

Answer on Question #81196 – Math – Statistics and Probability

Question

On average a certain intersection results in 6 traffic accidents per month. What is the probability that for any given month at the intersection at least one (1) accident will occur?

Solution

Suppose that the number of traffic accidents per month at this intersection, X , has a Poisson distribution with the parameter $\mu = 6 > 0$, i. e.,

$$P(X = n) = e^{-\mu} \frac{\mu^n}{n!} = e^{-6} \frac{6^n}{n!} \quad (n \in \mathbb{Z} \cup 0).$$

The probability that for any given month at the intersection at least one will occur is

$$P(X \geq 1) = 1 - P(X = 0) = 1 - e^{-6} \approx 1 - 0.00248 = 0.99752.$$

Answer:

The probability is 0.99752.