Summary of Lecture 16

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Reading: [Arora-Barak (AB)] 21.1, 21.2

- We basically covered the basics of analyzing random walks over graphs. The most important quantity is the second largest eigenvalue $\lambda(G)$ of the normalized adjacent matrix of any graph G.

- We showed that the distance between the distribution generated by random walks for t steps and the uniform distribution over vertices decays exponentially. (i.e., upper bounded by $\lambda(G)^t$ in ℓ_2 norm.)

- We introduced two definitions of expander graphs (algebraic and combinatorial). Both definitions are equivalent with some loss in parameters (details can be found in [AB] Chap 21.2, although this is optional).