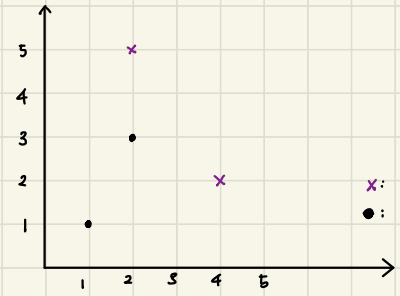
Class-1: A = (1,1) B = (2,3)

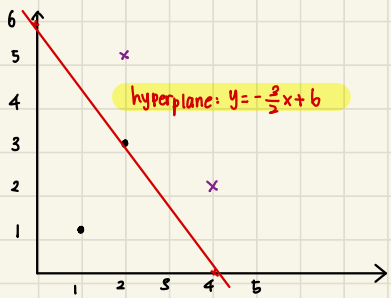
Class+1: C = (2,5) D = (4,2)

1) Plot the data.



A = (1,1)
B = (2,3)
C = (2,5)
D = (4,2)

2) Plot the hyper plane $w = (3,2)^T$, $b = -12$



hyperplane: $w^T x + b = 0$

$\begin{bmatrix} 3 \\ 2 \end{bmatrix} [x, y] - 12 = 0$

$3x + 2y - 12 = 0$

$y = -\frac{3}{2}x + 6$

3) l_2 distance C = (2,5)

$$d(x) = \frac{|w^T x + b|}{\|w\|_2}$$

$$= \frac{|3x + 2y - 12|}{\|w\|_2} \quad \text{(plug in (2,5))}$$

$$= \frac{|3 \cdot 2 + 2 \cdot 5 - 12|}{\sqrt{3^2 + 2^2}} = \boxed{\frac{4}{\sqrt{13}}} \; //$$