Assignment 7

Find the MLE of following distribution for generated 50 samples and you can take specific choices of parameters.

1. Exponential distribution.
   (a) $f(x) = (1/\sigma)\exp(-x/\sigma),\ x > 0, \sigma > 0.$
   (b) $f(x) = (1/\sigma)\exp(-(x-\mu)/\sigma),\ x > \mu, \sigma > 0, \mu \in 0.$
2. Generalized Inverted Exponential Distribution

$$F(x) = 1 - \left(1 - e^{-\lambda/x}\right)^{\alpha},\ x > 0,\ \alpha, \lambda > 0,$$
$$f(x) = \frac{\lambda\alpha}{x^2} e^{-\lambda/x}\left(1 - e^{-\lambda/x}\right)^{\alpha-1},\ x > 0,\ \alpha, \lambda > 0,$$

3. Chen Distribution

$$f(x) = \alpha\beta x^{\beta-1}\exp\left(\alpha(1 - e^{x^{\beta}}) + x^{\beta}\right),\ x > 0, \alpha, \beta > 0.$$

4. Cauchy Distributions
   (a) $f(x) = \frac{\sigma}{\pi(\sigma^2 + x^2)},\ x \in \mathbb{R}, \sigma > 0.$
   (b) $f(x) = \frac{\sigma}{\pi(\sigma^2 + (x-\mu)^2)},\ x > \mu,\ x, \mu \in \mathbb{R}, \sigma > 0.$