

25 Aug 2014

Math 181

We did introductions (Hi! I'm Tom!) and got to know each other a little bit. I shared a few pieces of math that I find fun and interesting, but the only material that I covered that is required for the course is listed below.

Definitions are the building blocks of all mathematics: What is a prime number? What is the hypotenuse? What is a right angle? Even “triangle” is a term that was defined for you at some point.

One thing you will always have to do is keep track of definitions. Every result that we use will rely on how some object is defined, and your ability to apply that result requires knowing the definitions well. Here are the terms you should be familiar with after our first meeting:

Definitions

- A *theorem* is a statement in mathematics that has been proven to be true.
Technically, statements like “ $1 + 1 = 2$ ” can be considered theorems, but usually we will use a theorem to mean something more interesting and less trivial.
For example, Pythagoras’ Theorem, the Infinitude of Prime Numbers, or the Birthday Problem/Paradox/Theorem. On Wednesday, we’ll discuss a theorem about circuits (defined below).
- A *graph* is a collection of *vertices* (points or nodes) and *edges* that connect pairs of vertices.
- The *valence* (or *degree*) of a vertex is the number of edges touching that vertex.
- A *path* is a sequence (or list) of vertices in a graph where each consecutive pair of vertices is connected by an edge.
Alternatively, a path is a connected sequence of edges in a graph.
- A *circuit* is a path that starts and ends at the same vertex.