TOPIC

Engineering Probability and Statistics – Section II – Question 8

QUESTION

The sodium content of a 300-gram box of organic corn flakes is approximately normally distributed with $\sigma = 0.55$ milligrams. Ten boxes were examined. The data (in milligrams) are as follows: 131.4, 130.9, 130.0, 129.8, 129.5, 129.4, 130.1, 130.6, 130.5, and 129.8. Test the hypothesis H_0: $\mu = 130$ versus H_1: $\mu \neq 130$, using $\alpha = 0.02$. If the true mean sodium content is 130.5 milligrams, the power of this test most nearly is

(A) 0.050
(B) 0.121
(C) 0.216
(D) 0.293

HINT

The power = $1 - \beta$, where β is the type-II error probability.
β = P(Accept H_0: $\mu = \mu_0$, when $\mu = \mu'$).

CONTRIBUTOR

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