MATH 765 – Fall 2017

PRACTICE PROBLEMS AND GUIDE FOR THE FIRST IN-CLASS EXAM

The exam will be based on the material in the book form Chapter 1, Chapter 2 and Section 3.1.

- Of course, you need to know all the definitions of the concepts introduced and be able to state them. You will be asked about some definitions in the exam.
- Study the proofs of the results presented in the lectures. Becoming acquainted with the proofs can help you prove similar related results.
- As with the homework, you can use the results proved or stated in class unless you are asked to prove them in the exam. You need to know the logical order of the theory since you cannot invoke a more advanced result to prove something on which such a result depends upon.
- Similarly, you cannot used results we have not seen yet in the class (unless you prove them, together with any other previous results on which they may depend).
- While you will not be asked to prove any of the main theorems, you may be asked to prove some simple properties or some of the remarks we left as exercises.
- Review your homework and make sure you know how to do all the problems assigned.
- Try some other of the exercises in the book similar to the ones assigned in the homework. (Some others may be tricky though, so do not get discouraged if you cannot do all of them)
- If in doubt about anything please ask me.
- Do the following additional practice problems from the book:

Pbs. 1.3.6, 1.3.7, 1.4.7, 1.5.5, 1.5.6, 1.6.1, 1.6.2, 1.6.4, 2.1.8, 2.2.4 a), 2.3.3, 2.4.4, 2.5.9, 3.1.0.

Extra one: Let $A = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9\}$ and define $A_n = A$ for all $n \in \mathbb{N}$. Show that

$$\prod_{n\in\mathbb{N}} A_n = \{x = (x_1, x_2, x_3, \dots) : \, x_n \in A_n \,\text{for all}\, n \in \mathbb{N}\}$$

is uncountable.