

Stat 134: Section 16

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Problem 1

Suppose the random variable U is distributed uniformly on the interval $(0, 1)$. Find the density of the random variable $Y = \min(U, 1 - U)$ and indicate where the density is positive.

Ex 4.rev.25 in Pitman's Probability

Problem 2

Let $U_{(1)}, \dots, U_{(n)}$ be the values of n i.i.d. Uniform $(0,1)$ variables arranged in increasing order. For $0 < x < y < 1$, find simple formulae for:

- a. $P(U_{(1)} > x, U_{(n)} < y);$
- b. $P(U_{(1)} > x, U_{(n)} > y);$
- c. $P(U_{(1)} < x, U_{(n)} < y);$
- d. $P(U_{(1)} < x, U_{(n)} > y)$

Ex 4.6.3 in Pitman's Probability