ST 705 Linear models and variance components
Homework problem set 9

March 24, 2021

1. Exercise 3.6 from Monahan.

2. Consider the restricted linear model $Y = X\beta + U$ over the constrained parameter space $\{P'\beta = \delta\}$, for some full-column rank matrix P. Set up the Langrangian function and derive the *restricted normal equations* (RNE),

$$\begin{pmatrix} X'X & P \\ P' & 0 \end{pmatrix} \begin{pmatrix} \beta \\ \theta \end{pmatrix} = \begin{pmatrix} X'y \\ \delta \end{pmatrix}.$$

3. Exercise 4.9 from Monahan.

4. Exercise 4.13 from Monahan.

5. Exercise 4.25 from Monahan.

6. Exercise 4.27 from Monahan.