Exercise session 1

Problem 1

Solve

$$\begin{aligned} \max \;\; & 3x_1 + kx_2 \\ s.t. \;\; & x_1 + 2x_2 \leq 8 \\ & 2x_1 + x_2 \leq 7 \\ & x_1 \geq 0, \quad x_2 \geq 0, \end{aligned} \tag{LP}$$

with the Simplex method for $k = 1$ and $k = 2$.

a) Rewrite (LP) on standard form.

b) Perfrom Simplex iterations. Start with the slack variables in the basis.

c) What value of k would give an infinite number of optimal solutions among which there are two optimal basic feasible solutions?