MA204: Mathematical Statistics

Assignment 4

Submit your solutions for Q4.1 $\sim$ Q4.9 on pages 180–182 of the textbook "Mathematical Statistics", plus the following question

4.10 Let $X_1, \ldots, X_n \overset{\text{iid}}{\sim} f(x;\mu)$, where

$$f(x;\mu) = \frac{1}{\sigma_0} e^{-\frac{x-\mu}{\sigma_0}} \exp(-e^{-\frac{x-\mu}{\sigma_0}}), \quad x \in \mathbb{R} \hat{=} (-\infty, \infty),$$

where $\mu \in \mathbb{R}$ is the location parameter and $\sigma_0 > 0$ is the known scale parameter.

(a) Find the cdf of X_1.

(b) Use the result in (4.3) of page 165 in the textbook "Mathematical Statistics" to find the $100(1-\alpha)\%$ equal-tail CI of μ.