

Quiz 04~~Q1.~~Given

$$\mu_0 = 3.2$$

~~$$\mu = 4$$~~

$$n = 7$$

i) $H_0: \mu = 3.2$

$$H_1: \mu \neq 3.2$$

(ii) $\frac{\bar{X} - \mu_0}{\sqrt{\frac{s^2}{n}}} \sim t_{(n-1)} = \text{Test statistic.}$

$$\bar{X} = \frac{2.8 + 3.5 + 3.4 + 2 + 2.5 + 2.9 + 3.2}{7}$$

$$= 2.914$$

$$s^2 = \frac{\sum (x_i - \bar{x})^2}{n-1}$$

$$= \frac{(2.8-2.9)^2 + (3.5-2.9)^2 + (3.4-2.9)^2 + (2-2.9)^2 + (2.5-2.9)^2 + (2.9-2.9)^2 + (3.2-2.9)^2}{7-1}$$

$$= 0.2981$$

$$\therefore \text{Test statistics} = \frac{2.914 - 3.2}{\sqrt{\frac{0.2981}{7}}} = -1.3859$$

(iii) $H_1: \mu \neq 3.2$. and $\alpha = 0.10$, $n-1 = 7-1 = 6$

\therefore The rejection region is

$$\begin{aligned} &]-\infty, -t_{\frac{\alpha}{2}, 6}] \cup [t_{\frac{\alpha}{2}, 6}, +\infty[\\ & =]-\infty, -t_{0.05}] \cup [t_{0.05}, +\infty[\\ & =]-\infty, -1.943] \cup [1.943, +\infty[\end{aligned}$$

~~(iv) So the~~

(iv) since test statistics value (-1.3859) does not fall in the rejection region, so we cannot reject H_0 at 10% level of significance.

So the our assumption of the average grading point average in NSU is incorrect.