PR ASSIGNMENT - 2 (Deadline : 02/03/2020)
Design of Bayes Classifier

Deliverables for this assignment:

1. Programming Assignment (MATLAB or Python)
2. Code file and output screenshots for all

Q1. Find and plot the decision boundary between class ω_1 and ω_2.

i) Assume $P(\omega_1) = 0.8$; $P(\omega_2) = 0.2$

ii) Assume $P(\omega_1) = P(\omega_2)$

ω_1 = [1,6; 3,4; 3,8; 5,6]
ω_2 = [3,0; 1,-2;3,-4;5,-2]

Q2. Find and plot the decision boundary between class ω1 and ω2. Assume $P(\omega_1) = 0.3$; $P(\omega_2) = 0.7$

ω_1 = [1,-1; 2,-2; 3,-3; 4,4]
ω_2 = [2,1; 3,0; 4,-1; 5,6]

Q3. Find and plot the decision boundary between class ω1 and ω2. Assume $P(\omega_1) = P(\omega_2)$

ω_1 = [2,6; 3,4; 3,8; 4,6]
ω_2 = [3,0; 1,-2; 3,-4; 5,-2]

Q4. Implement Bayes Classifier for Iris Dataset.

Dataset Specifications:

Total number of samples = 150
Number of classes = 3 (Iris setosa, Iris virginica, and Iris versicolor)
Number of samples in each class = 50

Use the following information to design classifier:

Number of training feature vectors (random choice in each class) = 40
Number of test feature vectors (random choice in each class) = 10
Number of dimensions = 4
Feature vector = <sepal length, sepal width, petal length, petal width>

If the samples follow a multivariate normal density, find the accuracy of classification for the test feature vectors.

Q5. Use only two features: Petal Length and Petal Width, for 3 class classification and draw the decision boundary between them (2 dimension, 3 regions also called as multi-class problem)
