Quiz:	You should be able to:	You should know:	Practice Problems:	Past Exam Problems:
17	Lagrange Multipliers	15.8	6	- Use Lagrange multipliers to find extreme values	Lagrange multiplier	**15.8**: #7, 9, 11, 13, 15, 17, 21, 23, 25, 35 41	S19E2#1 F19E2#1 F18FE#6 F18E2#2
18	Double Integrals in Rectangular Regions	16.1	6	- Evaluate iterated integrals - Evaluate double integrals over rectangular regions - Compute average values of functions over plane regions	Double integral, average value	**16.1**: #5, 27, 29, 31, 33, 35, 45, 47	F19E2#2 S18E2#2 F18E2#3
19	Double Integrals over General Regions	16.2	6	- Evaluate double integrals over general regions - Change the order of integration	Order of integration	**16.2**: #43, 47, 51, 55, 57, 59, 61, 63, 65, 67	S19E2#2 ~~S19E2#4~~ S19FE#10 F19E2#3 F19FE#9 F18E2#4
20	Double Integrals in Polar Coordinates	16.3	6	- Find volumes of solids using polar coordinates - Evaluate double integrals using polar coordinates	Polar coordinates	**16.3**: #15, 17, 21, 23, 25, 27, 29, 31, 33, 41, 51, 55	S19E2#3 S19FE#11 F18FE#8 F18E2#5
21	Triple Integrals	16.4	7	- Find volumes of solids using triple integrals - Evaluate triple integrals - Change the order of integration	Triple integrals	**16.4**: #15, 17, 19, 21, 25, 31, 37, 39, 41, 45, 47, 49, 55	S19E2#5 S19FE#12 F19E2#4 F18FE#9 F18E2#7
22 23	Triple Integrals in Cylindrical and Spherical Coordinates	16.5	7	- Evaluate triple integrals in cylindrical and spherical coordinates	Cylindrical coordinates, spherical coordinates	**16.5**: #15, 17, 19, 21, 25, 29, 31, 33, 41, 43, 45, 47, 49, 51, 53, 55	**Cylindrical** S19E2#6 S19FE#13 F19E2#5 F19FE#10 S18FE#8 F18E2#9 **Spherical** S19E2#7 S19FE#14 F19E2#6 F19E2#7 F18E2#10 F18FE#10

#	Lesson:	Sec:	Quiz:	You should be able to:	You should know:	Practice Problems:	Past Exam Problems:
24	Integrals for Mass Calculation	16.6	Practice	- Find centers of mass of two-dimensional objects - Find centers of mass of three-dimensional objects - Calculate the mass of variable density solids	Center of mass, variable density	**16.6**: #21, 23, 25, 29, 31, 33, 35, 37, 39	F19E2#8 S18FE#10 F18E2#6 F18E2#8 F18FE#11
25	Vector Fields	17.1	Practice	- Graph vector fields - Find gradient fields for a given potential function	Vector field, radial vector field, potential function, equipotential curves, flow curves, streamlines.	**17.1**: #11, 13, 15, 24, 37, 39, 41, 43, 47, 53	S19E2#8 F19E2#9 F18E2#11 F18E2#12
26 27	Line Integrals of Functions and Vector Fields	17.2	8	- Evaluate line integrals - Find the work required to move an object on an oriented curve - Find the circulation and flux of a vector field on a plane curve	Line integral, work, circulation, flux	**17.2**: #17, 19, 21, 23, 25, 27, 29, 31, 33, 41, 43, 45, 49, 51, 53, 57	S19E2#9 S19E2#10 S19FE#15 F19E2#10 F19E2#11 F19FE#11 S18FE#12 F18FE#12
28	Conservative Vector Fields & the Fundamental Theorem of Line Integrals	17.3	8	- Determine whether a vector field is conservative and find potential functions - Evaluate line integrals - Compute the work done in force fields	Conservative vector field, potential function, Fundamental Theorem for Line Integrals, independent of path	**17.3**: #17, 19, 23, 25, 35, 37, 39, 41, 43, 53, 55, 57, 59, 61	S19FE#3 F19FE#12 F18FE#13

*Answers to the practice problems are included in the textbook starting on page A-61.

Sample Exam Booklet Cover Sheet

MA 26100
Exam 1
10/03/2023
TEST/QUIZ NUMBER:
1003

NAME _____ YOUR TA'S NAME _____

STUDENT ID # _____ RECITATION # _____

You must use a #2 pencil on the scantron answer sheet. Fill in the following on your scantron and blacken the bubbles

1. Your name. If there aren't enough spaces for your name, fill in as much as you can.
2. Your 3-digit recitation section number, e.g. **XYZ**. (If you don't know your recitation section number, ask your TA.)
3. Test/Quiz number: **1003**
4. Student Identification Number: **This is your Purdue ID number with two leading zeros**
5. Blacken in your choice of the correct answer on the scantron answer sheet for questions 1–12.

There are **12** questions, each worth 8 points (you will earn 4 points for filling out your scantron correctly). Do all your work in this exam booklet. Use the back of the test pages for scrap paper. Turn in both the scantron and the exam booklet when you are finished.

If you finish the exam before 8:50pm, you may leave the room after turning in the scantron sheet and the exam booklet. You may not leave the room before 8:20pm. If you don't finish before 8:50pm, you MUST REMAIN SEATED until your TA comes and collects your scantron sheet and your exam booklet.

EXAM POLICIES

1. Students may not open the exam booklet until instructed to do so.
2. Students must obey the orders and requests by all proctors, TAs, and lecturers.
3. No student may leave in the first 20 min or in the last 10 min of the exam.
4. Books, notes, calculators, phone, or any electronic devices are not allowed on the exam, and they should not even be in sight in the exam room. Students may not look at anybody else's test, and may not communicate with anybody else except, if they have a question, with their TA or lecturer.
5. After time is called, students must put down all writing instruments and remain in their seats, while the TAs will collect the scantrons and the exams.
6. Any violation of these rules and any act of academic dishonesty may result in severe penalties. Additionally, all violators will be reported to the Office of the Dean of Students.

I have read and understand the exam rules stated above:

STUDENT SIGNATURE: _____

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Sample Scantron