

1. X_1, X_2, \dots, X_n are iid with the following probability density function.

$$f(x_i|\theta) = \begin{cases} \frac{1}{3\theta} e^{-x_i/3\theta}, & x_i > 0 \\ 0, & \text{otherwise} \end{cases}$$

- a) Find the expected value and variance of the X_i .
- b) Find the Method of Moments estimator of θ .
- c) Find the Mean Square Error (MSE) of your estimator.