Math 419-01, Guidelines for Written Work

A significant objective of this class is learning to explain mathematical results clearly and carefully in writing. There are (at least) two reasons why mathematical writing is an important part of your education as a mathematician: (1) because it deepens your understanding of the mathematics: the process of writing your ideas in a coherent way forces you to think deeply and carefully, and (2) because effectively communicating your mathematical ideas is an essential aspect of being a scholar.

The written work you submit in this course will be graded for clarity and coherence of exposition, as well as mathematical writing style and correctness. I am not requiring volumes of written work, so I expect that the work you do submit is written thoughtfully and presented neatly. Show me your best work.

Please make sure your homework is neatly assembled in a stapled packet and clearly labeled with name, date, problem number, etc. I reserve the right to take off points if your homework is not neat.

Guidelines for written problems:

- Make sure your work is readable. If necessary, use a word processor.
- Restate the question. If you are asked to prove something, restate the question in the form of a claim followed by a proof.
- In a computation, show all your steps, and make your reasoning clear.
- Cite relevant theorems, definitions, or previous exercises to back up your claims.
- You will not usually need to write full paragraphs, but you should use helpful transitional words and phrases like, "first we will . . . ," "next we need to verify . . . ," "therefore," "thus," "one one hand . . . on the other hand," . . . "we can conclude that . . . ," etc.

Rubric for written problems:

- Very Nice (4): clear, correct, and complete solution of the problem and good presentation
- Right Idea (3): essentially correct, but some small gaps, lack of clarity, or poor presentation
- Good Start (2): shows partial understanding, e.g. correct start, but significant flaws or gaps
- Good Effort (1): inappropriate approach, faulty reasoning, or wrong problem
- No Attempt (0): recopy problem but do not attempt to solve it

Note: the points are "messages," not percentages. For example, having all 3s would be B-level performance, but having all 2s would be C- or D level performance.

Challenge Problems. Challenge problems are graded on a more lenient scale: as long as you attempt the problem, your score for the problem will be one level higher than the rubric above dictates. For example, if your work on the problem would normally merit a 3 (you have the right idea), it will get a 4, because having the right idea on a challenge problem is really very good!

Math 419-01, Written Problem Set for Chapters 1 & 2

This assignment is due on September 27, at the beginning of class.

If, for any reason, you would like an extension on the assignment, please discuss this with me before the assignment is due.

To create your written problem set:

1. Choose 14 exercises to write up nicely:
   (a) Pick 10-12 problems from the list of selected discussion problems, at least one from each section.
   (b) Pick 2-4 challenge problems from Chapters 1 and 2.
2. Write up each problem nicely, making sure to restate the problem and provide a full explanation.
3. Identify one of the problems that was particularly interesting to you, and write a short paragraph about what you found interesting in the problem.
4. Identify one of the problems that you struggled with, and write a short paragraph about what caused you difficulty in the problem and how you resolved the difficulty.

Selected Discussion Problems:

Section 1.1: 1.1.3 #3, 1.1.4 #1, 2

Section 1.2: 1.2.1 #2, 3, 1.2.3 # 1, 3

Section 1.3: 1.3.4 #2, 3

Section 1.4: 1.4.1 #4, 1.4.3 # 1, 2

Section 2.1:

Section 2.2:

Section 2.3:

Section 2.4:

I will add the selected problems for Chapter 2 section by section, after we cover the material in class.