

# Learning to write proofs: a simple linear algebra proof (as a dumb physics major)

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## Being bad at Math

I have had a respectable career in Physics but when it comes to Mathematics I start to suck really bad. My freshman year at Rice I tried to be a “Mathematician” and studied these few topics,

- The TechBro/EngiMajor Differential Equations (non-rigorous and applied problems)
- Hardcore Multivariable Calculus (this was real deal)
- Honors Linear Algebra (we studied purely from Sheldon Axler’s masterpiece)
- Computational Complex Analysis (stresses on the cute and nice problems of complex analysis)

Here are my grades, in order, with course codes

- MATH 211: DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA [FALL 2023] : C
- MATH 232: HONORS MULTIVARIABLE CALCULUS [SPRING 2024]: C
- MATH 354: HONORS LINEAR ALGEBRA [SPRING 2024]: B
- MATH 382: COMPUTATIONAL COMPLEX ANALYSIS [SPRING 2024]: C

My spring was agonizingly bad and I also failed a writing requirement course that pulled my GPA to a whopping 2.51; so low my college magister reached me over the mail to know what went wrong. Here’s my “excuse” why I did bad (I take full responsibility for my grades though, haha)

- **MATH 211:** This was my first semester as a university student and I tried to play it safe by taking a popular and “easy” math course. This was actually very easy, but the problem was in the class we brushed over the “rigor” and the “how things work” aspect of mathematics that I started to resent by the end of the semester. So much so, that I only solved 3 problems from the final exam and left the hall room because I gave up caring about this course as I didn’t find the meaning behind it.

There’s a reason why I didn’t find the “meaning” behind this math course. In July of 2023 I had finally saw a dream come true of getting into the International Physics Olympiad delegation from Bangladesh (which was a grueling yet fun 4 year process). Doing not-so-good in that competition led me to believe that I am never working too hard on anything ever again. I still have some of that mentality left. I leave it to the readers to judge that.

- **MATH 232:** This is real deal. This course is that one course that changed me as a person. I am no more the same Sabit I used to be. This course beat me up repeatedly like a Damascus Steel Sword being made in the History channel “Forged in Fire” with the blacksmith going short on time<sup>1</sup>.

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<sup>1</sup>This is a show where craftsman compete against each other blacksmithing katanas-sword-kukri and stuffs under severe time constraint

Jokes apart, this coursework was tough for me. Contrast to last course (211) I had all the rigor of mathematics the world had to offer. But the problem was Dr. Wang<sup>2</sup> didn't suggest a solid textbook from where he taught the course. There was a suggestion of a few instead. I tried to read the books and they went into the most deeper pits of mathematics which I tried to explore without proper mindset. Remember I am still wounded by my IPhO performance and I am not in the most strong form to do that type of analytical thinking. I was dumb to not realize that by the 4 months I spent at Rice. I pushed through and struggled overshadowing all other courseworks but by the end I didn't do too well in the tests.

[TODO]

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<sup>2</sup>He also is a International Mathematics Olympiad Gold Medalist.