

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