

## LONG PROJECT RUBRIC, MATH 191 SPRING 2018

Most of the details of the project are the same as for the short project, except that some requirements have been lengthened and/or emphasized.

The goal for this paper (beyond learning something yourself!) is to tell a mathematical story. The reader you should have in mind while writing your paper is the other students in the class. Make sure that you prioritize clarity, and everything you say supports the “big picture” story you explain. Don’t just jump right in to calculations – *explain why the calculations are interesting*.

Each paper should have a significant amount of mathematical work done by you which hasn’t been covered in class. It doesn’t have to be totally original, especially if your paper is a survey or a history of a problem; in those cases, you can provide examples of some of the phenomena described in the theorems you cite. By “significant,” I mean at least **a full page** to get any credit for this portion of the paper, and more than **two pages** to get full credit.

The same requirements for how to include other peoples’ theorems in your mathematical work hold as for before.

**Make sure that you explain all terms which are new to the course.** The guideline should be: if your paper has work which covers the same ground as we covered in the course, e.g. a word-for-word definition or theorem, that does not count as new mathematical content. Also, you can assume that the reader knows every definition and theorem that’s been covered in the course. Conversely, *every term which has not been introduced and used in the course must be defined*.

Also, make sure that you choose an appropriate amount of material for your 15-minute presentation. You will not be able to tell us every detail from your report, so try to give us a “trailer” for your paper. Also, make sure you rehearse a few times!

- The project can be worked on individually or in groups of up to three. The size of your group will determine the page count required in your report: for individuals, the report should be 7-10 pages, for groups of two, the report should be 13-18 pages, and for groups of three, the report should be 19-26 pages.
- Schedule a **15 minute meeting with me the week of April 2** to discuss your project topic. Come to the meeting with at least a general idea of what you’re planning to do.
- Submit a first draft and/or very detailed outline in class on **Tuesday, April 17**. Come to office hours and/or send a detailed email to **discuss how your project is shaping up, in light of my comments**.
- **Present your findings in a 15 minute talk in class on Thursday, April 26, Tuesday, May 1, or Thursday, May 3.** Attend all the other presentations on those three dates.
- Hand in a report summarizing your findings on **Monday, May 7, by 5 PM**, with page count determined by your group size as indicated above. The page count does not include title, contents, or reference pages, but does include figures. The report must be in .pdf format, written up in LaTeX, with standard font, margins, and spacing (12 pt, 1.5 in, single spaced), or equivalent length if you choose to format differently. You need to include proper citations, just like in a paper for an English or History class.

Grading will be as follows. For the presentation:

<b>Mathematical content:</b> Was the selection of material from your paper appropriate for the time constraint? Do you provide sufficient definitions for and explanation of new ideas, are they explained correctly, and are they presented in logical order? Are they explained <i>at a level appropriate for your fellow 191 students</i> ?	10 points
<b>Delivery:</b> Is your speaking clear and well-paced? Do you face the audience when possible? Is your board work clear? Is the presentation globally arranged in logical order? Do you have a point, rather than just providing a random sample of facts from your paper? Do you support your ideas and explain all your claims? Are you concise and direct? Do you appear to have rehearsed?	10 – [min. over time] points

For the paper, the grading scheme will be similar to the short project, but there will be more points in each category. Note that I will also be more of a stickler for the presentation component the second time around – make sure you proofread!

<b>Mathematics:</b> Do you have at least half a page of mathematical content new to the course? Is it correct? Do you provide sufficient definitions for and explanation of new ideas, and are they presented in logical order?	20 points
<b>Exposition:</b> Does the paper communicate your ideas effectively to your fellow 191 students? Is the paper globally arranged in logical order? Do you support your ideas and explain all your claims? Is your writing concise and direct?	20 points
<b>Presentation:</b> Is the formatting correct? Is the paper free of obvious spelling and/or typesetting errors? Is the paper relatively easy to read, e.g., you use complete English sentences except during computations, and you explain all steps of proofs and computations? Are all sources cited properly?	12 points

Finally, the remaining pieces:

<b>First 1-1 meeting:</b> did we have one?	1 point
<b>First draft:</b> did you turn one in on time? does it look like you are making significant progress?	2 points
<b>Follow-up to draft:</b> did you follow up in office hours or by email?	1 point
<b>Attendance:</b> did you attend and attend to your fellow students' presentations?	3 points
<b>Bonus point:</b> for being extra attentive during presentations, e.g. asking relevant questions	1 point