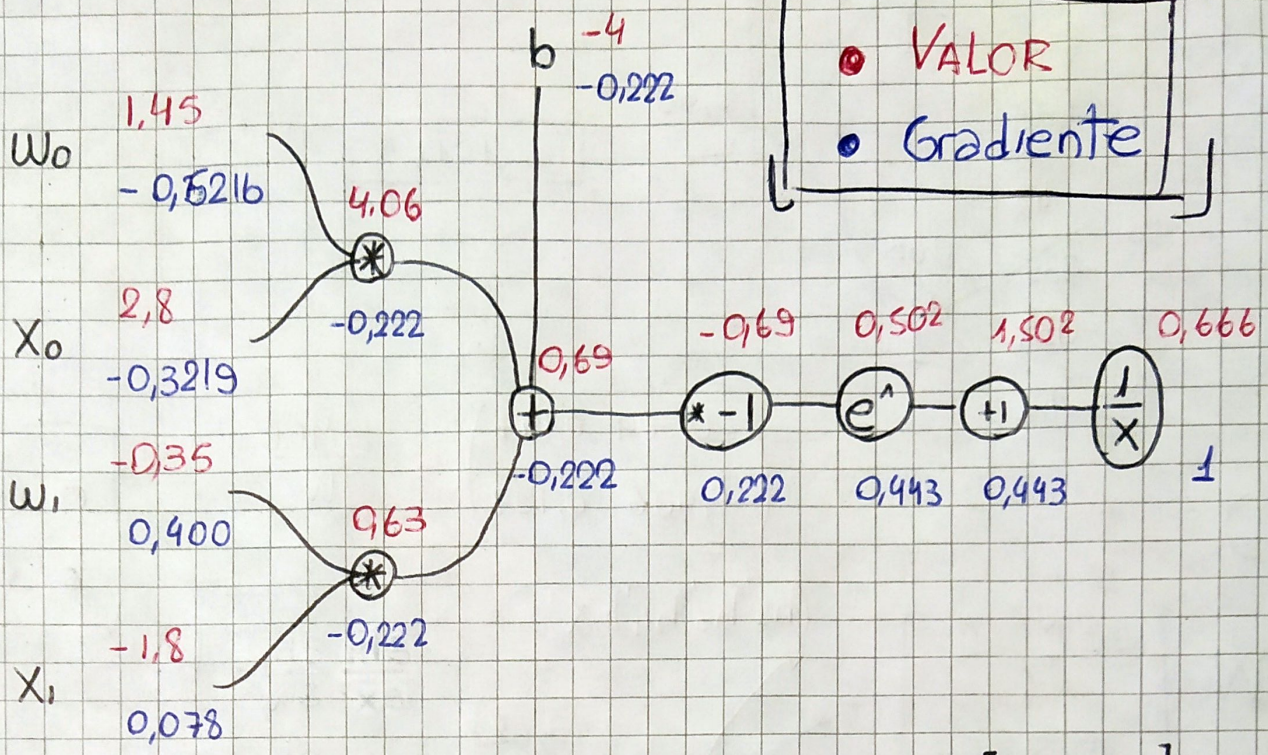
Deep Learning - Huttebraucker

- VALOR
- Gradiente

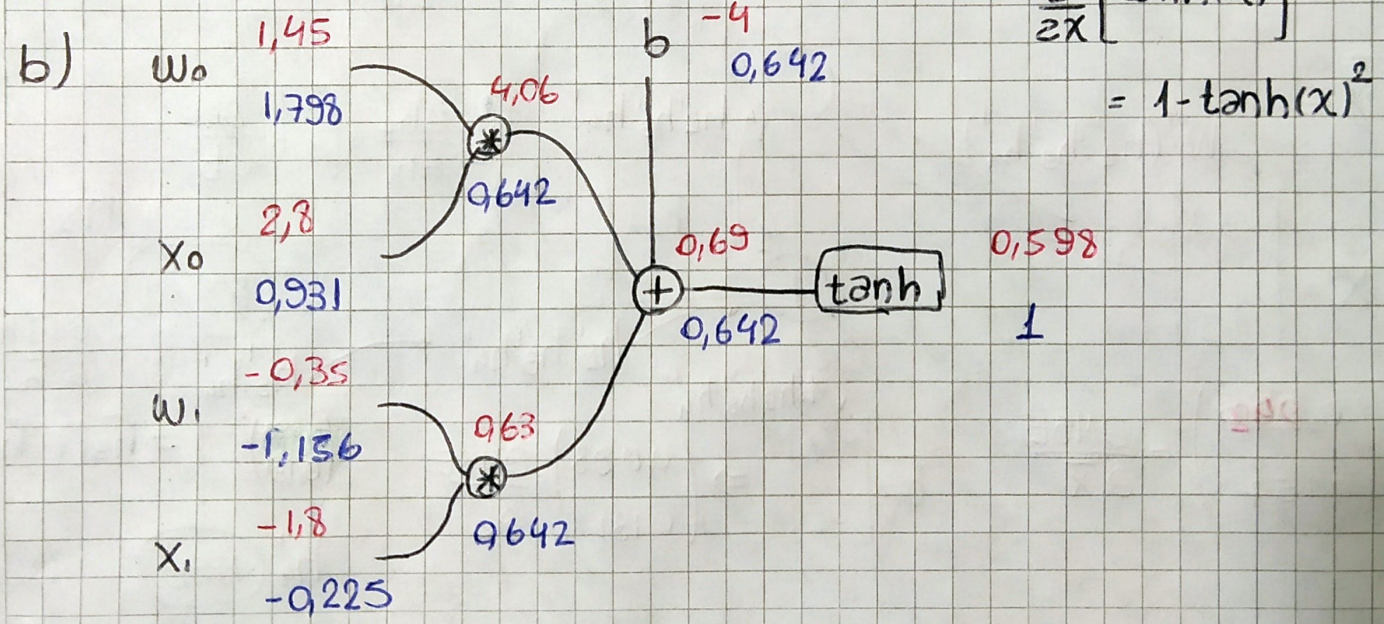
①

a)

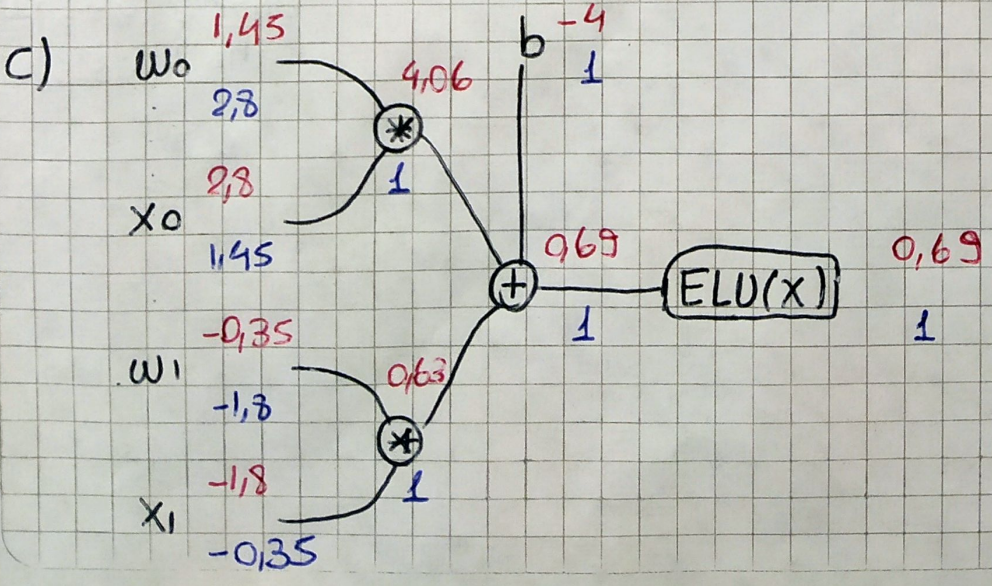


b)

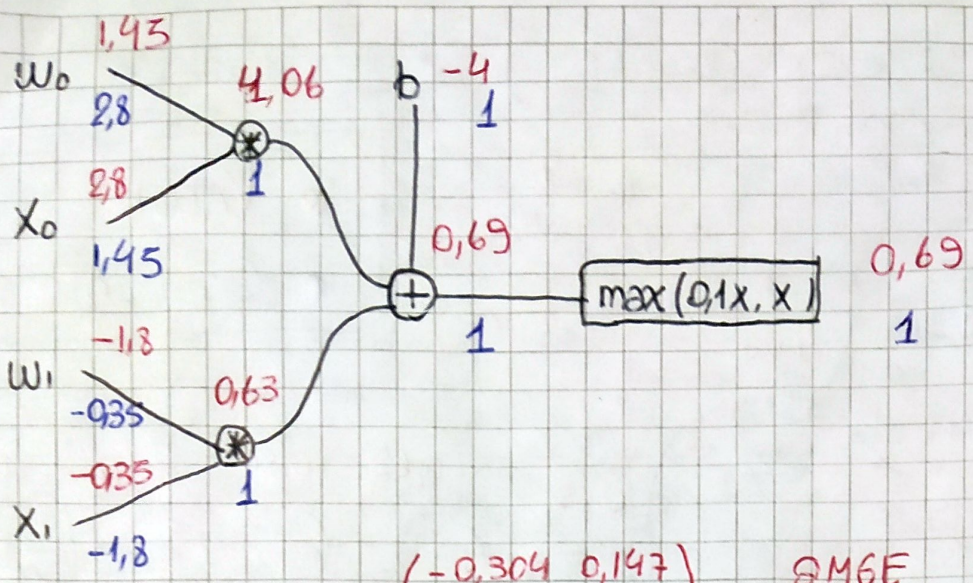
$$\frac{\partial}{\partial x}\left[\tanh(x)\right] = 1-\tanh(x)^2$$



c)



d)



$$\begin{pmatrix} -0,304 & 0,147 \\ -0,406 & 0,197 \end{pmatrix} = \frac{\partial MSE}{\partial W}$$

$$= (h_2' h_3' h_4') \cdot X^T$$

- Gradiente
- derivada

$$\frac{\partial h_1}{\partial \bar{x}} = W^T$$

$$\frac{\partial h_1}{\partial w} = X^T$$

② $W = \begin{bmatrix} -0,2 & 2 \\ -0,5 & -0,3 \end{bmatrix}$ $h_1 = \begin{pmatrix} 3,62 \\ 1,1 \end{pmatrix}$

$W^T \cdot (h_2' h_3' h_4')$ $h_2' h_3' h_4'$

$h_2' = \frac{\partial h_2}{\partial h_1} = \begin{pmatrix} 1 \\ 1 \end{pmatrix} = \frac{\partial h_2}{\partial b}$

$h_2 = \begin{pmatrix} -0,38 \\ 0,1 \end{pmatrix}$ $h_3 = \begin{pmatrix} 0,406 \\ 0,525 \end{pmatrix}$

$\bar{X} = \begin{bmatrix} -3,1 \\ 1,5 \end{bmatrix}$ 1 $\nabla(\bar{X})$

$\frac{\partial \nabla(\bar{h}_2)}{\partial \bar{h}_2} = h_3'$

$h_2' h_3' h_4'$ $h_3' h_4'$

$\begin{pmatrix} -0,085 \\ 0,157 \end{pmatrix} = \frac{\partial MSE}{\partial \bar{X}}$

$b = \begin{bmatrix} -4 \\ -1 \end{bmatrix} \Rightarrow \begin{pmatrix} 0,098 \\ 0,131 \end{pmatrix} = \frac{\partial MSE}{\partial \bar{b}}$

$\begin{pmatrix} 0,098 \\ 0,131 \end{pmatrix} = \bar{h}_3(1-\bar{h}_3)$

h_4' MSE $= 0,218 = h_4$

$\frac{\partial MSE}{\partial h_3} = \begin{bmatrix} 0,406 \\ 0,525 \end{bmatrix} = \bar{h}_3 = h_4'$