## **Assignment 5**

Due date: 6 December 2023

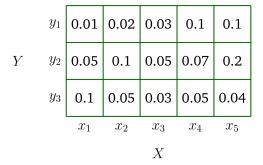
TA: 鄒冠勳 E814

1. (30%) Consider a mixture of two Gaussian distributions

$$0.4\mathcal{N}\left(\left[\begin{array}{c}10\\2\end{array}\right],\left[\begin{array}{c}1&0\\0&1\end{array}\right]\right)+0.6\mathcal{N}\left(\left[\begin{array}{c}0\\0\end{array}\right],\left[\begin{array}{c}8.4&2.0\\2.0&1.7\end{array}\right]\right).$$

compute the marginal distributions of each dimension.

2. (30%) Consider the following example. Compute the conditional distributions  $p(x \mid Y = y_1)$  and  $p(y \mid X = x_3)$ .



3. (40%) Exercise in the slides.

