

MA 515 – Exam 2 Review Sheet

Exam 2 will be a take-home exam. You will have two hours to complete it. You are not allowed to use your notes or the book. You are responsible for all the material in Carl Lee's notes and section 0.8 of Jon Lee's book, as well as all of chapter 1 of Jon Lee's book. In addition to knowing how to work problems similar to those given on the homework, you need to know how to prove the following theorems.

- \mathcal{V} -polytopes are \mathcal{H} -polytopes (assuming knowledge of Fourier-Motzkin Elimination)
- Weak-Duality Theorem for linear programs
- Hall's Theorem (assuming König's theorem)
- Greedy optimality for matroids (page 57 in J. Lee)
- Greedy Characterization of matroids (page 60 in J. Lee)
- Rank Characterization of Matroids (assuming the Closure Lemma, page 62 in J. Lee)