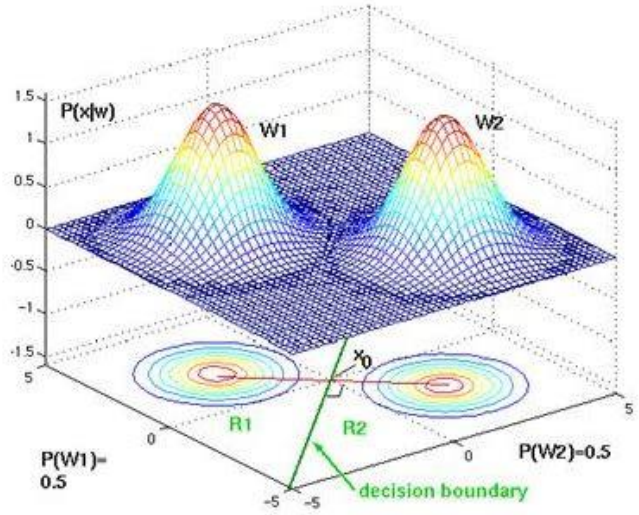
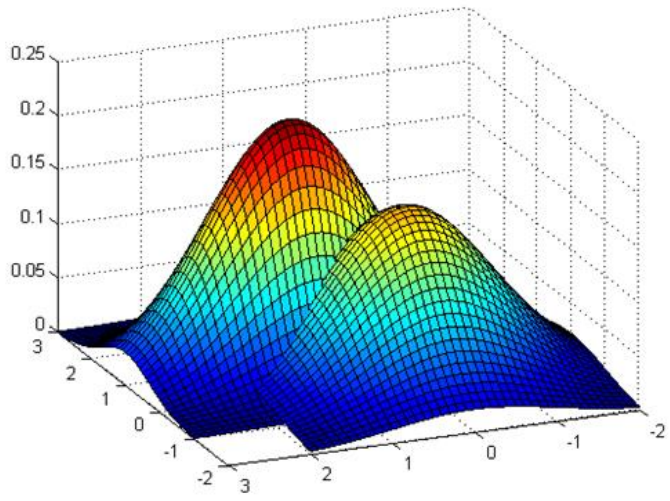
**Question 3**

Here, we are given two classes who have distributed classes with 1 variance and different means. The functionality of the Gaussian classifier is to classify a data into given classes based on the hyperplane that separates them.




From the above figure, we can say that the data falling into range of R1 belong to class 1 while the data falling into range R2 belongs to class 2.



But there is not always a clear classification boundary that can separate all the regions of the classes. The hyperplanes are overlapped in such areas and that is the Theoretical limit of Gaussian Classification.

From the given data we created 2 gaussian curves from the values of mean and variance given by integrating the limits. Thus, we obtain an accuracy of 87.5% using the given model. From this, we can conclude that the model we constructed has a limit of correctly classifying just 87.5% of the data correctly. The remaining 12.5% of the data falls at the intersection of the 2 curves which may misclassifies the data.