Tutorial 11

April 11, 2024

Question 1

Explain how to solve the following problem:

$$\begin{aligned} min \;\; & (1/2)x^T x + c^T x \\ s.t. \;\; & Ax \leq b \end{aligned}$$

using barrier method and Newton method. where $x \in R^n$, and $A \in R^{n \times n}, c, b \in R^n$ are given.

Question 2

Write down the Newton Equation in the barrier method for

$$\begin{aligned} min \;\; & (1/2)(x-a)^T P^{-1}(x-a) \\ s.t. \;\; & \mathbf{0} \leq x \leq \mathbf{1} \end{aligned}$$

where $x \in R^n$, and $P^{-1} \in S^n_{++}, a \in R^n$ are given.