smfprob11(13).tex

SMF PROBLEMS 12. 14.6.2013

Q1 (*Inverse of a partitioned matrix*). Show that

$$\begin{pmatrix} A & B \\ C & D \end{pmatrix}^{-1} = \begin{pmatrix} M & -MBD^{-1} \\ -D^{-1}CM & D^{-1} + D^{-1}CMBD^{-1} \end{pmatrix}, \quad M := (A - BD^{-1}C)^{-1}.$$

Q4 (*Conditional independence and the concentration matrix*). Show that two components x_i, x_j of a multinormal vector are conditionally independent given the other components iff $k_{ij} = 0$, where $K = (k_{ij}) = \Sigma^{-1}$ is the concentration matrix. (Take $i = 1$, $j = 2$, and x_1 in IV.6 as the sub-vector of the first two components.)

NHB