KFUPM | Term 172 | Date: 8/3/2018
Mathematics & Statistics | AS 483 | Duration: 25 minutes

Quiz# 4

Name: ID #: Section:

Q1: A group dental policy has a negative binomial claim count distribution with mean 300 and variance 800.
Ground-up severity is given by the following table:

Severity	**Probability**
40	**0.25**
80	**0.25**
120	**0.25**
200	**0.25**

You expect severity to increase 50% with no change in frequency. You decide to impose a per claim deductible of 100.
Calculate the expected total claim payment after these changes.
Answer: 22,500

Q2: Michael is a professional stuntman who performs dangerous motorcycle jumps at extreme sports events around the world.
The annual cost of repairs to his motorcycle is modeled by a two parameter Pareto distribution with $\theta = 5000$ and $\alpha = 2$.
An insurance reimburses Michael's motorcycle repair costs subject to the following provisions:

(i) Michael pays an annual ordinary deductible of 1000 each year.
(ii) Michael pays 20% of repair costs between 1000 and 6000 each year.
(iii) Michael pays 100% of the annual repair costs above 6000 until Michael Has paid 10,000 in out-of-pocket repair costs each year.
(iv)Michael pays 10% of the remaining repair costs each year.

Calculate the expected annual insurance reimbursement.

Q3: For a special investment product, you are given:

(i) All deposits are credited with 75% of the annual equity index return, subject to a minimum guaranteed crediting rate of 3%.
(ii) The annual equity index return is normally distributed with a mean of 8% and a standard deviation of 16%.
(iii) For a random variable X which has a normal distribution with mean μ and standard deviation σ, you are given the following limited expected values:

E(X ^ 3%)		
	μ=6%	μ=8%
σ=12%	-0.43%	0.31%
σ=16%	-1.99%	-1.19%

E(X ^ 4%)		
	μ=6%	μ=8%
σ=12%	0.15%	0.95%
σ=16%	-1.43%	-0.58%

Calculate the expected annual crediting rate.