

MATH 232 Discrete Math

Homework Grading Rubric and Guidelines

The homework will generally have two kinds of problems. Some will be more computational in nature and require you to show the formulaic steps you took to solve the problem, perhaps with short explanations. Others will require you to write a proof or give as detailed explanation in complete sentences. The latter type of homework will be graded on a 4 point scale (see below). In either case, show your work on the homework. Answers with no work will receive zero points.

Perhaps for the first time in your math career, one of the goals for this class is to learn how to *produce* mathematics, not just how to *use* mathematics. This change in perspective can be jarring. I know that each of you can make this adjustment and I am here to help.

Rubric for proofs

4 points Correct mathematical solution. Everything is justified with only very minor errors, if that (for example a simple copying error).

3 points The solution is mainly correct with only a minor error or omissions, such as correct statement asserted at some point but not justified.

2 points The solution may technically be correct but there is little or no justification of it. Or the solution may contain a more serious error (something that is clearly a misunderstanding of a crucial concept).

1 point The problem started on the right track and then things went bad quickly. Perhaps a major error was made early, or wild claims with no justification, or the whole point of the problem was misunderstood.

0 points Did not attempt the problem or only stated trivial consequences of the problem.

Guidelines for all questions

- I. Assume you should always justify why your answer is valid or correct, even if the problem doesn't explicitly say that. For "Find a blah ..." or "Give an example of blah ..." problems you should always implicitly add an "... and explain why" to the problem, unless I explicitly say otherwise.
- II. Proofs should be written in complete sentences and in paragraph form.

- III. List at the top of the first page, or next to specific problems, the names of anyone with whom you worked or any source (animate or inanimate) from which you received assistance.
- IV. While you are writing your solutions, don't think about writing them for me. Think about writing explanations for the other students in the class. You don't need to justify results we proved in class (although you must reference them) but you should explain your reasoning for any results or conclusions beyond what we cover in class.
- V. If you are struggling with a new problem, here are some suggestions that may help get you started. Make sure you understand exactly what the question is asking you. Do you know what all the mathematical symbols are referring to? Remind yourself or write down any definitions of mathematical words in the problem. Would working through an example (or even several examples) help clarify the problem?
- VI. If you are struggling with how to write a solution clearly, come talk to me! It takes practice to get good at technical writing.

Academic Honesty

For this class, you are welcome to use any resource you find helpful for learning about the concepts and ideas in the class. However, the homework is designed to help you gain practice *yourself* in solving the problems. As such, it is important that while doing homework, **you do not seek out solutions to the specific problems** (this includes solution manuals, online systems that solve math problems, or asking someone down the hall who isn't in the class but knows the material). If you do so, you are cheating yourselves of the essential practice you need to master the material in this course. Reading a math solution is much easier than figuring it out yourself. It only hurts your learning to find solutions online or in other books. I intentionally write some difficult problems and do not assume students will ace the homeworks. Talk to me or the TA or other students who have not yet solved the problem if you are stuck.

As I say on the syllabus, **do not outsource your thinking**. Understanding this content and solving problems in this class will be hard sometimes. It will require you to spend time thinking deeply yourself. That may be a new experience for many of you in a math class, and sometimes you will be frustrated and confused. That is a natural part of the learning process.

I do encourage you to work together to solve homework problems, but everyone must write their own solutions. Here are some more explicit instructions regarding working together. If a few of you are sitting around discussing how to solve a problem and in the course of the conversation one of you figures out a key piece and discusses it with everyone else, and then you all go home and write up your own answers, that is fine. Additionally, you may discuss your written solutions with anyone you have worked with to solve a particular problem.

However, it is not ok if one of you solves a problem on their own first, and then gives other people the key pieces of the proof. Giving good hints can be very tough. If you already have a proof and someone asks you how to solve the problem, you should tell them you already figured it out. Conversely, if you know your colleagues have figured out a proof, you should not ask them for help but instead should talk to me or the TA.

In my past experiences, students are more likely to contemplate violating the honor code when they are very stressed or overwhelmed in a class. If you find yourself thinking about violating the honor code on the homework or midterm, come talk to me. If you are worried about your grade, or if you're frustrated about the material, come talk to me. If you just need a pep talk, come talk to me!