Tutorial – Normal Distribution – Bayes classifier – Various cases

- Find the discriminant (show it geometrically) for a two class two dimensional problem, when

  (1) $\mu_1 = \begin{pmatrix} 0 \\ 0 \end{pmatrix}, \mu_2 = \begin{pmatrix} 4 \\ 10 \end{pmatrix}, \Sigma_1 = \Sigma_2 = \begin{bmatrix} 2 & 0 \\ 0 & 2 \end{bmatrix}$ with equal priors.

  (2) Do the problem 1 when $P(\omega_1) = 0.75, and\ P(\omega_2) = 0.25.$

(3) Take means to be same along with same Σ_1, but, let $\Sigma_2 = \begin{bmatrix} 3 & 0 \\ 0 & 3 \end{bmatrix}$ with equal priors.

(4) Take $\Sigma_1 = \Sigma_2 = \begin{bmatrix} 3 & 1 \\ 1 & 3 \end{bmatrix}$ with equal priors.

(5) Take same means, but let $\Sigma_1 = I \; and \Sigma_2 = \begin{bmatrix} 3 & 1 \\ 1 & 3 \end{bmatrix}$ with equal priors.