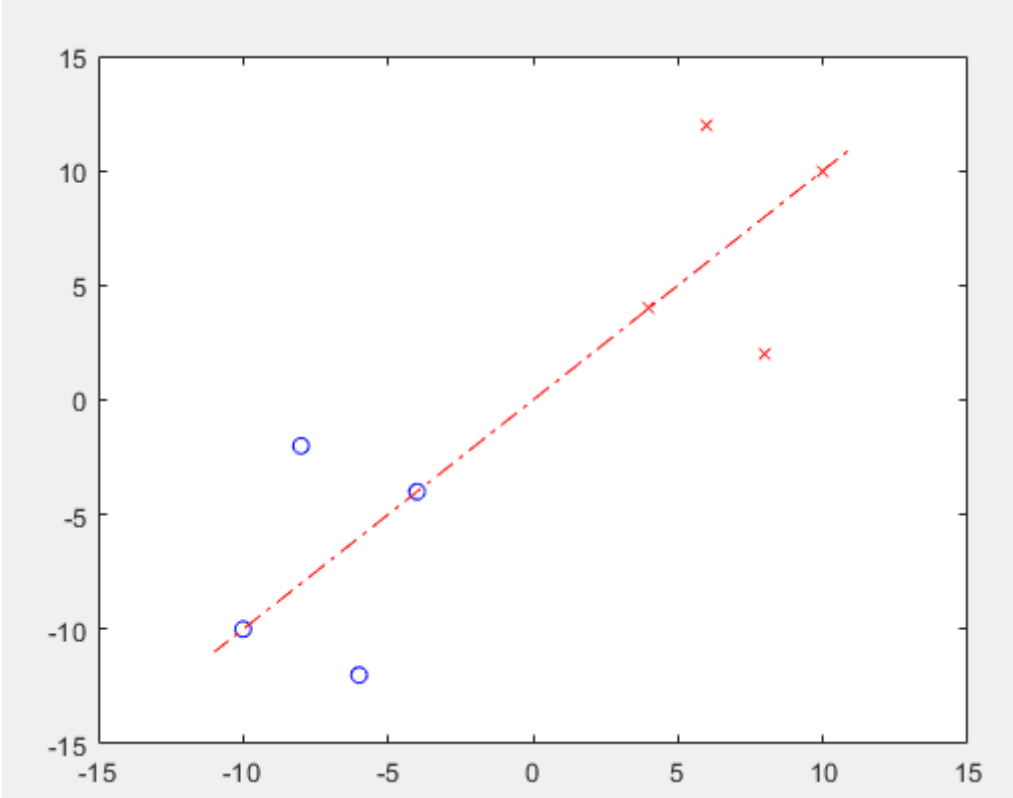


Assignment 1
Due Date : Jan 18th 2022

	Submit as a pdf document and Use Matlab/Octave to code
1	What do you mean by training a Neural Network?
2	What is the capacity of a single layer neural network?
3	Design a neural network for addressing OR and AND problem?
4	<p>Implement pocket algorithm to find the separating hyper plane for the data and for the initial boundary shown in the following diagram.</p>  <pre> function Perceptron() clear all; close all; DataPoints = [-10 -10; -8 -2; -6 -12; -4 -4; 10 10; 8 2; 6 12; 4 4;]; DataPoints = DataPoints'; DataLabel = [-1 -1 -1 -1 1 1 1 1]; class1Pts = DataPoints(:, DataLabel == -1); class2Pts = DataPoints(:, DataLabel == 1); plot (class1Pts(1, :), class1Pts(2, :), 'bo', class2Pts(1, :), class2Pts(2, :), 'rx'); W = findSepLine(class1Pts, class2Pts); end </pre>
5	Will it always give the best possible hyper plane? Which algorithm will give you the best hyper plane?
6	From Qn 2, you might have realised a single layer perceptron cannot solve XOR problem (non-linear separable problem)? Is it possible if you change the activation function to more sophisticated sigmoid? Justify your answer. Using pen and paper, can you design a two layer neural network for XOR problem? (Hint: $A \text{ XOR } B = A\bar{B} + A\bar{B}$)