This assignment is **due on Mar 31** in class. You are allowed (even encouraged) to discuss these problems with your fellow classmates. All submitted work, must be *written individually* without consulting someone else's solutions.

Problem 1: In class, to simplify the presentation of the simplex algorithm we made a number of assumptions. One of those assumption was that LP we interested in solving was in standard form

$$\text{minimize} \quad \mathbf{c} \cdot \mathbf{x}$$

$$\text{subject to} \quad \mathbf{Ax} = \mathbf{b}$$
$$\mathbf{x} \geq \mathbf{0}$$

and that the rows of $\mathbf{A}$ were linearly independent.

i) Where was this assumption used? What would happen if it didn't hold?

ii) Show how to remove the independence assumption.
   l *Hint: Get rid of some constraints*

Problem 2: Read about the Klee-Minty cube and Hirsch conjecture. Briefly explain these concepts and their relevance to the running time of the simplex algorithm.