

Stat 134: Poisson Process/Change of Variables Review

Problem 1

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

Stat 134 Fall 2017 Change of Variables Review Sheet #3

Problem 2

Bus lines A, B and C service a particular stop. Suppose the lines come as independent Poisson processes with rates λ_A , λ_B , and λ_C per hour respectively. Find expressions for the following probabilities.

- Exactly one A bus, two B buses, and one C bus come to the stop in a given hour.
- A total of 7 buses come to the stop in a given two hour time period.
- Starting from a fixed time, the first A bus arrives after t hours.

Ex 4.rev.18 in Pitman's Probability

Problem 3

Suppose calls are arriving at a telephone exchange at an average rate of one per second, according to a Poisson arrival process. Find:

- the probability that the fourth call after time $t = 0$ arrives within 2 seconds of the third call.
- the probability that the fourth call arrives by time $t = 5$ seconds.
- the expected time at which the fourth call arrives.

Ex 4.2.5 in Pitman's Probability