1. Player A bits player B with probability θ and loses with probability $1 - \theta$. The prior distribution of θ is beta distribution with parameters $\alpha = 3$ and $\beta = 1$. After they have played 10 games, the posterior distribution of θ turns out to be symmetric about $1/2$. How many games did A lose?

2. A sample $X_1, ..., X_n$ is taken from a Poisson distribution with parameter θ. The prior distribution of θ is gamma distribution with parameters (α_0, β_0). Find n and $\sum_{i=1}^{n} X_i$ if the posterior distribution is gamma distribution with parameters (α_1, β_1).