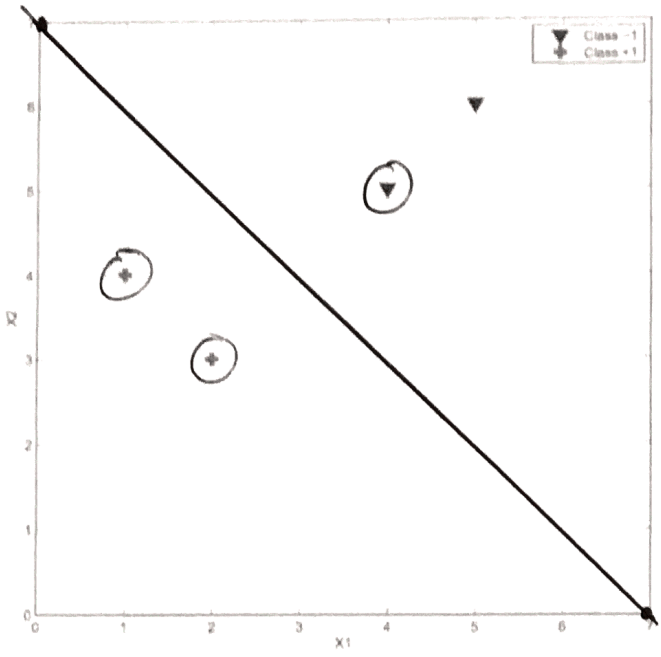
1)



a) we can see that the slope of this line is negative. With idea we pick the support vectors. From Class -1, we pick (4,5) and from class 1, we pick (2,3)

$\therefore -1(x_1-3)=(x_2-4)$

$-x_1+3=x_2-4$

$\boxed{x_1+x_2=7}$

b) using w^Tx+b, we have

$2w_1+3w_2+b=1$

$4w_1+5w_2+b=-1$

and from the graph, we can see that $w_1=w_2$ (same length).

What we need is $2w+3w+b=1$ and $9w+b=-1$

$5w+b=1$

[redacted]

$\therefore \quad 5w+b=1$

$\therefore -1(9w+b=-1)$

$\frac{-4w=2}{-4 \quad -4}$

$\boxed{w=-\frac{1}{2}}$

$b=-5w+1$

$=\frac{5}{2}+1$

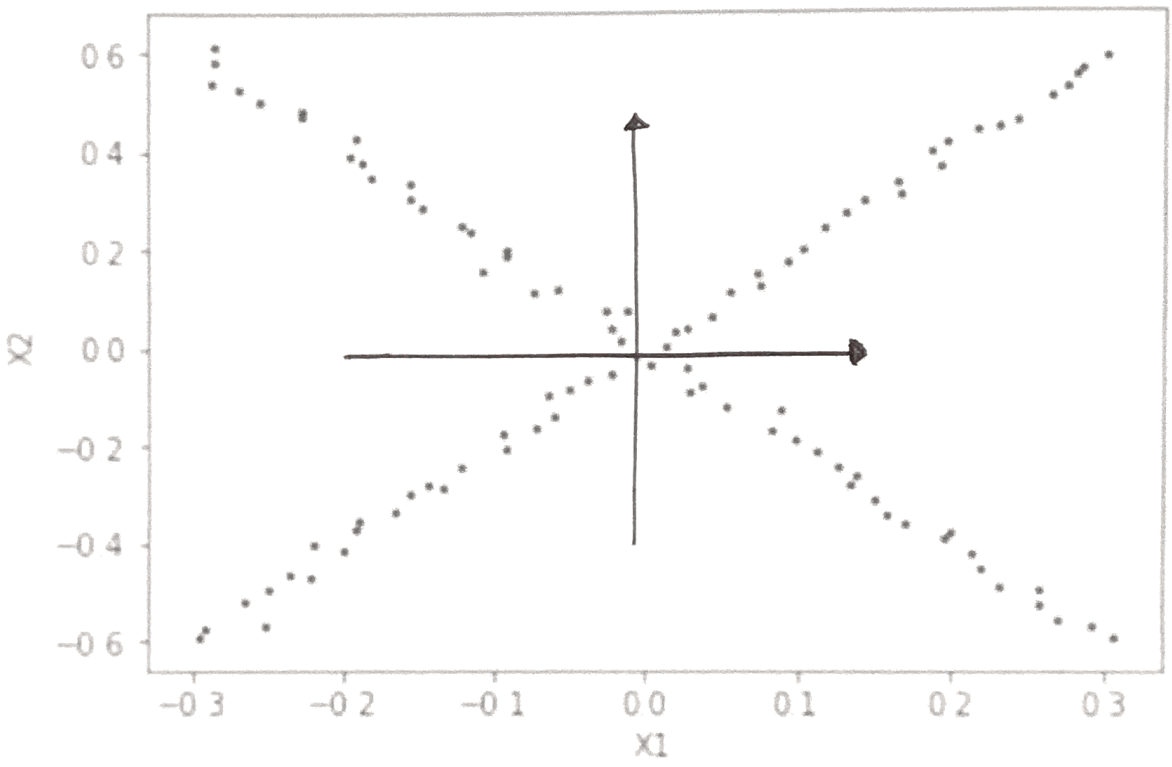
$\boxed{b=\frac{7}{2}}$

c) Let $x_1=0$

$x_2=7$

Let $x_2=0$

$x_1=7$


0 6
0 4
0 2
0 0
−0 2
−0 4
−0 6
X2
−0 3
−0 2
−0 1
0 0
0 1
0 2
0 3
X1