Third Homework Assignment for Math 496 and 827

Due: Friday, February 27th, in class.

All references are to the Bertsimas and Tsitsiklis text.

Problems for Math 496 and 827:

1. Exercise 3.18.
2. Exercise 3.31.
3. Exercise 5.1.
4. Exercise 5.6. Note this asks you to solve a small L.P. on a linear programming package. This can be done in Excel, for instance. Please see the instructor if you would like access to Cplex.

Problems mainly for Math 827:

5. Exercise 3.8.
6. Exercise 3.10.
7. Exercise 5.2.

Reading:

Chapters 6 and 8.

Reminder:

The midterm is **Wednesday, March 4th**.

Presentations:

Graduate students must sign-up for a presentation date and choose a paper. I would like to finalize the choices by Friday, February 19th. The ideal situation would be to choose papers that are relevant to your own research. If you have, or are considering, an advisor, I recommend consulting with them.

A sample of interesting papers is on page 2 of the assignment.

References

[AA95] Erling D. Andersen and Knud D. Andersen, *Presolving in linear programming*, Math. Programming **71** (1995), no. 2, Ser. A, 221–245.

[DNT08] Antoine Deza, Eissa Nematollahi, and Tamás Terlaky, *How good are interior point methods? Klee-Minty cubes tighten iteration-complexity bounds*, Math. Program. **113** (2008), no. 1, Ser. A, 1–14.

[DV08] John Dunagan and Santosh Vempala, *A simple polynomial-time rescaling algorithm for solving linear programs*, Math. Program. **114** (2008), no. 1, Ser. A, 101–114.

[Kal92] Gil Kalai, *A subexponential randomized simplex algorithm*, Proceedings of the Twenty Fourth Annual ACM Symposium on Theory of Computing (STOC), 1992, pp. 475–482.

[Meh92] Sanjay Mehrotra, *On the implementation of a primal-dual interior point method*, SIAM J. Optim. **2** (1992), no. 4, 575–601.

[MTY93] Shinji Mizuno, Michael J. Todd, and Yinyu Ye, *On adaptive-step primal-dual interior-point algorithms for linear programming*, Math. Oper. Res. **18** (1993), no. 4, 964–981.

[Ren95] James Renegar, *Incorporating condition measures into the complexity theory of linear programming*, SIAM J. Optim. **5** (1995), no. 3, 506–524.

[ST04] Daniel A. Spielman and Shang-Hua Teng, *Smoothed analysis of algorithms: why the simplex algorithm usually takes polynomial time*, J. ACM **51** (2004), no. 3, 385–463 (electronic).