Answer on Question #84612 – Math – Statistics and Probability

Question

The manager at a car assembly plant believes that the mean assembly time for a car is greater than the target time of 35 hours. We record the assembly times for a sample of ten cars. The mean and standard deviation assembly times of these ten cars are calculated to be 38 hours and 5 hours, respectively. Assembly times are known to follow a normal distribution. At the 5% level of significance, we have:

A) sufficient evidence that the true mean assembly time is greater than 35 hours, since the P-value is between 0.025 and 0.05.

B) insufficient evidence that the true mean assembly time is greater than 35 hours, since the P-value is between 0.025 and 0.05.

C) sufficient evidence that the true mean assembly time is greater than 35 hours, since the P-value is between 0.05 and 0.10.

D) insufficient evidence that the true mean assembly time is greater than 35 hours, since the P-value is between 0.05 and 0.10.

Solution

Test statistic: $t = \frac{\bar{x}-\mu}{s/\sqrt{n}} = \frac{38-35}{5/\sqrt{10}} = 1.90.$

P-value: $p = 0.0449.$

A) sufficient evidence that the true mean assembly time is greater than 35 hours, since the P-value is between 0.025 and 0.05.
Answer: A).