

Analysis, Random Walks and Groups
Spring 2019

Week 10 tutorial

1. Let X_1, X_2, \dots be the random walk on S_{52} driven by the probability distribution μ describing the weak Borel shuffle (recall the first tutorial of the course). Write down the formula for this measure μ . Then, let $e \in S_{52}$ be the identity permutation. Apply the right convolution $\mu *_R \mu$ in the group S_{52} to compute the probability

$$\mathbb{P}(X_2 = e).$$

2. Prove the Upper Bound Lemma in \mathbb{Z}_2^d .