

Math 303 Assignment 7: Due Wednesday, March 14 at start of class

I. Problems to be handed in:

1. In a pizzeria the orders arrive according to a Poisson process of rate λ . Given that 3 orders arrived in an hour, determine the conditional probability density functions of the arrival of the first order S_1 , and similarly of the second and third orders S_2 and S_3 , too. (The question asks for 3 probability density functions, not the joint p.d.f.)
2. Let $N(t)$ be a Poisson process of rate λ . Determine the conditional distribution of $N(3)$ given that $N(5) = 7$.
3. Textbook Chapter 5 Exercise 53.
4. Textbook Chapter 5 Exercise 64.
5. Textbook Chapter 5 Exercise 68.
6. A kid counts the cars passing a certain street according to a Poisson process of rate λ . When a given α time units passes without any car arriving, he gets bored and leaves.
 - (a) How much time does he spend there on average?
Hint: Condition on the time of the first car.
 - (b) How many cars did he count on average?

II. Recommended problems: These provide additional practice but are not to be handed in. Chapter 5: Exercises 34, 36, 50, 56.