

The Infinite Actuary Exam STAM Online Course
A.2.2. Practice Problems on Gamma Distributions

1. Losses are exponential with median 50. Two losses occur in a year, with independent loss amounts. What is the probability that the sum of those losses exceeds 100?
A. 0.06 B. 0.25 C. 0.44 D. 0.56 E. 0.60
2. Suppose X has a Gamma distribution with parameters $\alpha > 1$ and θ . Find the mode of X .
A. 0 B. $(\alpha - 1)\theta$ C. $\alpha\theta$ D. $(\alpha - 1)\theta^2$ E. $\alpha\theta^2$
3. [4B.F98.27] Determine the skewness of a gamma distribution with coefficient of variation of 1.
A. 0 B. 1 C. 2 D. 4 E. 6
4. The probability generating function for a loss amount X satisfies

$$P(z) = \frac{1}{(1 - 3 \ln z)^3}, \quad z < e^{1/3}$$

Find the variance of X .

- A. 1 B. 3 C. 9 D. 27 E. 36