Due: 17.01.2025

Stat 303 Project

In this project, you have 3 data sets. Please work on the following:

1. a) For the first two data sets (set 1 and set 2) decide the distribution first, then estimate the related parameter(s) by using MME and MLE procedures theoretically. Furthermore, take a random sample of size 100 from the distr. and calculate the estimates.

b) For the data set 3 distribution is known and given to each group separately. Estimate the related parameter(s) by using MME and MLE procedures (theoretically). Furthermore, take a random sample of size 100 from the dist. and calculate the estimates.

2. For parts a) and b) in (1)

a) Compare the relative efficiencies of MMEs (compared to MLEs)

b) Find UMVU estimators and calculate the estimates from sample. Decide the distribution of MLEs.

c) Find a confidence interval for the unknown parameter(s) if possible.

3. For the data sets in question (1), find the $P(X > a)$ and $P(X < a)$ by using

a) UMVU estimator of unknown parameter

b) MME estimator of the unknown parameter

choose `a` with respect to your distribution. Comment.