1. If $G$ is Eulerian, show that $L(G)$, the line graph of $G$, is both Hamiltonian and Eulerian.

2. Prove that $R(3,4) = 9$.

3. (a) Name a graph with $\chi = 4$ and no $K_3$ subgraph.
    (b) Find a graph $G$ such that $\chi(G) = \omega(G)$ but $G$ is not perfect.

4. Find the exact crossing number of $K_6$.

5. Figure out minimum $n$ such that $K_n$ is not embeddable on the torus.

6. Find the characteristic polynomial for the adjacency matrix of $K_{n,m}$. What are the eigenvalues of $K_{n,m}$?