Stat 134: Section 15

Adam Lucas

November 4th, 2019

Conceptual Review

Please discuss these short questions with those around you in section. These problems are intended to highlight concepts from lecture that will be relevant for today's problems.

a. How does the change of variable formula differ from one-to-one to many-to-one functions?

b. What is the relationship between the CDF and the density of a random variable?

Problem 1

Suppose X has the uniform $[-1, 2]$ distribution. Find the density of X^2.

Ex 4.4.5 in Pitman's Probability

Problem 2

Suppose X_1, X_2, ... X_n are Exp(λ). Let Y = min(X_1, X_2, ... X_n).

a. Find the CDF of Y.

b. Use (a) to find the density of Y.

Problem 3

Let X be a random variable that has a uniform distribution on the interval $(0, a)$

a. Find the CDF of $Y = \min(X, a/2)$.

b. Is the distribution of Y continuous? Explain.

c. Find E(Y).

Ex 4.rev.22 in Pitman's Probability

Prepared by Neil Sharma and Yiming Shi