ST617 – MULTIVARIATE METHODS – (2008 FALL)

3. Homework

Due: October 1, 2008, before the class

Use your words for the solutions, show your reasoning. A correct solution is a correct answer that is correctly reasoned.

1.) (10pts) Consider the quadratic form:

\[ Q(x_1, x_2) = 4x_1^2 + 4x_2^2 + 6x_1x_2. \]

Find the matrix \( A \) such that for all \( x \in \mathbb{R}^2 \)

\[ Q(x_1, x_2) = x'Ax. \]

Find the maximum and minimum values of \( Q(x_1, x_2) \) for \( x'x = 1 \).

Do not use program packages, do it by hand.

Problems from the book.

2.34 (5 pts) (verify the inequality by hand computation.)

2.38 (10 pts) (use the R package to solve the problem.)

2.41 a–c (10 pts) (Do it by hand)