The goal of this course is to introduce students to a world of math that lies beyond (and beside) calculus; prepare and inspire them to major in math; and give them tools that will make them potentially useful as research assistants. The target audience is first-year students who have completed Math 11 or 13. A motivated student coming from Math 8 or 9 should be able to do fine.

The course will be project-based. Students will use the computational and graphical tools of the programming system *Mathematica* to investigate problems of their own choosing. Readings and classes will introduce a variety of topics that all aspiring math majors should know. Many will be drawn from Stillwell’s *Mathematics and Its History*, the primary course text. The focus will be on geometry and algebra, but no topic will be called out of bounds.

In parallel with this, we will use Velleman’s book *How to Prove It* as an introduction to formal reasoning (writing proofs). Students will be expected to read and learn from this book largely on their own.

**Course texts**

  
  John Stillwell  
  [Amazon price: 37.02](https://www.amazon.com/Mathematics-Its-History-Stillwell/dp/144196052X)

  
  Konrad Knopp  

  
  Daniel J. Velleman  
  [Amazon price: 30.66](https://www.amazon.com/How-Prove-Structured-Approach/dp/0521675995)