1. For a zero modified Poisson distribution, you are given:

\[ p_1^{M} = 0.20\] and \[ p_2^{M} = 0.12\]

Calculate \( F(2) \).
2. The random variable $X$ is the amount of the loss on an automobile accident and is distributed as a gamma distribution given parameter $\alpha^g$ and with parameter $\theta^g$ equal to a constant $C$.

$\alpha^g$ is distributed as a Pareto distribution with parameters of $\alpha^p = 3$ and $\theta^p = 6$.

Further, you are given that the unconditional $E[X] = 3000$.

Calculate unconditional $Var[X]$. 