

Homework 12

Problem 1. Chapter 10.3: 10

Problem 2. Let X_1 and X_2 be i.i.d. $N(1, 1)$. Define

$$(U_1, U_2) = (X_1, X_2) A, \text{ where } A = \begin{pmatrix} 2 & 0 \\ 0 & -2 \end{pmatrix}.$$

Find the joint density function $\psi(u_1, u_2)$ for (U_1, U_2) .

Problem 3. Let $X_1 \sim N(1, 1)$ and $X_2 \sim N(1, 1)$ be independent. Define

$$(U_1, U_2) = (X_1, X_2) A, \text{ where } A = \begin{pmatrix} 2^{-1/2} & -2^{-1/2} \\ 2^{-1/2} & 2^{-1/2} \end{pmatrix}.$$

Find the joint density function $\psi(u_1, u_2)$ for (U_1, U_2) .