Homework 2: STA414 LEC0101, January 2018

This assignment is not for credit. Please do not submit your work.

Hints: You may use R, Python, or another language of your choice. Please feel free to use Piazza to compare your approaches and your answers.

The ten 3-d points contained in the file `HW2.txt` were generated from a two-component mixture of Gaussians. The first five points come from component 1, and the next five from component 2. Calculate the likelihood for $\pi_1 = \pi_2 = 0.5$, $\Sigma_1 = \Sigma_2 = \mathbb{I}_3$, and:

(a) $\boldsymbol{\mu}_1 = (3, 2, 2)^T$, $\boldsymbol{\mu}_2 = (2, 3, 2)^T$
(b) $\boldsymbol{\mu}_1 = (2, 3, 2)^T$, $\boldsymbol{\mu}_2 = (3, 2, 2)^T$
(c) $\boldsymbol{\mu}_1 = (2, 2, 3)^T$, $\boldsymbol{\mu}_2 = (3, 2, 2)^T$

From among the above three choices, which is the most likely pair of mean vectors to have generated the data?