CIE 6010/MDS 6118 (Fall 2018) **Assignment 7**

Name: _____

Student ID: _____

Course Number: _____

1. (All) Consider the optimization problem:

$$\begin{aligned} \min \quad & -0.1(x_1 - 4)^2 + x_2^2 \\ \text{s.t.} \quad & 1 - x_1^2 - x_2^2 \leq 0 \end{aligned}$$

   Find all the KKT points (including multipliers) and classify them as clearly as you can. In particular, how many KKT points are there, and how many local minima are there, and justify.

   Plot the surface and/or contours of the objective function in relevant regions to help you interpret your results.

2. (CIE only) Exercise 4.3.2 in the textbook.