UNIVERSITY OF TEXAS AT AUSTIN

Quiz #19

Please, provide your **complete solutions** to the following questions:

Problem 19.1. (5 points) You want to fit to the observed values

$$4, 5, 7$$

a two-parameter Pareto distribution with parameters $\alpha = 4$ and θ unknown using maximum likelihood estimation. Write down **clearly** an **explicit** expression for the loglikelihood function (of course, as a function of θ).

Problem 19.2. (10 points) Consider the following individual observed values:

$$5, 8, 10$$

of a random variable Y such that $Y = X^{-1}$ with $X \sim Gamma(\alpha = 2, \theta)$.

Calculate $\hat{\theta}_{MLE}$, the Maximum Likelihood Estimate of θ based on the above observed values.