Answer on Question #71090 – Math – Statistics and Probability

Question

In an experiment with a new tranquilizer, the pulse rates (per minute) of 12 patients were determined before they were given the tranquilizer and again 5 minutes later, and their pulse rates were found to be reduced on the average by 7.2 beats with a standard deviation of 1.8. At the level of significance 0.05, do we have significant evidence that the mean pulse reduction with this tranquilizer is less than 9.0 beats?

Solution

Null hypothesis H_0: $\mu_d = 9$.
Alternative hypothesis H_a: $\mu_d < 9$.
Test statistic: $t = \frac{\bar{x}_d - 9}{\frac{s_d}{\sqrt{n}}} = \frac{7.2-9}{\frac{1.8}{\sqrt{12}}} = -3.46$.
P-value: $p = 0.0027$.

Since P-value is less than 0.05 we should reject the null hypothesis and conclude that we have significant evidence that the mean pulse reduction with this tranquilizer is less than 9.0 beats.

Answer: we have significant evidence that the mean pulse reduction with this tranquilizer is less than 9.0 beats.