Exercises in Optimization
(ACM 40990 / ACM41030)

Dr Lennon Ó Náraigh

Exercises #4

Exercises #4 – Global Optimization

1. The Metropolis Algorithm can be used to generate random numbers from an arbitrary distribution. In this exercise, you should write a computer code to generate a sequence of numbers from the exponential distribution,

$$f(x;\lambda) = \begin{cases} \lambda \mathrm{e}^{-\lambda x} & x \geq 0, \\ 0 & x < 0. \end{cases} \tag{1}$$

   Here, λ is a positive constant, which you should fix for the exercise.

2. Write a computer code to compute the global minimum of the cost function

$$f = \frac{\sin(x)}{x^2 + 10}.$$

   Compare your result with the built-in SA algorithm in Python / Matlab.