Algorithms for Optimal Decisions
Tutorial 4
Questions

Exercise 1

Solve the following **Q.P.** *using the Frank–Wolfe method:*

$$\begin{array}{rcl} \min\limits_{x} f(x) & = & x_1^2 - x_1 x_2 + x_2^2 - 3x_1 \\ s.t. & & -x_1 \leq 0 \\ & & -x_2 \leq 0 \\ & & x_1 + x_2 - 4 \leq 0. \end{array} \tag{1}$$

Starting point : $x^{(0)} = (x_1^{(0)}, x_2^{(0)}) = (0, 0)$.

Exercise 2 *Solve the following problem by using* **SUMT** *and taking* $x^{(0)} = (x_1^{(0)}, x_2^{(0)}) = (1, 1)$ *as a starting point*

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

The solution is $x^* = (x_1^*, x_2^*) = (1, 2)$.