

Answer on Question #41783, Math, Statistics and Probability

The manager of a restaurant in Malacca claims that waiters working in all restaurants in Malacca earn an average of RM150 or more in tips per week. A random sample of 25 waiters selected from restaurants of Malacca yielded a mean of RM139 in tips per week with a standard deviation of RM28. Assume that the weekly tips for all waiters in Malacca have a normal distribution. Using 1% significance level, can you conclude that the manager's claim is true?

Solution

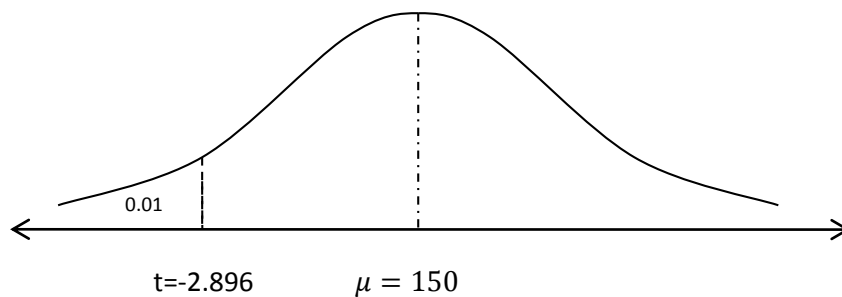
Step 1. State $H_0: \mu \geq 150$, $H_1: \mu < 150$.

Step 2. Type of test - left-tailed test.

Step 3. Level of significance: $\alpha = 0.01$.

Step 4. Critical value of the statistic: $t = -2.896$.

Step 5. Diagram



Step 6. Decision rule: Reject H_0 if t computed from evidence less than -2.896 .

Step 7. Compute the statistic:

Evidence: $n = 25$, $\bar{x} = 139$, $s = 28$.

$$t = \frac{\bar{x} - \mu}{\frac{s}{\sqrt{n}}} = \frac{139 - 150}{\frac{28}{\sqrt{25}}} = -1.96.$$

Step 8. Conclusion:

Don't reject H_0 . We have statistical evidence at a 0.01 level of significance to believe that the evidence is in line with the manager's claim that waiters working in all restaurants in Malacca earn an average of RM150 or more in tips per week.