



STEP III, 2003 Q12

- 12 Brief interruptions to my work occur on average every ten minutes and the number of interruptions in any given time period has a Poisson distribution. Given that an interruption has just occurred, find the probability that I will have less than t minutes to work before the next interruption. If the random variable T is the time I have to work before the next interruption, find the probability density function of T .

I need an uninterrupted half hour to finish an important paper. Show that the expected number of interruptions before my first uninterrupted period of half an hour or more is $e^3 - 1$. Find also the expected length of time between interruptions that are less than half an hour apart. Hence write down the expected wait before my first uninterrupted period of half an hour or more.



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