BONUS Week 13 Homework

(!) This is a preview of the published version of the quiz

Started: Jul 2 at 7:56am

Quiz Instructions

Question 1 Opposite of CRN - Suppose θ_1 and θ_2 are its unbiased estimator for some parameter θ_1 .

1 pts

The we induce negative correlation between θ_1 and θ_2 , then the average of the two is also unbiased and may have very low variance. (Lesson 10.7: Antithetic Random Numbers.) BONUS: Suppose A and B are two identically distributed, unbiased, antithetic estimators for the mean μ of some random variable, and let C = (A + B)/2. Which of the following is true?

O a. $E[C] < \mu$.

O b. $E[C] = \mu$ and Var(C) = Var(A).

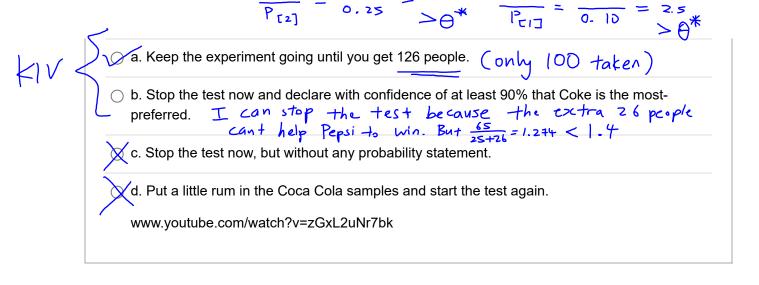
O c. $E[C] = \mu$ and Var(C) = Var(A)/2.

O e. $E[C] = \mu$ and Var(C) < Var(A)/2.

O e. $E[C] = \mu$ and Var(C) < Var(A)/2.

(Lesson 10.16: Multinomial Procedure.) BONUS: Suppose that we want to know which of Coke, Pepsi, and Dr. Pepper is the most popular. We would like to make the correct selection with probability of at least $P^* = 0.90$ in the event that the ratio of the highest-to-second-highest preference probabilities happens to be at least $\theta^* = 1.4$. If we use procedure \mathcal{M}_{BEM} , then the corresponding table in the notes (with k = 3) tells us to take 126 samples (taste tests). Suppose we take those samples sequentially and after 100 have been taken it turns out that 65 people prefer Coke, 25 love Pepsi, and 10 like Dr. Pepper. What to do?

$$P_{[1]} = 0.10$$
 $P_{[2]} = 0.25$ $P_{[3]} = 0.65$ $P_{[3]} = 0.65$ $P_{[3]} = 0.65$ $P_{[3]} = 0.65$ $P_{[3]} = 0.65$



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