

Rencher Schaalje Chapter 4 Problems

Nooreen Dabbish

January 23, 2015

Contents

1 Problem 4.16	1
1.1 Find the joint and marginal distribution of y_1 and y_2	1

1 Problem 4.16

Suppose that \mathbf{y} is $N_4(\mu, \Sigma)$ where:

$$\mu = \begin{pmatrix} 1.00 \\ 2.00 \\ 3.00 \\ -2.00 \end{pmatrix}, \Sigma = \begin{pmatrix} 4.00 & 2.00 & -1.00 & 2.00 \\ 2.00 & 6.00 & 3.00 & -2.00 \\ -1.00 & 3.00 & 5.00 & -4.00 \\ 2.00 & -2.00 & -4.00 & 4.00 \end{pmatrix}$$

1.1 Find the joint and marginal distribution of y_1 and y_2 .

By Theorem 4.4b, any $r \times 1$ subvector of \mathbf{y} has a normal distribution with the same means, variances and covariance as in the original p -variate distribution.

$$\mathbf{y} = \begin{pmatrix} \mathbf{y}_{1,2} \\ \mathbf{y}_{3,4} \end{pmatrix}$$