

Homework 3

*Assigned: October 7**Due: October 14*

Problem 1 An edge in a graph is a *bridge* if its removal disconnects the graph. Prove that every 3-regular bridgeless simple graph has a perfect matching. Hint: use the Edmonds-Gallai decomposition and count edges inside or crossing components.

Problem 2 Dining problem. Several families go out to dinner together. To increase their social interaction, they would like to sit at tables so that no two members of the same family are at the same table. Show how to formulate finding a seating arrangement that meets this objective as a maximum flow problem. Assume that q tables are available and that the j th table has seating capacity of $b(j)$. Also assume there are p families and that the i th family has $a(i)$ members.