

3. a) Prior probabilities,

$$p(\omega_1) = \frac{6}{12} = 0.5$$

$$p(\omega_2) = \frac{6}{12} = 0.5$$

b) For class ω_1 ,

$$\mu_1 = \frac{\sum_{i=1}^6 \omega_{1i}}{6} = \frac{[1.71428, 1.142857]}{6} = [2, 1.33]$$

$$\text{co-variance matrix} = \begin{bmatrix} [30, 19], [19, 18] \end{bmatrix} = \Sigma_1$$

For class ω_2 ,

$$\mu = [7.71428571, 8.57]$$

$$\mu_2 = [9, 10]$$

$$\Sigma_2 = \begin{bmatrix} [420, 459], [459, 536] \end{bmatrix}$$

