Supplement for MAA 3200, Prof S Hudson, Fall 2018

Review page for Exam II

The exam will mainly cover topics from Cardinality through Cauchy sequences (Kane, page 67). You can read over rather lightly Ch.7.3 of Velleman and Chs 1-2 of Kane (but read Kane, Ch. 2.5 more carefully). I do not intend to test Induction directly, but there could be proof(s) about cardinality or number systems, for example, that require induction. Regarding number systems, know almost all the definitions and be ready for easy proofs (for example, most proofs about Z and Q should be pretty easy, even if you have not seen them before).

I suggest learning the following theorem-proofs from the lectures. Most are also in one of the textbooks.

$N \times N$ is countable.

$(0, 1)$ is not countable (Cantor's proof).

$\sqrt{2} \in R$

A monotone bounded sequence must converge.

Also possible, but less likely: the Archimedean Principle, some version of Trichotomy (fairly easy in Z, harder in N). Limit proofs similar to ones from class or HW are likely, but are not listed here since they are not theorems. You should also be able to state most of the theorems and axioms we have covered, such as the Completeness Axiom of the real numbers, the Schroder-Bernstien Thm, etc

If you want more practice problems, work with unassigned problems from the exercise lists, or you can look at these problems from some of my old exams. Most have fairly complete answers, but be aware that the topics were done in different orders and to different depths. For example, we did more Algebra (with groups etc) in 2013 than 2018, but less on limits. We did number systems a bit earlier this year.

From 2013: Exam I: 8, B(bonus). Exam II: 3,4,7(maybe), 8c, B. Exam III: 3cde, 6, 8b.

From 2010: Exam I: B. Exam II: 1cde, 5bc, B. Exam III: 3, 4, 7.

I expect the hardest problems on the exam may be proofs about limits of non-linear functions, or induction proofs about N. But the exam is unlikely to have more than 1-2 of those.

I am planning to update the HW page today, now that the web migration is complete. Be sure to refresh your browser if needed. Note the new TA hours, WF 10am to noon.