BAYESIAN STATISTICS

HOME WORK # 4

Wednesday, May 6, 2020

Problem 1. A beta distribution has mean 0.3 and variance 0.01. What are parameters a and b?

Problem 2. Suppose that μ has a prior distribution that is $N(0,1)$ and that $X \sim N(\mu, 0.25)$. What is the Bayes estimate of μ under squared error loss?

Problem 3. Given θ, the random variable X has a binomial distribution with $n = 2$ and probability of success θ. If the prior density of θ is

$$p(\theta) = \begin{cases} k & \text{if} \quad \frac{2}{3} < \theta < 1 \\ 0 & \text{otherwise} \end{cases}$$

what is the Bayes estimate of θ for a squared error loss if $X = 1$.

Problem 4. Suppose the prior distribution of θ is uniform over the interval $(2, 5)$. Given θ, X is uniform over the interval $(0, \theta)$. What is the Bayes estimator of θ for absolute error loss if X = 1 ?