

IE400 Recitation 2

Q1) Use the simplex algorithm to find optimal solutions to the following LP:

$$\max 4x_1 + 6x_2$$

s.t

$$-x_1 + x_2 \leq 11$$

$$x_1 + x_2 \leq 27$$

$$2x_1 + 5x_2 \leq 90$$

$$x_1 \geq 0, x_2 \geq 0$$

Q2) Consider the problem

$$\min z = -2x_1 - x_2$$

s.t

$$x_1 - x_2 \leq 2$$

$$x_1 + x_2 \leq 6$$

$$x_1 \geq 0, x_2 \geq 0$$

- Convert the problem into standard form and construct a bfs at which $(x_1, x_2) = (0, 0)$.
- Carry out the full tableau implementation of the simplex method, starting with the basic feasible solution of part (a).
- Draw a graphical representation of the problem in terms of the original variables x_1, x_2 and indicate the path taken by the simplex algorithm.