

Instruction:

Member:

1. Name: _____ Code: _____

There are two questions in the homework.

1. Determine whether the following quadratic form is positive definite (10 points):

$$f(x_1, x_2, x_3) = 2x_1^2 + 5x_2^2 + 3x_3^2 - 2x_1x_2 - 4x_2x_3, \quad x \in \mathbb{R}^3$$

2. Determine a quadratic approximation based on the second-order Taylor series expansion, of $f(x, y) = e^{x^2+y}$ about $(x, y) = (0, 0)$ (10 points).