Homework 6

6.7.4 Consider the random bipartite graph G with bi-partition A, B where $|A| = |B| = n$. Each vertex $a \in A$ independently chooses $\lceil 2 \log n \rceil$ random neighbors in B. Show that w.h.p. G contains a perfect matching.

7.6.1 Let $p = d/n$ where d is a positive constant. Let S be the set of vertices of degree at least $\frac{2 \log n}{3 \log \log n}$. Show that S is an independent set w.h.p.

7.6.9 Suppose that H is obtained from $G_{n,1/2}$ by planting a clique C of size $m = n^{1/2} \log n$ inside it. describe a polynomial time algorithm that w.h.p. finds C. (Think that an adversary adds the clique without telling you where it is).
(How does adding the clique change the degree sequence?)