Integer Programming 308-761B
Homework 1 Due: Thurs, February 1

Exercises from Integer Programming, L. Wolsey

1. Ch. 1, P.19, Ex. 4

2. Ch. 1, P.20, Ex 7.

3. Ch. 2, P.34, Ex 3.

4. Let G be a graph with n nodes and m edges and node/edge incidence matrix A. The matching polytope is defined by (see P. 29):

$$P = \{x \in Z_+^m : Ax \le 1\}.$$

Using the program *lrs* at http://cgm.cs.mcgill.ca/~avis/C/lrs.html compute the matching polytopes for the graphs in figure 2.2 and figure 2.4. Give an interpretation of the fractional vertices (if any) in graph theoretic terms. Can you give additional inequalities that remove these? Hint: Consider using *lrs* to compute the convex hull of the integer vertices produced.