Problem 1
Prove the “exchange property” for trees: Let $T$ and $T'$ be spanning trees in $G(V,E)$. Given any $e' \in T' - T$, there exists an edge $e \in T - T'$ such that $(T - \{e\}) \cup \{e'\}$ is also a spanning tree.

Problem 2
Draw $K_{4,5}$ on the surface of a double torus (i.e. sphere with two handles) such that no lines cross.

Problem 3
Find the number $j$ such that removing any set of $j$ edges from $K_6$ yields a non-planar graph (prove this direction), but there exist a set of edges of size $(j + 1)$ such that removing it results in a planar graph (give the set of edges and the planar embedding for this direction).