Things that you should know for Midterm 2

1. Duality
   - The dual problem
   - Weak and strong duality properties
   - Complementary basic solutions and the relationship between optimality and feasibility for each

2. Sensitivity analysis
   - Using fundamental insight and Gaussian elimination to get to a basic solution in the new problem.
   - Checking if the basic solution is feasible and optimal in the new problem
   - Checking the allowable range for various parameters
   - Reoptimization

3. Transportation simplex algorithm
   - The Northwest corner rule to find an initial BFS
   - Given a BFS, solving for $u_i$ and $v_j$
   - Optimality condition
   - Finding the entering and leaving basic variable

4. Assignment Problem
   - The Hungarian algorithm