

Stat 98/198 HW #3 Due 2/24

52. An insurance company sells a one-year automobile policy with a deductible of 2 . The probability that the insured will incur a loss is 0.05 . If there is a loss, the probability of a loss of amount  $N$  is  $\frac{K}{N}$ , for  $N = 1, \dots, 5$  and  $K$  a constant. These are the only possible loss amounts and no more than one loss can occur.

Determine the net premium for this policy.

- (A) 0.031      (B) 0.066      (C) 0.072      (D) 0.110      (E) 0.150
54. An auto insurance company insures an automobile worth 15,000 for one year under a policy with a 1,000 deductible. During the policy year there is a 0.04 chance of partial damage to the car and a 0.02 chance of a total loss of the car. If there is partial damage to the car, the amount  $X$  of damage (in thousands) follows a distribution with density function

$$f(x) = \begin{cases} 0.5003 e^{-x/2} & \text{for } 0 < x < 15 \\ 0 & \text{otherwise.} \end{cases}$$

What is the expected claim payment?

- (A) 320      (B) 328      (C) 352      (D) 380      (E) 540
64. A probability distribution of the claim sizes for an auto insurance policy is given in the table below:

Claim Size	Probability
20	0.15
30	0.10
40	0.05
50	0.20
60	0.10
70	0.10
80	0.30

- What percentage of the claims are within one standard deviation of the mean claim size?
- (A) 45%      (B) 55%      (C) 68%      (D) 85%      (E) 100%

67. A baseball team has scheduled its opening game for April 1. If it rains on April 1, the game is postponed and will be played on the next day that it does not rain. The team purchases insurance against rain. The policy will pay 1000 for each day, up to 2 days, that the opening game is postponed.

The insurance company determines that the number of consecutive days of rain beginning on April 1 is a Poisson random variable with mean 0.6 .

What is the standard deviation of the amount the insurance company will have to pay?

- (A) 668      (B) 699      (C) 775      (D) 817      (E) 904

71. The time,  $T$ , that a manufacturing system is out of operation has cumulative distribution function

$$F(t) = \begin{cases} 1 - \left(\frac{2}{t}\right)^2 & \text{for } t > 2 \\ 0 & \text{otherwise.} \end{cases}$$

The resulting cost to the company is  $Y = T^2$  .

Determine the density function of  $Y$ , for  $y > 4$  .

- (A)  $\frac{4}{y^2}$
- (B)  $\frac{8}{y^{3/2}}$
- (C)  $\frac{8}{y^3}$
- (D)  $\frac{16}{y}$
- (E)  $\frac{1024}{y^5}$