

### Answer on Question #47511 – Math – Statistics and Probability

The mean weekly sales of soap bars in different departmental stores was  $\mu_0 = 146.3$  bars per store. After an advertising campaign the mean weekly sales increased to  $\mu = 153.7$  and showed a standard deviation of  $\sigma = 72.2$ . Was the advertising campaign successful at 5% level of significance? You may like to use the values given at end.

#### Solution

Null hypothesis  $H_0: \mu = \mu_0$ , i.e., the advertising campaign isn't successful.

Alternative hypothesis  $H_1: \mu > \mu_0$  (Right tail), the advertising campaign is successful.

Under  $H_0$  the test statistic is

$$z = \frac{\mu - \mu_0}{\sigma} = \frac{153.7 - 146.3}{72.2} = 0.10.$$

Since the calculated value of  $z = 0.10$  is lower than the tabulated value of  $z_{0.05} = 1.645$  at 5% level of significance, we don't reject  $H_0$ . The advertising campaign wasn't successful in promoting sales.