Department of Mathematics
CARNEGIE MELLON UNIVERSITY

Discrete Mathematics: 21-228

Homework 11 due Wednessday 5/1/2002

Q1: Two people play a game on a graph G by alternately selecting distinct vertices $v_0, v_1, v_2, \ldots$, such that for $i > 0$, v_i is adjacent to v_{i-1}. The last player able to select a vertex wins. Show that the first player has a winning strategy iff the graph G does not have a perfect matching.

Q2: Show that a tree has at most one perfect matching.

Q3: Show that the edge set of a k-regular bipartite graph can be partitioned into k disjoint perfect matchings.