STAT 35920: Homework 6

Robert Winter

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

$$m = 1 : \log(\lambda(x)) = \beta_0 + \beta_1 x$$
$$m = 2 : \log(\lambda(x)) = \beta_0 + \beta_1 x + \beta_2 x^2.$$

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

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.

```
logdata =
 ↪  read.table("C:/Users/rewin/OneDrive/Documents/STAT_35920/Homework/HW6/log.txt",
                header = T)
```