First post

Andrew • 18 Mar 2026

For a very long time, I have been confronted with the question of why I like math. I say, “because it’s fun!” and then they say, “well, what about it is fun?” And then I am stuck.

As is usual in mathematics when you are stuck, one of the best things to do is to do examples. In this blog, I hope to collect some examples of things I liked in math, and try to explain in each post why I think I liked it. From this I hope to see some patterns and maybe deduce some principles which determine things that I like in mathematics.

I have said that the purpose of this blog is ultimately to figure out why I like mathematics. One reason for having this goal is that I think it will make it easier for me to decide what math to do in the future. People seem to assume that people are attracted to certain areas of mathematics due to their content. But what determines someone’s experience of doing mathematics isn’t the content of the mathematics itself, but the “qualities” of the mathematics (say, how abstract it is, what kinds of arguments are used, the amount of computation, etc.). In deciding what kind of math I want to do in the future, it seems the first step is figuring out what qualities that math should have, not figuring out what content that math should have. And the former is best done by taking some examples of things I liked and trying to figure out what it is I liked about it.

Let me give an example of a case where I like the content of mathematics, but not the qualities. On the whole, I think number theory is interesting, in the sense that the fact that certain theorems or propositions are true seems interesting to me. For example, the fact that every number is the sum of four squares intrigues me. But I find the experience of doing number theory, that is, learning proofs and creating proofs myself, rather unenjoyable. This is because it seems rather unsystematic: each statement seems to require its own method of proof, with not much motivation. After a while, the interesting-ness of the statement is just not enough to motivate me to keep doing number theory.

Let me give another example in which the content of mathematics is the same but the qualities are different. The content in question is the fact that $\pi_1(S^1) = \mathbb{Z}$. The traditional proof goes by way of finding a universal covering space and then arguing that the set of deck transformations is $\mathbb{Z}$. I find this unsatisfying because it doesn’t give any intuition, at least to me. A much better proof is to first move to the differentiable setting by arguing that any continuous map $S^1 \to S^1$ is homotopic to a differentiable map, and then arguing that the degree is the only invariant. The explicit isomorphism given here better explains *why* the statement is true, because it tells us that you just need to figure out the number of times the loop winds around (i.e. the generic number of preimages with sign). One principle one might extract from this example is that I like when you can trace through the proof in a specific example and get from it geometric intuition. (Maybe this is just my incompetence, but I am unable to trace through the proof in the first case.)

Another reason for figuring out why I like mathematics is simply that I think this process will make me like mathematics more. It is well-known that thinking about instances of happiness makes you happier. Similarly, I think highlighting instances of mathematical joy will make me experience that joy more.

A big part of doing mathematics is sharing the mathematics with others. But it is not just the mathematics that is worth sharing. The joy of doing mathematics is too. And so even if people who read this blog don't understand the mathematics, I hope they can understand the joy.