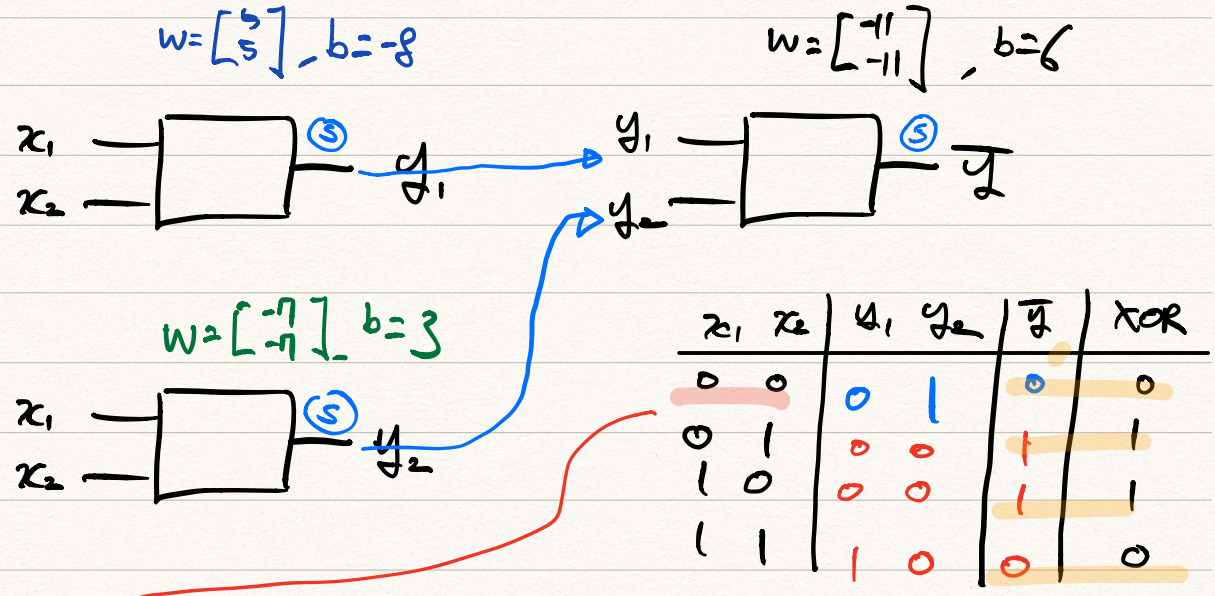
⊛ XOR using NN



x_1	x_2	y_1	y_2	y	XOR
0	0	0	1	0	0
0	1	0	0	1	1
1	0	0	0	1	1
1	1	1	0	0	0

1) 00일때

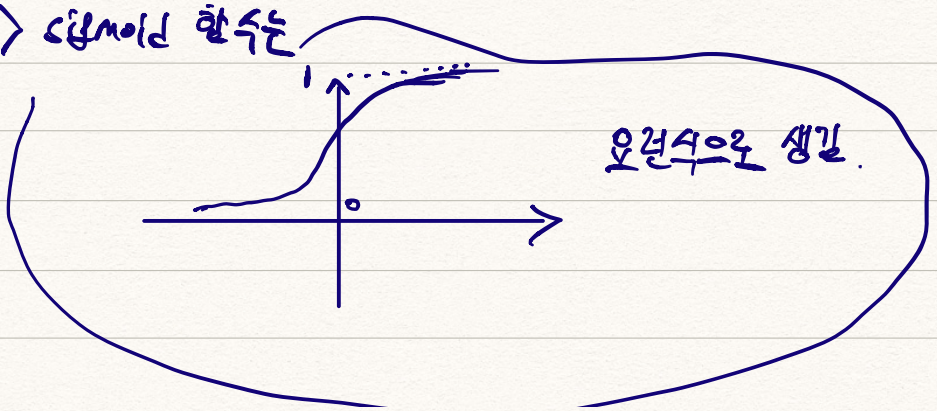
$[0,0]\begin{bmatrix}5\\5\end{bmatrix}-8=-8$, $y_1=S(-8)\fallingdotseq 0$ (대략 0)

$[0\,0]\begin{bmatrix}-7\\-7\end{bmatrix}+3=3$, $y_2=S(3)\fallingdotseq 1$ (대략 1)

$[0,1]\begin{bmatrix}-11\\-11\end{bmatrix}+6=-11+6=-5$.

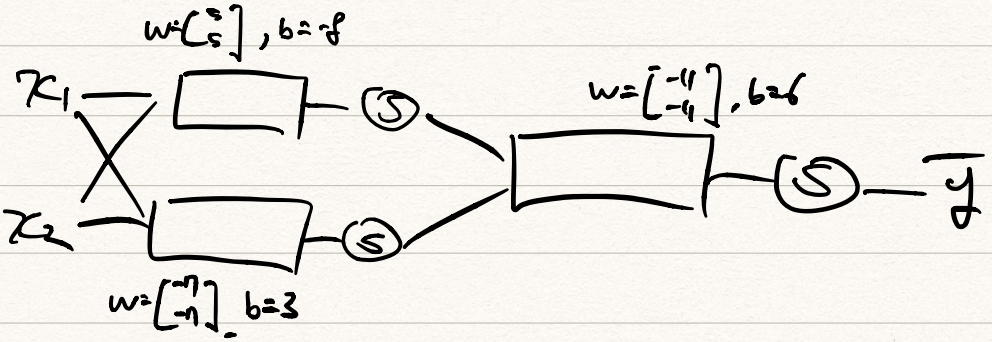
$\therefore y=S(-5)\fallingdotseq 0$.

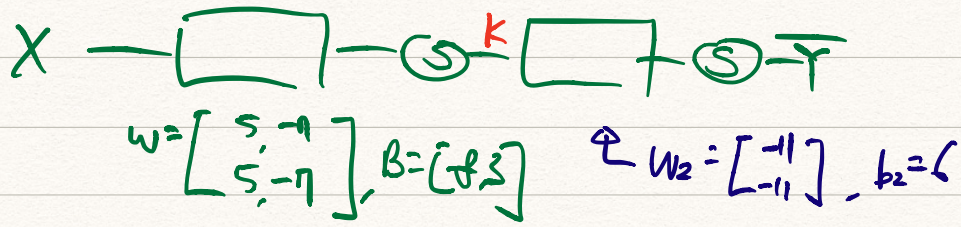
cf) sigmoid 함수는



위와 같은 방법으로 [0 1] [1 0] [1 1] 일때도 할수있음.

⊛ Forward propagation





앞부분의 결과를 K라고 하면,

$K = \text{sigmoid}(XW_1 + B_1)$ 이고,

전체 $\hat{Y} = H(X) = \text{sigmoid}(K(x)W_2 + b_2)$.

실제 코드상으로...

```
K = tf.sigmoid(tf.matmul(X, W1) + b1)
hypothesis = tf.sigmoid(tf.matmul(K, W2) + b2)
```

약간 합성함수? 같은 느낌이다 NN은.