

PR2017_HW2

106753027 戎諒

1. [Case 1: Refer to Chapter 2.6] Verify the following relationships:

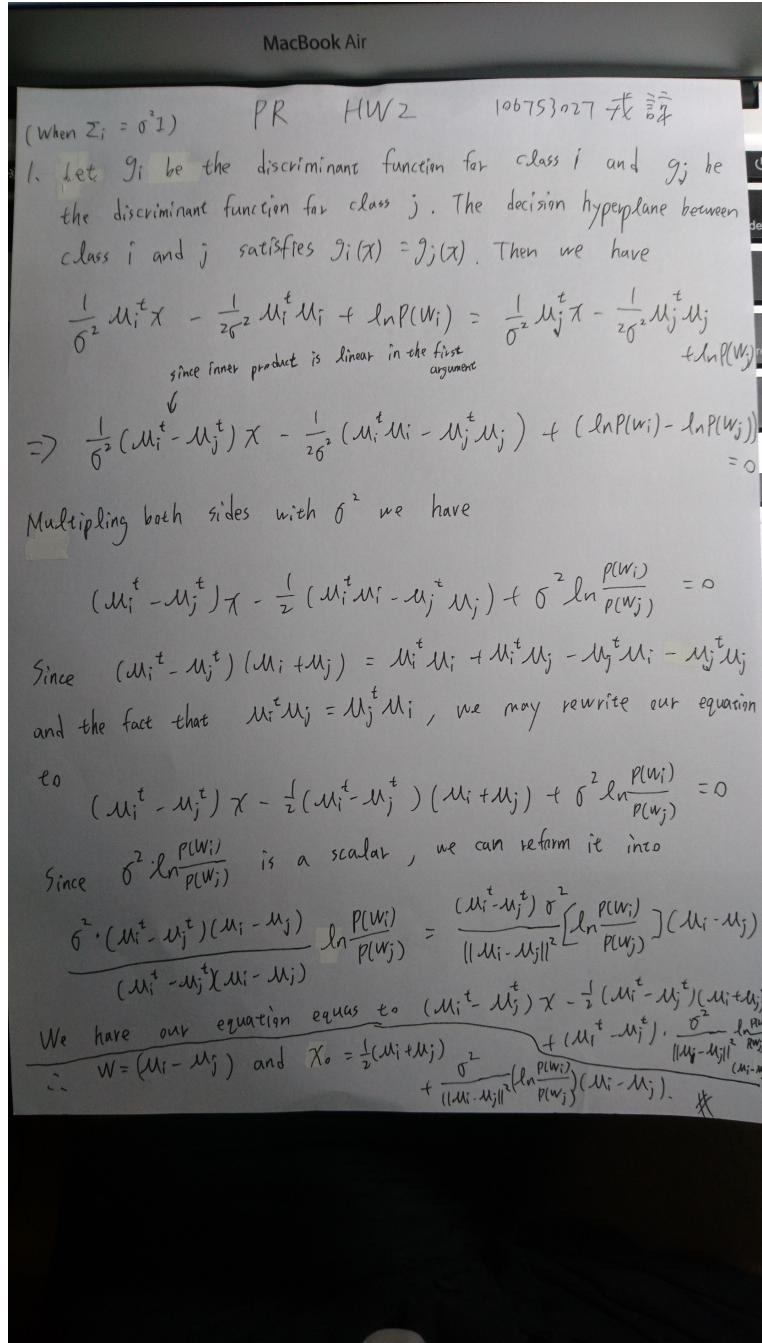
$$\mathbf{w}^t(\mathbf{x} - \mathbf{x}_0) = 0,$$

where

$$\mathbf{w} = \boldsymbol{\mu}_i - \boldsymbol{\mu}_j$$

and

$$\mathbf{x}_0 = \frac{1}{2}(\boldsymbol{\mu}_i + \boldsymbol{\mu}_j) - \frac{\sigma^2}{\|\boldsymbol{\mu}_i - \boldsymbol{\mu}_j\|^2} \ln \frac{P(\omega_i)}{P(\omega_j)} (\boldsymbol{\mu}_i - \boldsymbol{\mu}_j).$$



2. [Case 2: Refer to Chapter 2.6] Verify the following relationships:

$$\mathbf{w}^t(\mathbf{x} - \mathbf{x}_0) = 0,$$

where

$$\mathbf{w} = \Sigma^{-1}(\boldsymbol{\mu}_i - \boldsymbol{\mu}_j)$$

and

$$\mathbf{x}_0 = \frac{1}{2}(\boldsymbol{\mu}_i + \boldsymbol{\mu}_j) - \frac{\ln [P(\omega_i)/P(\omega_j)]}{(\boldsymbol{\mu}_i - \boldsymbol{\mu}_j)^t \Sigma^{-1}(\boldsymbol{\mu}_i - \boldsymbol{\mu}_j)}(\boldsymbol{\mu}_i - \boldsymbol{\mu}_j).$$

