Assignment 4

Unconstrained and Constrained Optimization

August 23 2018

Problem 1. Consider the following function

$$f(x) = (x_1 - x_2)^2 + \frac{1}{1 + x_1^2 + x_2^2} \tag{1}$$

a) Is f(x) a convex function? Explain.

b) Let **x**=(1,-1). Is this point a local/global minima? Explain.

c) Plot the function and visually inspect the minima and maxima of this function.

Problem 2. Solve the problem below using Kuhn Tucker procedure.

min $e^{x_1 - x_2}$

subject to $e^{x_1} + e^{x_2} \leq 20$ and $x_1 \geq 0$