Part II
Expectation Maximization for Estimating 3 Means

(12 points) Structured questions. Answer in the space provided on the script.

1. (12 points) Given two instances $x_1 = 4$ and $x_2 = 6$ from X generated by a mixture of three Gaussian distributions with the same known variance $\sigma^2 = 0.5$, run the Expectation Maximization algorithm for **2 iterations** to estimate the values of the unknown means μ_1, μ_2, and μ_3 of the three Gaussian distributions. Initialize the values of μ_1, μ_2, and μ_3 to 4, 5, and 6, respectively. Show the steps of your derivation. **No marks will be awarded for not doing so.** Give your answer up to 6 decimal places.

Solution:

Solution: