Supplement – Exam question

- The minimum distance (MD) classifier for a class $j$ is written as
  \[ d_j(x) = x^T m_j - \frac{1}{2} m_j^T m_j \]
  where $m_j$ is the mean vector of the class.

- Fig. 1 illustrates a dataset containing two natural groupings. The mean vectors for the two classes are
  \[ m_1 = \begin{pmatrix} 2 \\ 4 \end{pmatrix}, \quad m_2 = \begin{pmatrix} 6 \\ 2 \end{pmatrix} \]

- Using the given information calculate the equation for the decision boundary between the two classes for a MD classifier.