# Algorithms for Optimal Decisions
# Tutorial 6
# Questions

**Exercise 1** *Solve the following problem by using the active set method and taking* $x^{(0)} = (x_1^{(0)}, x_2^{(0)}, x_3^{(0)}) = (0, 0, 1)$ *as a starting point*

$$\begin{array}{rcl} \min\limits_x f(x) & = & x_1^2 + 2x_2^2 + 3x_3^2 \\ s.t. & & x_1 + x_2 + x_3 - 1 \geq 0 \\ & & x_1, x_2, x_3 \geq 0. \end{array} \tag{1}$$

**Exercise 2** *Solve the following problem using the interior point method:*

$$\begin{array}{rcl} \min\limits_x \quad f(x) & = & x_1 + x_2 \\ s.t. \quad g_1(x) & = & -x_1^2 + x_2 \geq 0 \\ \quad g_2(x) & = & x_1 \geq 0. \end{array} \tag{2}$$