

Presentation problems for 4/29/13

Problem 1: Present Furstenberg's topological proof of the infinitude of primes. This isn't precisely related to what we're doing right now, but it's a rather neat topological result.

Problem 2: Exercise 1 from Professor Lee's notes on simply connected spaces.

Problem 3: Define n -dimensional real projective space, which we denote by $\mathbb{R}P^n$, to be the collection of all linear subspaces of \mathbb{R}^{n+1} which pass through the origin. Prove that $\mathbb{R}P^n$ is an n -dimensional topological manifold. (This space is a bit strange the first time you see it. I am happy to discuss it with whoever ends up presenting this problem).