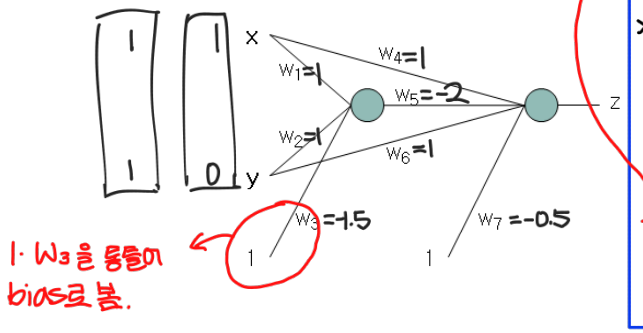
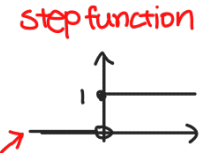
Homework #2

1. What are the outputs if x = 1 and y = 1, and x = 1 and y = 0, respectively? A step function is used in each neuron. $w_1 = w_2 = w_4 = w_6 = 1$, $w_3 = -1.5$, $w_5 = -2$ and $w_7 = -0.5$.





* IF bias가 없으면?

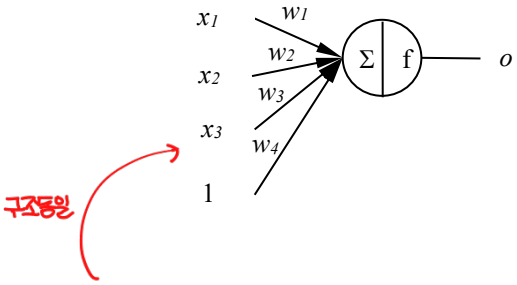
$x_1 w_1 + x_2 w_2 + w_3 > h$

$\leq h$

step function의 경우, bias인 w_3을 조정하는 것과 threshold인 h를 조정하는 것이 동일함.

1. w_3을 통틀어 bias로 봄.

2. Set w_1, w_2, w_3, w_4 so that the output is 1 only if more than half of inputs are 1s, where f is a step function.



구조동일

3. A function has three inputs and one output. The function outputs 1 if the number of "1" inputs is even; otherwise it outputs 0. Can this function be represented by a Perceptron? If so, construct a Perceptron that does it; if not, argue why not.

linearly separable한가의 여부를 묻는 문제.

NN은 linearly separable하지 않은 문제도 해결가능.

4. Set the weights so that the neural network performs the following logical operation:

x1	x2	y
0	0	1
0	1	0
1	0	0
1	1	1