

SUGGESTIONS FOR HOW TO STUDY FOR MIDTERM 1

MARTIN OLSSON

My aim in giving this exam is not to test your “trickiness” but rather to test if you have learned the main results covered so far, and just as importantly the main techniques that we have used to prove some of these results. I hope to do this by asking you to do problems where you have to use these results, and to give some (short) proofs of things that I feel a student of number theory should know. Therefore, you should not expect any problems where you have to use a “trick” which hasn’t come up before in the class. I may, however, ask you a question where you have to use a trick used before on homework or in class in pretty much the same way. So here is how I would study:

- (1) Know the definitions involved. For example, you should be able to define greatest common divisor or multiple, (reduced) residue system, prime or composite number, binomial coefficient etc. (this is not an exhaustive list).
- (2) Know the statements of the main theorems, and go over how they were applied to solve problems on HW or in class. For example, the Euclidian algorithm, Euler’s and Fermat’s theorem (2.15), Wilson’s theorem, binomial theorem, fundamental theorem of arithmetic.
- (3) Be able to prove some of the shorter standard results which we covered. For example, I think it would be fair game to ask you to prove any of the following results (but I could also ask you to prove other things or variants of these): 1.14, 1.17, 1.22, 2.9, 2.11, 2.12, 2.14, 2.18.
- (4) Go over the homework and read the solutions. If you solved a problem and your solution was long or messy, I would read the solutions anyway (there may have been a better way).