Tips for writing proofs

1. **Never say “it”**. The most common mistake is using the word “it” to describe a variable or function. Not only does it make the proof unclear, but there’s no way for the grader to be sure you understand what “it” is. After you write up any proof make sure you don’t use the word “it” and if you do, erase it and replace it with a variable name.

2. **Write legibly**. Obvious. Also, don’t write too small. For some reason when I was a student I wrote with a really sharp mechanical pencil as small as possible. Looking back, I have no idea why. I’ve never seen anyone write too big.

3. **Keep it simple**. Don’t write a novel. Often times when people don’t understand something, they try to write as much as possible and see if something sticks. Don’t just throw around definitions and theorems from the book.

4. **Write every proof twice**. At least. I’ve never met anyone who can write a good proof the first time. The first time you write a proof, you’re outlining the major ideas and making sure you understand it. The second time you write a proof, you’re cutting out superfluous details and checking for errors.

5. **Be confident**. I don’t think most people just “know” how to do a problem when they first see it. The way you should approach a problem is to just try anything that seems reasonable. First, copy down the problem, then try thinking of what theorem or main fact you’re going to need. Write the hypotheses of the theorem/fact in terms of what you’re given, and the conclusion of the theorem/fact. Then see if anything clicks. If not, don’t be afraid to try some algebraic manipulations. The key point is to just try; sitting around staring at a problem rarely gets anywhere.