

EXAM P QUESTIONS OF THE WEEK

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Week of February 25/08

A loss random variable X has a Poisson distribution with a mean of λ

An insurance policy on the loss has a policy limit of 1.

The expected insurance payment when a loss occurs is .8892 .

Find the expected insurance payment when a loss occurs for a policy on the same loss variable if the policy limit is 2.

The solution can be found below.

Week of February 25/08 - Solution

The expected insurance payment is $P(X \geq 1) = .8892$.

Therefore $P(X = 0) = .1108 = e^{-\lambda}$, and it follows that $\lambda = -\ln(.1108) = 2.200$.

The expected insurance payment on a policy with a limit of 2 is

$$\begin{aligned} & 1 \cdot P(X = 1) + 2 \cdot P(X \geq 2) \\ &= P(X = 1) + 2 \cdot [1 - P(X = 0 \text{ or } 1)] \\ &= \frac{e^{-\lambda} \cdot \lambda}{1!} + 2 \cdot [1 - e^{-\lambda} - \frac{e^{-\lambda} \cdot \lambda}{1!}] \\ &= (.1108)(2.2) + 2 \cdot [1 - .1108 - (.1108)(2.2)] = 1.53 . \end{aligned}$$