1. Classical 95% Confidence Interval for μ

Given:

- Sample size n=10
- Sample mean $\bar{y}$=176,
- Sample variance s^2 = 9（s = sqrt{9} = 3),
- Population standard deviation σ is unknown.

The 95% confidence interval for μ uses the t-distribution with n−1=9degrees of freedom:

$CI95=\bar{y} \pm t_{\alpha/2,n-1} \cdot s/sqrt\{n\}$,

where tα/2,9≈2.262,

Calculation:

Margin of Error=$t_{\alpha/2,9} \cdot s/sqrt(n)=2.262 \cdot 310 \approx 2.14$

$CI_{95}=176 \pm 2.14=(173.86,178.14)$

Classical 95% Confidence Interval:

(173.86,178.14)

2. Bayesian Posterior Credible Intervals for μ

Case a:
Posterior Mean: 176.00
95% Credible Interval for μ: [174.41, 177.49]

Hypothesis μ = 200 is rejected.

Case b:
Posterior Mean: 176.00
95% Credible Interval for μ: [174.82, 177.10]

Hypothesis μ = 200 is rejected.

Case c:
Posterior Mean: 176.00
95% Credible Interval for μ: [174.37, 177.52]

Hypothesis μ = 200 is rejected.