Hypothesis testing

Gold

A discrete random variable X has a binomial distribution B(25, p).
A single observation is used to test H_0:$p = 0.45$ against H_1:$p \neq 0.45$.

a Using a 1% level of significance find the critical region of this test. You should state the probability of rejection in each tail which should be as close as possible to 0.005.
b Write down the actual significance level of the test.
c The value of the observation was found to be 16. Comment on this finding in light of your critical region.

Silver

A test statistic has a distribution B(20, p). Given that H_0:$p = 0.4$ and H_1:$p \neq 0.4$:

a Find the critical region for the test statistic such that the probability in each tail is as close as possible to 2.5%.
b State the probability of incorrectly rejecting H_0 using this critical region.

Bronze

Explain what you understand by:

a a hypothesis test
b a critical region
c the level of significance of a hypothesis test

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