

p -adic Dynamics and Formal Groups

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The field of p -adic analysis is one that extends to many different mathematical topics. I will focus on the ones with which I am most familiar: group theory and algebraic number theory. I've had two semesters of algebra, one of number theory, and have done some independent study work in algebraic number theory, including L -series, characters, and zeta functions. I will be on the lookout for ways to incorporate these specifically into p -adic number theory. To start with, I will be working out of Fernando Gouvea's *p -adic Numbers: An Introduction* and Neal Koblitz' *p -adic Numbers, p -adic Analysis, and Zeta-Functions*.

As I specify the project further and further, I will be able to get a better grasp of unsolved problems in the field, especially ones that relate to my mathematical interests, listed above. For the time being, advanced areas I will consider include the dynamics of functions on the p -adic topology and the formal groups arriving from the different binary operations which respect these topologies.