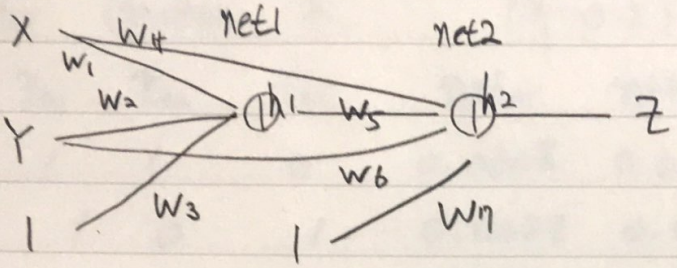
1.



step function = activate function

$w_1 = w_2 = w_4 = w_6 = 1$, $w_3 = -1.5$, $w_5 = -$

$w_7 = -0.5$

$x=1, y=1$ / $x=1, y=0$

$net1 = w_1x + w_2y + w_3$

$net2 = w_4x + w_5h_1 + w_6y + w_7$

$h_1 = u_s(w_1x + w_2y + w_3)$

$h_2 = u_s(w_4x + w_5h_1 + w_6y + w_7)$

i) $x=1$ $y=1$

$net1 = w_1 + w_2 + w_3 = 0.5$ $\quad h_1 = u_s(0.5) = 1$

$net2 = w_4 + w_5 + w_6 + w_7 = 1 - 2 + 1 - 0.5 = -0.5$

$\therefore h_2 = u_s(-0.5) = 0$

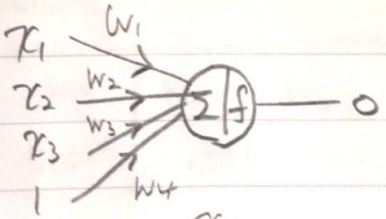
ii) $x=1$ $y=0$

$net1 = w_1 + w_3 = -0.5$ $\quad h_1 = u_s(-0.5) = 0$

$net2 = w_4 + w_7 = 1 - 0.5 = 0.5$

$\therefore h_2 = u_s(0.5) = 1$

2.



$\Sigma = w_1x_1 + w_2x_2 + w_3x_3 + w_4$

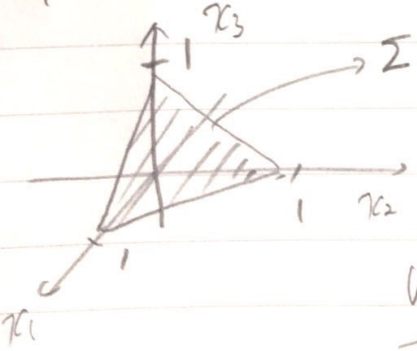
$O = u_s(\Sigma)$

$\Sigma > 0$ when x_1 or x_2 or $x_3 > 0$.

$w_1 + w_4 > 0$ $\quad (1,0,0)$ $\quad w_4 < 0$ $\quad (0,0,0)$

$w_2 + w_4 > 0$ $\quad (0,1,0)$

$w_3 + w_4 > 0$ $\quad (0,0,1)$



$w_1 = 1$ $\quad w_2 = 1$ $\quad w_3 = 1$ $\quad w_4 = -0.5$

3. for iteration 2. ($\eta = 0.5$)

n	x_{n1}	x_{n2}	t_{n1}	net_{n1}	net_{n2}	h_{n1}	h_{n2}	net_{n1}	o_{n1}
1	1	1	0	0.0308	0.0177	0.5077	0.5044	0.0643	0.516
2	1	0	1	0.0028	0.0878	0.5	0.5219	0.0651	0.516
3	0	1	1	0.1198	-0.0802	0.5299	0.4800	0.064	0.51
4	0	0	0	0.0919	-0.0101	0.5229	0.4975	0.0647	05

<table 1> fruward_feed

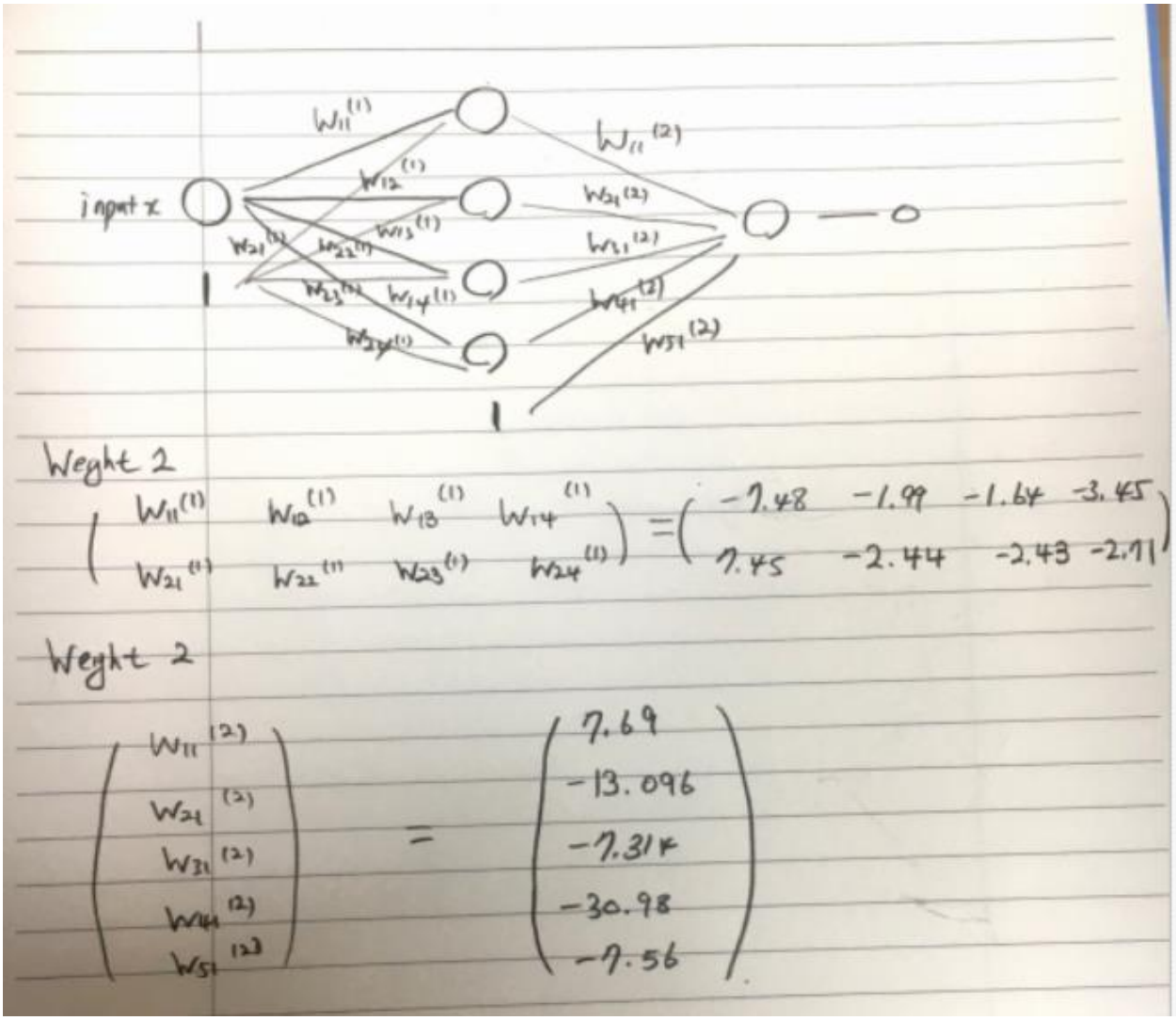
② Back word

n	$\frac{\partial E}{\partial w_{13}}$	$\frac{\partial E}{\partial w_{12}}$	$\frac{\partial E}{\partial w_{11}}$	$\frac{\partial E}{\partial w_{23}}$	$\frac{\partial E}{\partial w_{22}}$	$\frac{\partial E}{\partial w_{21}}$	$\frac{\partial E}{\partial w_{13}}$	$\frac{\partial E}{\partial w_{12}}$	$\frac{\partial E}{\partial w_{11}}$
1	0.06	0.0305	0.0307	0.00088	0.00088	0.00088	0.00073	0.00073	-0.00073
2	-0.0566	-0.0295	-0.028	-0.00083	-0.000	-0.00083	-0.00068	0.0000	-0.00068
3	-0.057	-0.027	-0.03	-0.00083	-0.0008	-0.000	-0.00068	-0.00068	-0.0000
4	0.0604	0.03	0.0316	0.00089	0.0004	0.0000	0.00072	0.0000	0.0000
Sum	-0.0078	-0.004	-0.0039	-0.00011	-0.00005	-0.00059	-0.00091	-0.00049	-0.00044

③ Result

	w_{13}	w_{12}	w_{11}	w_{23}	w_{22}	w_{21}	w_{13}	w_{12}	w_{11}
처음	-0.0007	0.0586	0.0474	-0.01	-0.07	0.0979	0.0918	0.0279	-0.0891
2									
3									

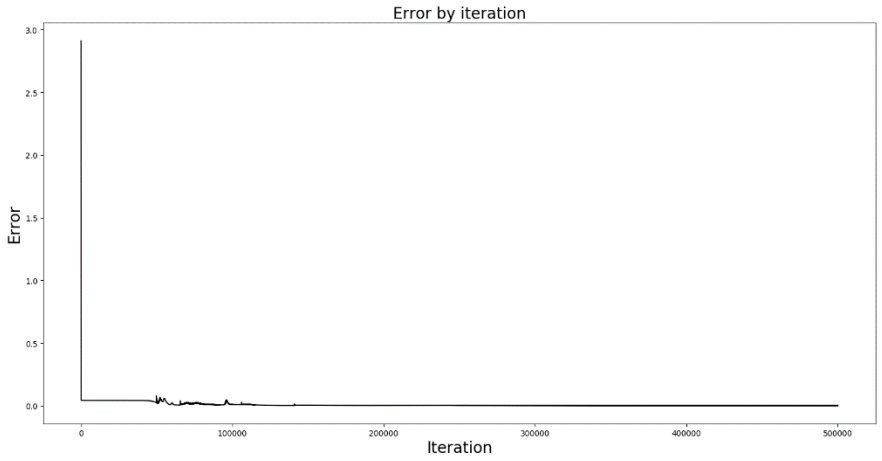
4. the final values of weights



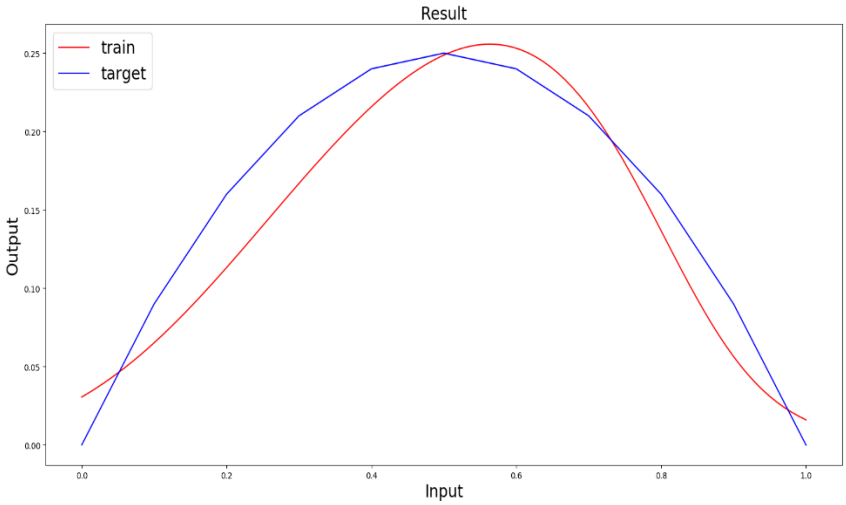
실제 결과값

```
[[-7.47988215 -1.99361267 -1.63566339 -3.44533889]
 [ 7.4514876  -2.43646043 -2.4235325  -2.7121973 ]]
[[  7.68698188]
 [-13.0959445 ]
 [ -7.31426573]
 [-30.98205344]
 [ -7.56088407]]
```

Figure1 <weight1 &weight2>



<Graph1> Error by iteration



<Graph2> Result from 500000 iteration