PBHS 43010: Homework #5

Based on the data"log.txt", perform a model selection based on RJMCMC. The models under consideration are

$$\begin{aligned} m = 1 &: log(\lambda(x)) = \beta_0 + \beta_1 x \\ m = 2 &: log(\lambda(x)) = \beta_0 + \beta_1 x + \beta_2 x^2 \end{aligned}$$

In the data file, the first column is x, a continuous covariate, and the second column is y, the Poisson outcome where $y \sim Poi(\lambda(x))$.

Consider parameter space $\{m = 1, \beta_0, \beta_1\}$ and $\{m = 2, \beta_0, \beta_1, \beta_2\}$. Use RJMCMC to estimate the posterior of m, β_0, β_1, and β_2. Draw the trace plots for them and make a conclusion if $m = 1$ or $m = 2$ is a better model by comparing their marginal posterior probabilities.