

Homework 4 Due Friday 18th, 2022

We observe the following data corresponding to two classes:

$$\text{Class 1 : } \begin{bmatrix} 9 \\ 4 \\ 1 \end{bmatrix}, \begin{bmatrix} 10 \\ 6 \\ 3 \end{bmatrix}, \begin{bmatrix} 11 \\ 5 \\ 2 \end{bmatrix}, \begin{bmatrix} 12 \\ 7 \\ 4 \end{bmatrix}$$

$$\text{Class 2 : } \begin{bmatrix} 2 \\ 5 \\ 10 \end{bmatrix}, \begin{bmatrix} 4 \\ 7 \\ 11 \end{bmatrix}, \begin{bmatrix} 3 \\ 6 \\ 12 \end{bmatrix}, \begin{bmatrix} 5 \\ 9 \\ 14 \end{bmatrix}$$

- a) Find the mean vectors and Covariance matrices for each model.
- b) We observe a new vector $\begin{bmatrix} 5 \\ 7 \\ 12 \end{bmatrix}$. Does it belong to class1 or class2? Use your model in part (a) to answer.