Third Homework Assignment for Math 408 and 708

Due: Friday, October 29th, 2010, in class.

Note:
  The midterm will take place in class on **Friday, October 22nd** (10:30-12:30).

Problems for Math 408 and 708:

  1. Chapter 8 problem 2.

  2. Chapter 8 problem 4.

  3. Chapter 7 problem 1. There is a typo in the book: please replace 35 by 31 in the lower right. All upper bounds are assumed to come from feasible solutions.

  4. Chapter 7 problem 3.

  5. Chapter 7 problem 4.

Additional problems for Math 708:

  6. Chapter 8 problem 5.

  7. Chapter 7 problem 5. The *assignment relaxation* of the TSP requires only that the number of edges entering and leaving each vertex is 1.

  8. Consider the problem of finding a maximum stable set of a graph (a maximum set of vertices with no two vertices sharing an edge). We can formulate this problem as:

$$\max \sum_{v \in V} x_v \quad \text{subject to} \quad x_{v_1} + x_{v_2} \leq 1 \quad \forall (v_1, v_2) \in E \quad \text{and} \quad x \in \{0,1\}^{|V|}$$

Show that for any complete subgraph (*clique*) W of G, you can obtain the clique inequality $\sum_{v \in W} x_v \leq 1$ by repeatedly applying rounding cuts.

Reading:
  Chapters 9 and 10.

Reminder:
  Math 708 students must select a presentation topic and a date for the presentation. Please consult me if you have not done this.