Problem 1.
In an Erdős–Rényi graph with $N=4000$ nodes, the linking probability is $p=0.001$

a) What is the average degree of a node in this graph?
b) What is the variance in the degrees of the nodes?
c) What is the expected number of nodes with a degree which is at least twice larger that the average degree?

Problem 2. Consider $G_{n,p}$, an Erdös–Rényi random graph with $n$ nodes, $m$ edges, and mean degree $c$:
   a) Compute the probability $p$ of creating an edge in $G_{n,p}$.
   b) Show that in the limit (large $n$) the expected number of triangles in $G_{n,p}$ is $1/6 \cdot c^3$