Choose any one of the papers below to be the focus of your final paper and your final presentation. Start by reading the paper carefully. Be sure you understand the results presented— not only their significance but also the method and technique of their proof. You will then write a short (8-15 page) paper of your own. Your work will put the results of the paper into its broader context; it is not meant to summarize the result. You will also give a short (10-15 minute) oral summary of the paper to the class that does summarize the paper, including the results and proofs.

Detailed Instructions and Grading Rubric for the Paper

The purpose of your paper is to put the results into their broader mathematical context. Do not summarize the paper you read— after all, that paper has already been written. Instead discuss the meaning and significance of the paper that you have read, as well as reasonable directions for future work.

The student’s work will be graded against four categories:

- Does the student’s work properly explain the problem that is being studied? (5 points)
  - Does the student’s work precisely and correctly describe the problem?
  - Does the student’s work use proper and correct terminology?
  - Does the student’s work precisely and correctly describe the solution?
- Does the student’s work correctly identify other, similar problems? (5 points)
  - Did the student provide a broad cross-section of relevant related work?
  - Are the results from the related work correctly and precisely stated?
  - Are all of the sources properly referenced?
  - Is a complete and full bibliography provided?
- Does the student’s work put the paper selected in its proper context? (5 points)
  - Does the student’s work correctly identify what is new about the paper?
  - If the paper provides a new proof of an existing result, does the student’s work well explain this fact?
  - If the paper provides a generalization of a known result, does the student’s work well explain this fact?
  - If the paper provides a new approach to a well known problem, does the student’s work well explain this fact?
  - If the paper describes a new problem, does the student’s work describe related problems?
- Does the student’s work identify new problems or questions that are worth further study? (5 points)
Deductions from the 20 possible points can also be made for mistakes in grammar, spelling, and formatting. Deductions may occur for papers below or above the required size (8-15 pages).

The paper does not need to be typed or typeset; handwritten papers are acceptable. However all papers must be professional, neat and clean.

The final paper must be turned in on or before 5:15 pm on Thursday, December 12. Electronic submissions are acceptable, however it is the student’s responsibility to ensure that the electronic delivery is complete before the deadline. The professor will provide electronic confirmation of any paper submission; if you do not receive confirmation, assume that the paper has not been properly delivered.

**Detailed Instructions and Grading Rubric for the Presentation**

Students will be called upon to give a short 10-15 minute presentation on their project. These presentations will be given on either 12/3, 12/5, 12/10, or 12/12. The precise schedule of talks will be announced in class on Tuesday, 11/26.

During the presentation, the student will summarize the paper, including the main results and proofs.

The student’s work will be graded against three categories:

- Did the student correctly introduce the problem studied in the paper? (5 points)
- Did the student correctly summarize the key results from the paper? (5 points)
- Did the student provide correct summaries of the proofs of one or more key results from the paper? (5 points)

During the presentation, the student will not use prepared materials; PowerPoint slides are prohibited. Students may use tools like Mathematica in the talk to illustrate ideas, but they must not be used as a substitute for PowerPoint.

Deductions from the 15 possible points can be made if the talk is unclear, ill presented, or poorly given.

**List of Papers**

Students may select any one of these papers as the basis for their project.

Different students must select different papers for their project. Once a student selects a paper topic, please email the instructor with your choice. If no other student has requested that paper, then the choice will be approved and this will be recorded.

Students who wish to read a paper that is not on this list may propose the paper to the instructor who will consider the request. Allow at least one week for such a request to be considered.

No changes to project topics will be considered after November 26.


