MATH 3330 — Applied Graph Theory

Assignment 8

Due Thursday, March 21, 2007 (before class)

1. Do problems 13.3.4 and 13.3.12. This means: applying the max flow algorithm to determine the local vertex and edge connectivity (= size of minimum vertex or edge cut) between the two solid vertices. Your solutions should show: (1) the transformed network, and (2) all steps of the max flow algorithm.

2. Find a maximum matching in the bipartite graph of problem 13.4.3, using the max flow algorithm. Show every step of the algorithm.

3. Solve problem 13.4.5. If the answer is yes, give an assignment of men to women. If the answer is no, show that Hall's condition is violated(give a specific set of men and women that shows this).

4. (13.4.21) Let G be a graph, and let W be a subset of V_G.

   (a) Assume W is an independent set. Show that $V_G - W$ is a vertex cover.

   (b) Assume W is a vertex cover. Show that $V_G - W$ is an independent set.

5. Do problem 13.5.6