Hw10

2020年4月23日 星期四　　下午5:20

Homework 10_...

Homework 10

Due Apr 23 at 11:59pm　　**Points** 15　　**Questions** 4
Available Apr 17 at 12am - Apr 23 at 11:59pm 7 days　　**Time Limit** None

Attempt History

	Attempt	Time	Score
LATEST	Attempt 1	29 minutes	15 out of 15

① Correct answers are hidden.

Score for this quiz: 15 out of 15
Submitted Apr 22 at 7:36pm
This attempt took 29 minutes.

Question 1　　4 / 4 pts

A company receives shipments of a component used in the manufacture of a component for a high-end acoustic speaker system. When the components arrive, the company selects a random sample from the shipment and subjects the selected components to a rigorous set of tests to determine if the components in the shipments conform to their specifications. From a recent large shipment, a random sample of 250 of the components was tested, and 24 units failed one or more of the tests. Let, p, represent the proportion of components that fail to meet the specifications. If the company wanted to test the null and alternative hypotheses, H_0: $p = 0.10$ against H_1: $p \neq 0.10$, at the $\alpha = 0.05$ level of significance, what conclusion would they draw?

- ○ Reject the null hypothesis
- ◉ Fail to reject the null hypothesis

Question 2　　3 / 3 pts

After a college football team once again lost a game to their archrival, the alumni association conducted a survey to see if alumni were in favor of firing the coach. A simple random sample of 100 alumni from the population of all living alumni was taken. Sixty-four of the alumni in the sample were in favor of firing the coach. Let p represent the proportion of all living alumni who favored firing the coach. Suppose the alumni association wished to see if the majority of alumni are in favor of firing the coach. To do this they test the hypotheses H_0: $p = 0.50$ versus H_1: $p > 0.50$. What is the P-value for this hypothesis test? Choose the closest option.

- ○ Below 0.001
- ◉ 0.0026
- ○ 0.0682
- ○ 0.14

Question 3　　4 / 4 pts

The attention span of children (ages 3 to 5) is claimed to be Normally distributed with a mean of 15 minutes and a standard deviation of 4 minutes. A test is to be performed to decide if the average attention span of these kids is really this short or if it is longer. You decide to test the hypotheses H_0: $\mu = 15$ versus H_1: $\mu > 15$ at the 5% significance level. A sample of 10 children will watch a TV show they have never seen before, and the time until they walk away from the show will be recorded. If, in fact, the true mean attention span of these kids is 18 minutes, what is the probability of a Type II error? Choose the closest option.

- ○ 0.0107
- ◉ 0.2327
- ○ 0.3405
- ○ 0.7665

Question 4　　4 / 4 pts

The nicotine content in cigarettes of a certain brand is Normally distributed with a standard deviation of $\sigma = 0.1$ milligrams. The brand advertises that the mean nicotine content of their cigarettes is $\mu = 1.5$ milligrams, but you are suspicious and plan to investigate the advertised claim by testing the hypotheses H_0: $\mu = 1.5$ versus H_1: $\mu > 1.5$ at the 5% significance level. You will do so by measuring the nicotine content of 15 randomly selected cigarettes of this brand and computing the mean nicotine content $\bar{x}$ of your measurements. If the mean nicotine content of the cigarettes is, in fact, $\mu = 1.6$, what is the

power of the test? Choose the closest option.

- ○ 0.7995
- ○ 0.95
- ○ 0.9711
- ◉ 0.9877

Quiz Score: 15 out of 15