

Math 155B - Spring 2020 - “Mini”-Midterm 4 - May 28, 2020 - 11:00am to
4:00pm sharp

Duration: 45 minutes

Instructions: Read completely before starting! You have 45 minutes once you start the midterm.

- Hand in your answers to the **three questions** as the answers to problems 1-3 on Gradescope.
- Hand in this cover page (or other statement of Academic Integrity along with the start and stop time) as the answer to problem 5 on Gradescope.
- You may (1) print out the quiz and write answers on the printed sheet, or (2) use a tablet to write on the PDF file, or (3) write answers on a blank sheet of paper (preferably white, unlined printer paper).
- You must SHOW WORK. Do not just upload unsupported answers.
- **BEFORE YOU START WORKING OR THINKING ABOUT THE PROBLEMS:** Write the start time in the space below.
- **WHEN YOU STOP:** Write the stop time in the space below. The total time should be at most 45 minutes. If more than 50 minutes, explain in the comments below.
- **AFTER YOU STOP:** Sign the Academic Integrity Acknowledgement below.
- Convert your written answers to a PDF file.
- **UPLOAD TO GRADESCOPE – IMMEDIATELY AFTER THE STOP TIME:** If there are problems uploading, please explain in the comment section. If you modify any answers after the “STOP TIME”, that is, while preparing to upload, please explain in the comments below.

Academic Integrity Guidelines: **You must work this exam on your own. You may not use a “cheat sheet” or any other notes, textbook, online resources, or resources of any kind. You may neither receive help nor provide help on this midterm.**

START TIME:

STOP TIME:

ACADEMIC INTEGRITY: I understood and abided by the academic integrity guidelines.

SIGNED: _____

Comments (optional):

Math 155B - Spring 2020 - Midterm #4 - May 28, 2020 - due 4:00pm sharp

1. The Radiosity Equations can be solved by the Jacobi method, the Gauss-Seidel method or the Shooting method. The shooting method is also called the “progressive refinement” method. Give complete pseudocode for the shooting method. What are the inputs to the shooting method, and what are the outputs?

2. Describe the two methods used to determine the visibility factors $V_{i,j}$ in radiosity. Your answer should be specific and detailed, but does not need to give the mathematical formula for form factors.

3. We discussed two methods for combining soft shadows with other distributed ray tracing methods. (We called these the “old” method and the ”new” method for soft shadows.) Describe the two distributed ray tracing techniques for soft shadows. How are they different? How are they the same? What are their advantages and disadvantages?