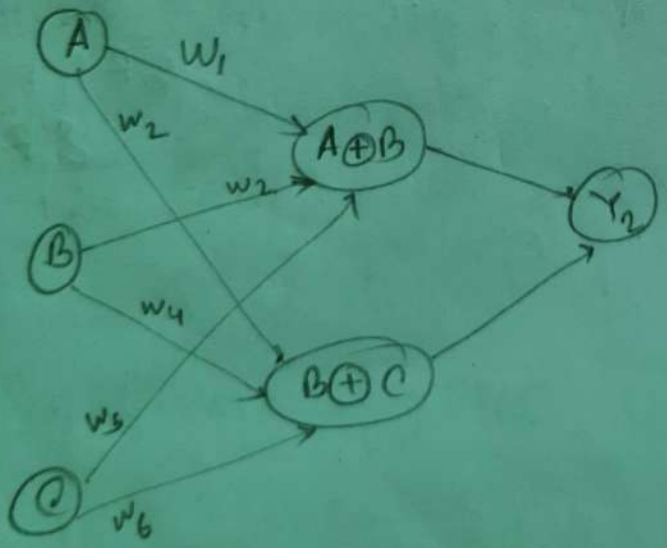
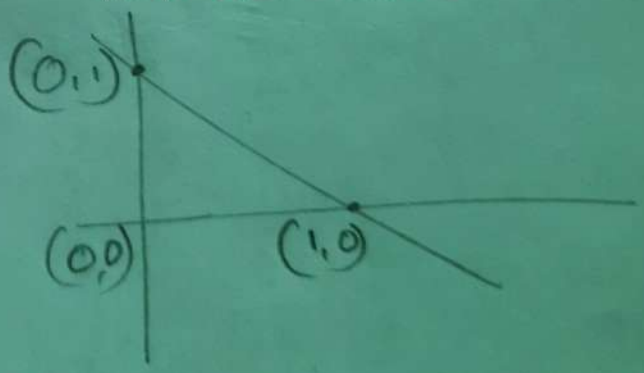
1. $F(A,B,C) = AB' + BA' + BC' + CB'$

$= (AB' + A'B) + (BC' + BC) = (A \oplus B) + (B \oplus C)$

A	B	C	$A \oplus B$	$B \oplus C$	
0	0	0	0	0	0
0	0	1	0	1	1
0	1	0	1	1	1
0	1	1	1	0	1
1	0	0	1	0	1
1	0	1	1	1	1
1	1	0	0	1	1
1	1	1	0	0	0



if we plot point in graph then we we see



the function in linearly separable.

2.

for the f an output layer

$$\delta f_1 = e f_1 \varphi'(v f_1)$$

$$\delta f_2 = e f_2 \varphi'(v f_2)$$

$$\delta f_3 = e f_3 \varphi'(v f_3)$$

so,

$$\delta h_1 = \varphi'(v h_1)(\delta f_1 w f_1 h_1 + \delta f_2 w f_2 h_1 + \delta f_3 w f_3 h_1)$$

$$\delta h_2 = \varphi'(v h_2)(\delta f_2 w f_1 h_2 + \delta f_2 w f_2 h_2 + \delta f_3 w f_3 h_2)$$

$$\delta h_3 = \varphi'(v h_3)(\delta f_1 w f_1 h_3 + \delta f_2 w f_2 h_3 + \delta f_3 w f_3 h_3)$$

$$\delta h_4 = \varphi'(v h_4)(\delta f_1 w f_1 h_4 + \delta f_2 w f_2 h_4 + \delta f_3 w f_3 h_4)$$

Now. P layer

$$P_1 = \varphi'(v P_1)(\delta h_1 w h_1 P_1 + \delta h_2 w h_2 P_1 + \delta h_3 w h_3 P_1 + \delta h_4 w h_4 P_1)$$

$$P_2 = \varphi'(v P_2)(\delta h_1 w h_1 P_2 + \delta h_2 w h_2 P_2 + \delta h_3 w h_3 P_2 + \delta h_4 w h_4 P_2)$$

$$P_3 = \varphi'(v P_3)(\delta h_1 w h_1 P_3 + \delta h_3 w h_2 P_3 + \delta h_3 w h_3 P_3 + \delta h_4 w h_4 P_3)$$

$$P_4 = \varphi'(v P_4)(\delta h_1 w h_1 P_4 + \delta h_2 w h_2 P_4 + \delta h_3 w h_3 P_4 + \delta h_4 w h_4 P_4)$$

$$P_5 = \varphi(v P_5)(\delta h_1 w h_1 P_5 + \delta h_2 w h_2 P_5 + \delta h_3 w h_3 P_5 + \delta h_4 w h_4 P_5)$$

for the first (m) layer

$$\delta m_1 = g'(V_{m_1})(\delta P_1 W_{P_1} m_1 + \delta P_2 W_{P_2} W_i + \delta P_3 W_{P_3} m_1 + \delta P_4 W_{P_4} m_1 + \delta P_5 W_{P_5} m_1)$$

$$\delta m_2 = g'(V_{m_2})(\delta P_1 W_{P_1} m_2 + \delta P_2 W_{P_2} m_2 + \delta P_3 W_{P_3} m_2 + \delta P_4 W_{P_4} m_2 + \delta P_5 W_{P_5} m_2)$$

$$\delta m_3 = g'(V_{m_3})(\delta P_1 W_{P_1} m_3 + \delta P_2 W_{P_2} m_3 + \delta P_3 W_{P_3} m_3 + \delta P_4 W_{P_4} m_3 + \delta P_5 W_{P_5} m_3)$$

$$\delta m_4 = g'(V_{m_4})(\delta P_1 W_{P_1} m_4 + \delta P_2 W_{P_2} m_4 + \delta P_3 W_{P_3} m_4 + \delta P_4 W_{P_4} m_4 + \delta P_5 W_{P_5} m_4)$$

$$\delta m_5 = g'(V_{m_5})(\delta P_1 W_{P_1} m_5 + \delta P_2 W_{P_2} m_5 + \delta P_3 W_{P_3} m_5 + \delta P_4 W_{P_4} m_5 + \delta P_5 W_{P_5} m_5)$$

$$\delta m_6 = g'(V_{m_6})(\delta P_1 W_{P_1} m_6 + \delta P_2 W_{P_2} m_6 + \delta P_3 W_{P_3} m_6 + \delta P_4 W_{P_4} m_6 + \delta P_5 W_{P_5} m_6)$$