C&O 350
Assignment 3

Due: Wed. Feb 15 (§2, §3), Tues. Feb 14 (§1)

1. Solve the problem in Chvatal, Problem 3.2, page 43, by the lexicographic method.

2. Solve the problem

$$
\begin{array}{rrcrcrcrcl}
\max & 2x_1 & - & x_2 & - & 3x_3 & + & x_4 & & \\
 & x_1 & + & 3x_2 & - & x_3 & + & 1x_4 & = & 1 \\
 & 2x_1 & - & x_2 & + & 2x_3 & + & 5x_4 & = & 8 \\
 & x_1 & - & 2x_2 & + & 2x_3 & + & 3x_4 & = & 7
\end{array}
$$

$$x_1, x_2, x_3, x_4 \geq 0$$

   using artificial variables. Then solve the same problem with the right hand side of the equality constraints changed to the vector $(2\ 7\ 4)^t$.

3. Chvatal, Problem 5.1 (b), page 69.

4. Chvatal, Problem 5.9, page 70. (Hint: Consider the dual problem for (5.25).)