1. Automobile liability claims during 2013 were distributed as a two point mixture distribution of the following two distributions:

   a. Distribution 1 is a Pareto Distribution with $\alpha_1 = 4$ and $\theta_1$

   b. Distribution 2 is a Pareto Distribution with $\alpha_2 = 3$ and $\theta_2 = 9000$

The weights for the mixture distribution are 0.5 for each distribution. For 2013, $E[X] = 3000$.

For 2014, Automobile Liability claims are expected to incur uniform inflation of 10%.

Calculate the $\text{Var}[X]$ for 2014.
2. The number of medical claims for an insured in a calendar year is distributed as a Geometric distribution given $\beta$. Further, $\beta$ is distributed as a uniform distribution between 2 and 10.

Calculate the probability that a person will have zero claims in a calendar year.