

Q-1

ABHAS BHARGAVA

$$H_0: \mu = 75$$

$$H_a: \mu < 75$$

$$\bar{x} = \frac{\sum x_i}{n} = 74.7889$$

$$s^2 = \frac{\sum (x_i - \bar{x})^2}{n-1} \approx 1.0203$$

$$\text{Test statistic} = \frac{74.7889 - 75}{1.0203/\sqrt{9}} \approx -0.6207$$

$$\begin{aligned} p\text{-value} &= P(t < -0.6207) \\ &= P(t > 0.6207) \\ &= 0.276033 \end{aligned}$$

$$p\text{-value} > 0.05 = \alpha$$

$\Rightarrow H_0$  is not rejected.

No the sample data does not support the alternative hypothesis at 0.05 level.