ASSIGNMENT 2

CH5020

Ganji Penchala Kalyan Chakravarthi

DA23C007

October 16, 2024

Question 1

If a hypothesis is rejected at a particular significance level, can it be accepted at a higher level of significance? When increasing the level of significance, is the confidence interval becoming broader or narrower?

No, a hypothesis cannot be accepted at a higher level of significance if it is rejected at a specific significance level. This is because increasing the significance threshold (α) makes it easier to reject the null hypothesis rather than accept it.

Additionally, when the level of significance is increased, the corresponding confidence interval becomes narrower. A higher α results in a lower confidence level $(1-\alpha)$, leading to a tighter interval around the estimate.

Question 2

Find the degrees of freedom (dof) in T-distribution such that $P(Z > 2.086404) = P(T_{\text{dof}} > 2.5)$. Why is the value corresponding to the T-distribution higher than the Z value? [5]

Given:

$$P(Z > 2.086404) = P(T_{\text{dof}} > 2.5)$$

From the standard Z table,

$$P(Z > 2.086404) = 0.01847$$

We need to find the degrees of freedom (dof) for the T-distribution such that:

$$P(T_{\text{dof}} > 2.5) = 0.01847$$