Computer Science 341
Discrete Mathematics

Problem Session 8
Mon, Nov 18, 2002

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).