

EE559 Homework 1 (week 2)

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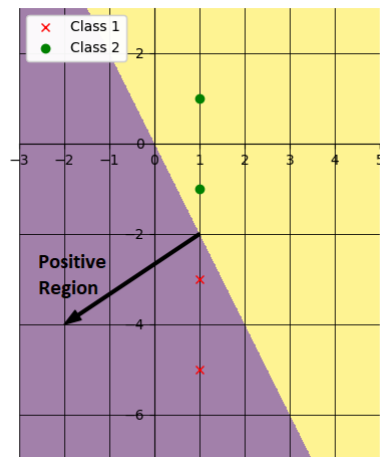
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EE559 repository: [Github](#)

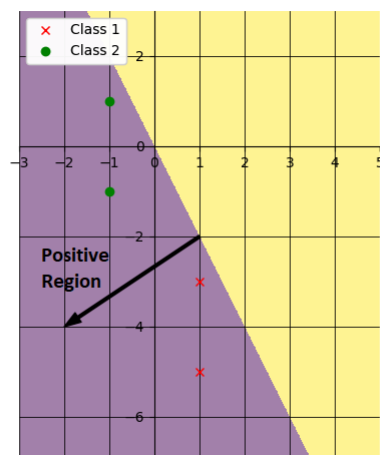
2 :

Solution:

1. Data set and linear decision boundary is as follows:

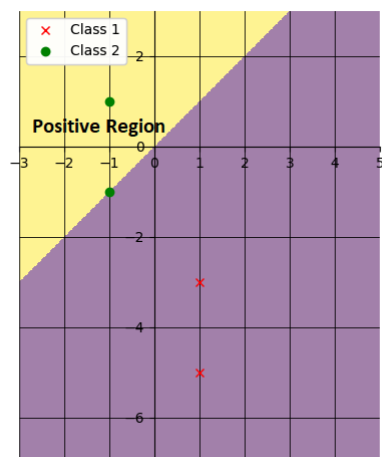
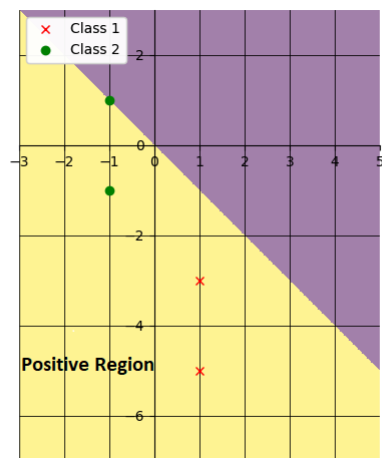
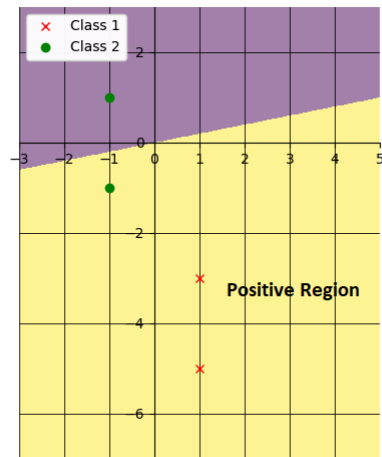
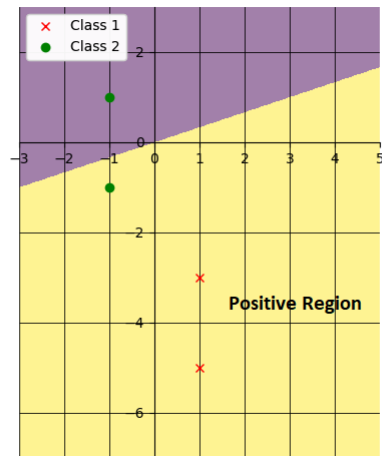


2. Reflected data points and the same decision boundary are as follow:

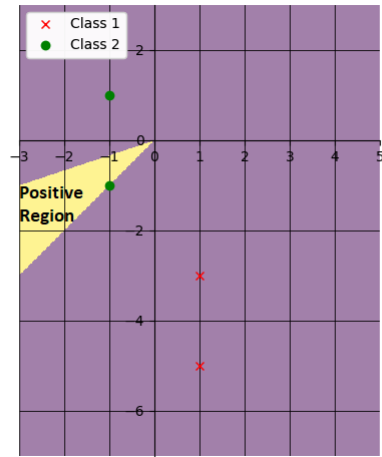


The same decision boundary can't not classify the reflected points correctly. However, since the reflected data points are at the same side of the boundary, this fact proves the linear separability of the 2-class points.

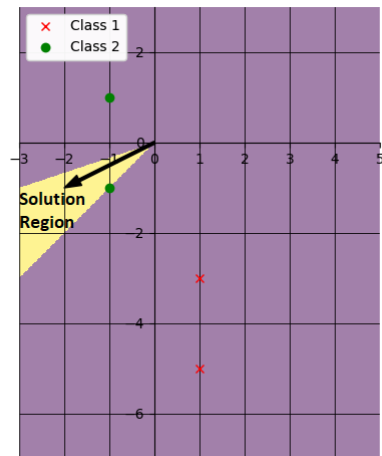
3. The respective positive regions of each reflected data points are as follow:



The final **solution region** is:



4. The weight vector of part (a) is:



It is obvious that the previous weight vector is in the solution area thus it can successfully separate the 2-class points.
