Home work. Chapter 12

Due at October 31 (Halloween Day)

1. Let Ω be a region (a wedge) in the (x_1, x_2)-plane:

$$(x_1, x_2) \in \Omega \ \text{ if } x_1 \le x_2, \ \ -x_1 \le x_2.$$

   Consider the problems

$$\min_{x \in \Omega} F_i(x), \quad i = 1, 2.$$

   where

   (a)
$$F_1(x) = (x_1 - a)x_2$$
   $a \in R$ is a real parameter.

   (b)
$$F_2(x) = (x_1 - \cos(t))^2 + (x_2 - \sin(t))^2$$
   $t \in [-\pi, \pi)$ is a real parameter.

   Write KKT conditions, analyze them and find the minima. Notice, that the solution depends of the value of the parameters. List all cases.

2. Problem 12.6

3. (bonus) Problems 12.4, 12.5