Midterm Questions

Jason Freels

2/7/2020

## Question 1

What does it mean if we say that an estimator for is unbiased?

## Question 2

For any random variable the Cumulative Distribution Function (CDF) is expressed as . What does this function tell us?

## Question 3

For any random variable the Probability Density Function (PDF) is expressed as . What does this function tell us?

## Question 4

Every hypothesis test requires a test statistic. What do we need to know about any test statistic before we can use it in a Hypothesis test

## Question 5

A hypothsis test is a statistical process in which we use data to decide between two complimentary statments. Suppose we were interested in conducting a hypothesis test in which we determine whether a new drug is effective at treating the flu. Our possible statements are: “The drug is effective” and “The drug is not effective”

Which of these two statements would be the Null hypothesis and which would be the alternative hypothesis?

## Question 6

In homework #3 you worked with the data in the newspaper column on the advertising data set. In this problem you will work with **ALL of the the observations** in radio column of the same data set.

1. Construct a confidence interval for the mean of the data in the radio column
2. Construct a confidence interval for the mean of the data in the radio column
3. Construct a confidence interval for the variance of the data in the radio column