**Artificial Intelligence**

Home Work – 1

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**Solution to Problem 1.2(a):**

h(x) =sign(wTx)

where, w = [w0,w1,w2] T and x = [1,x1,x2]T

Line that divides hyperplane is given by

=> wTx=0

=>[]\* = 0

=>x0w0 + x1w1+x2w2 = 0

First coordinate of x is fixed to x0 = 1;

1.w0 + x1w1+x2w2 = 0

So, if we express this line by the equation x2 = ax1 + b, where ‘a’ is the slope of the line and ‘b’ is the intercept of the line.

x2w2 = - w0 - x1w1

x2 =

Now, slope a = and intercept b =

**1.2(b):**

Case 1:

w = [1,2,3]T

h(x) =sign(wTx)

=sign([]\*

Case 2: w = -[1,2,3]T

Slope a = and intercept b =

10 dimensional output:

