02424 Week 12

Since you are having the Assignment No. 3 todays exercise is rather limited. You should simply drive the likelihood function needed for solving Assignment No. 3, ie. (given Theorem 5.10) you must show that

$$\begin{aligned}\ell(\boldsymbol{\mu},\boldsymbol{\Sigma},\boldsymbol{\Sigma}_0;\bar{x}_{1+},\ldots,\bar{x}_{k+}) \quad = \quad & \qquad (1)\\ & -\frac{N-k}{2}\log(\det(\boldsymbol{\Sigma}))-\frac{1}{2}\mathrm{tr}((SSE)\boldsymbol{\Sigma}^{-1})-\sum_{i=1}^{k}\left[\frac{1}{2}\log\left(\det\left(\frac{\boldsymbol{\Sigma}}{n_i}+\boldsymbol{\Sigma}_0\right)\right)\right.\\ & \left.+\frac{1}{2}(\bar{x}_{i+}-\boldsymbol{\mu})^T\left(\frac{\boldsymbol{\Sigma}}{n_i}+\boldsymbol{\Sigma}_0\right)^{-1}(\bar{x}_{i+}-\boldsymbol{\mu})\right]\end{aligned}$$