

134. Let Y_1, \dots, Y_n be IID with PDF

$$f(y \mid \theta) = \theta^{-1}, \quad 0 \leq x \leq \theta, \quad \theta > 0.$$

In the previous assignment, it was shown that the MME ($\tilde{\theta}$) and the MLE ($\hat{\theta}$) are

$$\tilde{\theta} = 2\bar{X}, \quad \text{and} \quad \hat{\theta} = X_{(n)}.$$

Find the MSE of both statistics and explain which one should be preferred and why.