

1. Exercise 7.3 on page 420.
2. Exercise 7.11 on page 422.
3. Justify the second part of Result 7.10 on page 395. That is,
 - (1) $\hat{\boldsymbol{\beta}}$ has a normal distribution with $E(\hat{\boldsymbol{\beta}}) = \boldsymbol{\beta}$ and $\text{Cov}(\hat{\boldsymbol{\beta}}_{(i)}, \hat{\boldsymbol{\beta}}_{(k)}) = \sigma_{ik}(\mathbf{Z}'\mathbf{Z})^{-1}$.
 - (2) $\hat{\boldsymbol{\beta}}$ is independent of $\hat{\boldsymbol{\Sigma}}$.
 - (3) $n\hat{\boldsymbol{\Sigma}}$ is distributed as $W_{m, n-r-1}(\boldsymbol{\Sigma})$, the Wishart distribution with $n-r-1$ degrees of freedom.