168. For an insurance:

(i) Losses can be 100, 200 or 300 with respective probabilities 0.2, 0.2, and 0.6.

(ii) The insurance has an ordinary deductible of 150 per loss.

(iii) Y^P is the claim payment per payment random variable.

Calculate $\text{Var}(Y^P)$.

(A) 1500

(B) 1875

(C) 2250

(D) 2625

(E) 3000

169. The distribution of a loss, X, is a two-point mixture:

(i) With probability 0.8, X has a two-parameter Pareto distribution with $\alpha = 2$ and $\theta = 100$.

(ii) With probability 0.2, X has a two-parameter Pareto distribution with with $\alpha = 4$ and $\theta = 3000$.

Calculate $\Pr(X \le 200)$.

(A) 0.76

(B) 0.79

(C) 0.82

(D) 0.85

(E) 0.88

13. The loss severity random variable X follows the exponential distribution with mean 10,000.

Determine the coefficient of variation of the excess loss variable $Y = \max(X - 30000, 0)$.

(A) 1.0

(B) 3.0

(C) 6.3

(D) 9.0

(E) 39.2

160. You are given a random sample of observations:

0.1 0.2 0.5 0.7 1.3

You test the hypothesis that the probability density function is:

$$f(x) = \frac{4}{(1+x)^5}, \quad x > 0$$

Calculate the Kolmogorov-Smirnov test statistic.

(A) Less than 0.05

(B) At least 0.05, but less than 0.15

(C) At least 0.15, but less than 0.25

(D) At least 0.25, but less than 0.35

(E) At least 0.35

161. DELETED

162. A loss, X, follows a 2-parameter Pareto distribution with $\alpha = 2$ and unspecified parameter θ. You are given:

$$E[X - 100 \mid X > 100] = \frac{5}{3} E[X - 50 \mid X > 50]$$

Calculate $E[X - 150 \mid X > 150]$.

(A) 150

(B) 175

(C) 200

(D) 225

(E) 250

100. The unlimited severity distribution for claim amounts under an auto liability insurance policy is given by the cumulative distribution:

$$F(x) = 1 - 0.8e^{-0.02x} - 0.2e^{-0.001x}, \quad x \geq 0$$

The insurance policy pays amounts up to a limit of 1000 per claim.

Calculate the expected payment under this policy for one claim.

(A) 57

(B) 108

(C) 166

(D) 205

(E) 240

101. The random variable for a loss, X, has the following characteristics:

x	$F(x)$	$E(X \wedge x)$
0	0.0	0
100	0.2	91
200	0.6	153
1000	1.0	331

Calculate the mean excess loss for a deductible of 100.

(A) 250

(B) 300

(C) 350

(D) 400

(E) 450