**Answer on Question #41808, Math, Statistics and Probability**

Firebrick Tire Company wants to increase sales of its long running, low end Roadmaster Tire brand with a new advertising campaign claiming they will last at least 28,000 miles [u=28,000 miles]. Tests with a random sample [n=30 tires] show a sample mean [x=$27,500 miles] with a sample standard deviation [s=1000 miles]. At a .05 level of significance, these tests indicate

a. Reject Ho: Z of -2.7386 less than -1.6450

b. Reject Ho: Z of -2.7386 less than 1.6450

c. Do not reject Ho: Z of 1.6450 less than 2.7386

d. Do not reject Ho: Z of -1.6450 less than 2.7386

e. None of the above

**Solution**

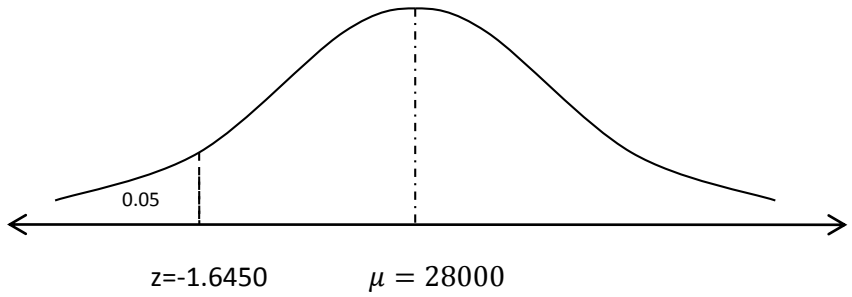
Step 1. State $H_o$: $\mu \geq 28000$, $H_1$: $\mu < 150$.

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

Step 3. Level of significance: $\alpha = 0.05$.

Step 4. Critical value of the statistic: z=-1.6450.

Step 5. Diagram




Step 6. Decision rule: Reject $H_o$ if t computed from evidence less than -1.6450.

Step 7. Compute the statistic:

Evidence: $n = 30$, $\bar{x} = 27500$ , $s = 1000$.

$$z = \frac{\bar{x} - \mu}{\frac{s}{\sqrt{n}}} = \frac{27500 - 28000}{\frac{1000}{\sqrt{30}}} = -2.7386.$$

Step 8. Conclusion:

**a. Reject Ho: Z of -2.7386 less than -1.6450.**