1. Show the derivation for deriving the parameters of a linear regression model using MLE and LSE.
2. Comment on the following: Correlation does not imply causation.
3. A random sample of 29 households was selected to study electricity consumption. The average usage was found to be 500 units. In a very large study the previous year it was found that the standard deviation of the usage was 100 units. Assuming the standard deviation is unchanged, calculate the 99% confidence interval for the mean consumption of electrical units.
4. Prove the memoryless property of exponential distribution.
5. Write about the central limit theorem in your own words.