

Information on the Midterm

The midterm in MATH 490 is on Thursday, March 21 in class. Professor John Gimbel will proctor for me, while I am away for research. (He will not be able to answer any questions, I think.) Class on Tuesday, March 19 is cancelled.

For the midterm, you should review and be able to do all your homework problems, including computations in p -adic arithmetic. You should be able to give examples with short proofs of concepts like 'a null sequence' or 'a sequence converging to 3 in the 5-adic norm' or determining if a rational number is or is not a p -adic integer. You should be able to write the canonical p -adic expansions of numbers.

The exam will cover material up through Theorem 1.39 (Hensel's Lemma). You need to know the basic definitions by heart, as well as the statements of Proposition 1.10 (Equivalent norms), Theorem 1.30 (canonical p -adic expansion), Proposition 1.36 (criterion for being a unit in \mathbb{Z}_p), Proposition 1.37, Theorem 1.38 ($r \in \mathbb{Q} \subset \mathbb{Q}_p \iff r$ had canonical p -adic expansion which is eventually periodic to the left), and Theorem 1.39 (Hensel's Lemma).

Despite the two hour time frame, I do not intend to make the exam extra long or extra hard; target length is one hour and the goal is to test that you have understood the basics of the p -adic numbers and the analysis of p -adic norms.