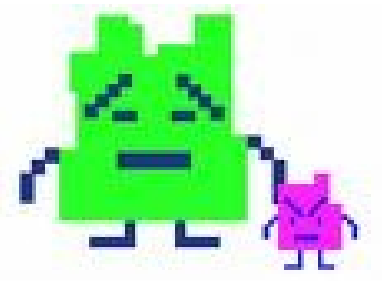
Math 555 Exam review sheet of awesome coolness!!!

The Mooninites

October 26, 2008



Hello earthlings (said in a pretentious monotone fashion). The mooninites are here to help you with your topology exam. We have convinced Corey not to put anything from Section 18 on the exam, since he didn't get through as much as he had hoped to during the last class. We hope you enjoy these comments. ROCK ON!

1. Section 12: Topological spaces. This section really kicks off this course, as it contains the definition of a topological space and provides some basic examples. Of course, knowing the definition of a topological space is essential. Also, Corey will likely use words like the "standard topology" (see below), "finite compliment topology", "particular point topology", "discrete topology" and "trivial topology." These structures should be understood by these names as we have discussed these examples in depth in class. You should expect that the exam will reference some of these and that you should know these by memory. In return, should you need to reference these on the exam you could expect that Corey knows what you are referring to, and that you wouldn't have to write out a description of each unless you're specifically directed to.

2. Section 13: Basis for a topology. There are several fundamental results in this section, and the notion of a basis for a topology persists to other sections in other contexts as well. For this section, however, the most important results are Lemmas/Theorems 13.1and 13.2. Corey recalls a painful experience in class when he tried to prove a result similar to 13.3, determining when it is the case that two bases should generate the same topology: he left off an important hypothesis that was corrected during

class. Finally, it was of utmost importance that we could finally discover the standard topology on Euclidean space was given by a basis, and that this topology agreed with our previous notions of "openness" and "closedness" that, before this class, were less precise to us.

3. Section 15: The product topology. This section was an important understanding as how to make a new topological space from two others via the Cartesian product. A firm understanding of the definition of the product topology is important.

4. Section 16: The Subspace topology. The subspace topology is probably one of the most important concepts from this course, and should be well understood. Lemma 16.1 is important , and all examples, class notes and homework should be studied carefully.

5. Section 17: Closed sets and limit points. There is a lot of information in this section. First, a good survey of closed sets and their properties in the subspace topology are studied. Then, the notion of closure and interior are introduced which, for now, we seem to be more interested in the closure of a set rather than its interior. This isn't really for any reason other than the notion of closed sets is a theme of this section. There will be more on interior later, but an understanding of both is required. Theorem 17.5 is a foundational result, and the notion of a limit point is very important. Finally, you should know the definition of a Hausdorff space, and why a one-point set is closed in a Hausdorff space.

6. Other information. It is extremely likely that Corey will ask you for straightforward definitions, in addition to asking you questions that are very basic. It is also extremely likely that Corey will ask you questions which could be somewhat involved, but none that would be absurdly difficult. There will be a little more material regarding limit points and closure, but indeed, there will be opportunities to answer questions on all of the material we have covered, no matter how basic or complicated. There will be plenty of choice as well, meaning: for every question I give you several questions, and you may choose which one (or ones) you'd like to do. The homework questions and theorems presented in class, along with all definitions form the foundation of the material I will ask about. I suggest that you spend some time learning the material on your own, then challenging your classmates with good questions that may or may not be identical to previously answered homework questions or theorems. Challenge yourself to create new questions and see if you can answer them. Other than that, I suggest you rock out all the time!!!!

Rock on!!!