Fifth Homework Assignment for Math 408 and 708

Due: Wednesday, November 26th, 2008, in class.

Problems for Math 408 and 708:

1. Chapter 10 problem 1.
2. Chapter 11 problem 1.
3. Chapter 11 problems 2.
4. Consider the following 7 cities, given as points on a 1000 x 1000 grid:

673	223	553	40	308	761	757
145	1	142	84	164	446	372

Apply Christofides heuristic to find a good tour through these cities. (You can round the distances to the nearest integers.) Can you improve this solutions by exchanging a pair of vertices?

5. Chapter 12, problem 2.

Additional problems for Math 708:

6. Chapter 10 problem 5.
7. Chapter 12 problem 3. What approximation ratio is guaranteed by this algorithm?
8. Chapter 12, problem 4.

Reading:

Chapters 12 and 13 (the last one lightly).

The final exam is scheduled for *Monday, December 8th at 3:30 p.m.*

Schedule of Presentations:

Wednesday, November 26th: John LaRusic. (O.R. Seminar, 3:30 pm, SUR 15-300).

Mihalis Yannakakis, *Expressing combinatorial optimization problems by linear programs*, J. Comput. System Sci. **43** (1991), no. 3, 441–466.

Friday, November 28th: Simon Lo.

Bernd Sturmfels, Robert Weismantel, and Günter M. Ziegler, *Gröbner bases of lattices, corner polyhedra, and integer programming*, Beiträge Algebra Geom. **36** (1995), no. 2, 281–298.

Monday, December 1st: Hua Zheng.

Samuel Burer and Jieqiu Chen, *A p-Cone Sequential Relaxation Procedure for 0-1 Integer Programs*, to appear.

Note there will be interesting Operations Research seminars on the 19th and 21st of November. The first is by Utz-Uwe Haus of the University of Magdeburg, Germany, and the second by Antoine Deza of McMaster.