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## 8. Poisson fun

Problem Set due May 13, 2020 05:29 IST Past Due

Problem 8. Poisson fun

2 points possible (graded)

Based on your understanding of the Poisson process, determine the numerical values of  $\boldsymbol{a}$  and  $\boldsymbol{b}$  in the following expression.

$$\int_t^\infty rac{\lambda^6 au^5 e^{-\lambda au}}{5!} \ d au = \sum_{k=a}^b rac{(\lambda t)^k e^{-\lambda t}}{k!}.$$

b= Answer: 5

## **Solution:**

The left-hand side is the probability that an Erlang random variable of order 6 and rate  $\lambda$  is larger than t. In the language of Poisson processes, this is the probability that there were at most 5 arrivals during the interval (0,t] (recall that an  $n^{th}$  order Erlang random variable corresponds to the  $n^{th}$  arrival time in a Poisson process. Hence, a=0, and b=5.

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You have used 0 of 3 attempts

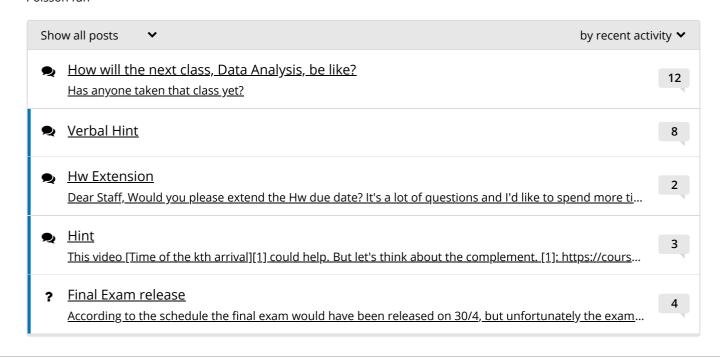
**1** Answers are displayed within the problem



## Discussion

**Hide Discussion** 

**Topic:** Unit 9: Bernoulli and Poisson processes:Problem Set 9 / 8. Poisson fun



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