Worksheet on Barrier Functions: Example 1

$$\min_{x} \quad (x-3)^2$$
$$s.t. \quad x \geq 0$$

1. Transform the problem into a barrier function form:

$$\min_{x \in R^n} \quad f(x)$$
$$s.t. \quad c(x) = 0$$
$$x \geq 0$$

$$\Rightarrow$$

$$\min_{x \in R^n} \quad f(x) - \mu \sum_{i=1}^{n} ln(x_i)$$
$$s.t. \quad c(x) = 0$$

2. Verify the optimal barrier function solution at one of the follow values of the barrier term: μ=1 μ=2 μ=5 μ=10.