

**COOPERATION VERSUS PLAGIARISM IN UPPER  
DIVISION MATHEMATICS COURSES**

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Abstract: In teaching upper level mathematics courses, we place great emphasis on developing students' understanding of difficult and abstract material. Evaluation is performance based, much like sports or music. Students are expected to demonstrate proficiency in solving math problems and proving results, using the tools of the given subject and their own intellectual and creative capacity. They are evaluated on their individual level of performance, with no consideration of how hard they worked or how they achieved that level.

This presents some conflicting impulses for our pedagogy. On the one hand, students benefit greatly from the opportunity to discuss ideas with their peers, bouncing ideas off each other and gaining insights into difficult problems. When working together makes students come out with a stronger understanding and more capable of doing high-level mathematics, we want to encourage it. On the other, this can easily slip across the line into simply copying ideas, leaving weaker students coasting on the accomplishments of their stronger peers on assignments. Professional mathematicians have very strict ethical standards for acknowledging contributions and not claiming the results of others, and we want to instill these into our students and our pedagogy.

In this talk, I will discuss some of the various strategies faculty members in the mathematics department have used in our upper-level courses to instill in our students a respect for the ethics of our profession regarding cooperation versus plagiarism. In general, we do not do any policing of rules. Instead, we have been experimenting with the structure of assignments and evaluations, aimed at creating a system where good cooperation is rewarded but plagiarism is detrimental to the student's ultimate grade (and is visibly so, in the sense that the student realizes themselves that this will not be a rewarding strategy to pursue). This talk will elaborate on the standards of our discipline, and the ways that we have tried to address these issues.