(1) Find the Bayes estimate of a parameter $\theta$ under weighted squared error loss, $l(\theta, a) = w(\theta)(\theta - a)^2$.

2. For the binomial distribution with $n$ trials, find the minimax rule for squared error loss. (Remember the rules are Bayes rule or limits of Bayes rules.)

3. In Bayes linear model suppose you have two available models: $Y = X_1 \beta_1 + \epsilon$ and $Y = X_2 \beta_2 + \epsilon$. If you assign same Normal-Gamma prior for the $\beta_1$, $\beta_2$ and error precisions $\tau_1$, $\tau_2$, then derive the Bayes factor for model comparison purpose.