

QUEEN MARY UNIVERSITY OF LONDON

MTH5120

Statistical Modelling I

Exercise Sheet 4

1. Using the Janka dataset described during the Practical in R session. In the Practical, we were using a quadratic term. For the assignment
 - (a) Try adding a cubic term to the model or a different transformation such a square root or a reciprocal. Fit your chosen model and do all the usual model checks.
 - (b) Write and submit a report of no more than one side of A4 comparing this model with the quadratic model you fitted in the Practical session. In the report, you could any possible problems with the models and say which model is the best.

2. For each of the following models, say if it is a linear model or not. If it is not a linear model say if it linearisable. If it is give the linearised model.
 - (a) $Y_i = \exp(\beta_0 + \beta_1 x_i) + \varepsilon_i$
 - (b) $Y_i = 3 + \exp(\beta_0 + \beta_1 x_i + \beta_2 x_i^2) + \varepsilon_i$
 - (c) $Y_i = \beta_0 + \beta_1 \sqrt{x_i} + \varepsilon_i$ or $Y_i = \beta_0 + \beta_1 \cos(x_i) + \varepsilon_i$