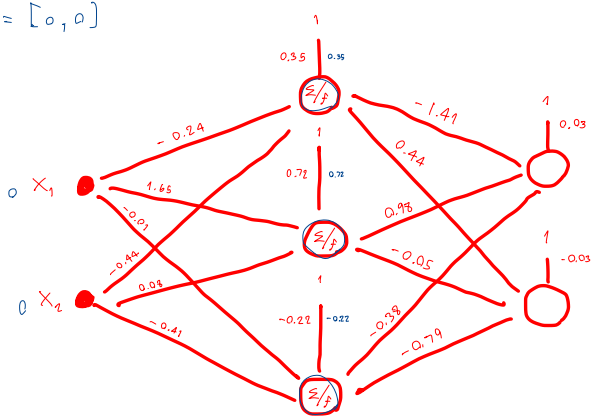
Ex 1.1

$X_{new} = [0, 0]$



$V = 0 \times (-0.24) + 0 \times (-0.44) + 1 \times 0.35$

$relu(V) = 0.35$

$V = 0 \times 1.65 + 0 \times 0.08 + 1 \times 0.72$

$relu(V) = 0.72$

$V = 0 \times (-0.01) + 0 \times (-0.41) + 1 \times (-0.22)$

$relu(V) = -0.22$

$z_1 = 0.35 \times (-1.41) + 0.72 \times 0.98 + (-0.22) \times (-0.38) + 0.03$

$= 0.33$

$e^{z_1} = 1.39 \Rightarrow \sigma_1 = \frac{1.39}{1.39 + 0.91} = 0.60$ ✗

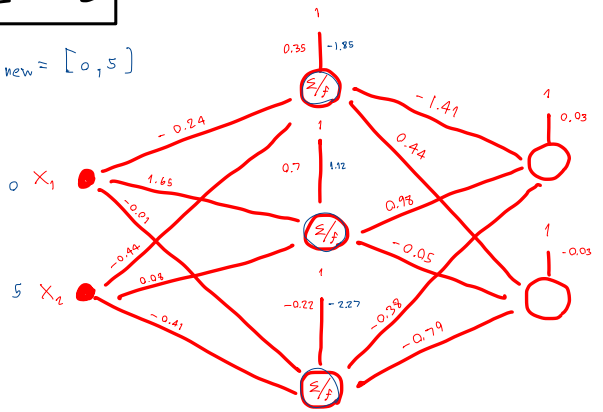
$z_2 = 0.35 \times 0.44 + 0.72 \times (-0.05) + (-0.22) \times (-0.79) + (-0.03)$

$= -0.09$

$e^{z_2} = 0.91 \Rightarrow \sigma_2 = \frac{0.91}{0.91 + 1.39} = 0.40$ ✗

Ex 1.2

$X_{new} = [0, 5]$



$V = 0 \times (-0.24) + 5 \times (-0.44) + 1 \times 0.35$

$relu(V) = -1.85$

$V = 0 \times 1.65 + 5 \times 0.08 + 1 \times 0.72$

$relu(V) = 1.12$

$V = 0 \times (-0.01) + 5 \times (-0.41) + 1 \times (-0.22)$

$relu(V) = -2.27$

$Z_1 = (-1.85) \times (-1.41) + 1.12 \times 0.98 + (-2.27) \times (-0.38) + 0.03$

$= 4.40$

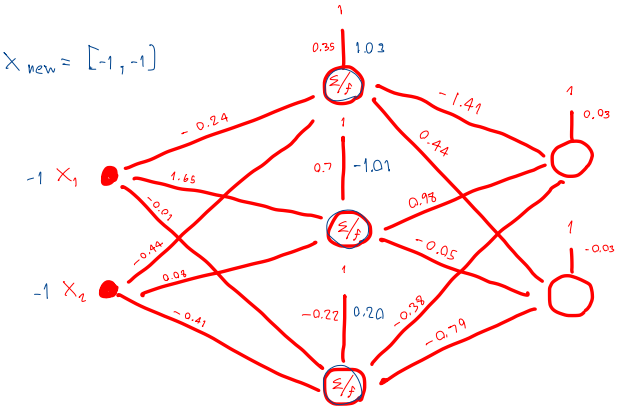
$e^{Z_1} = 99.48 \Rightarrow \sigma_1 = \frac{99.48}{99.48 + 2.75} = 0.97$

$Z_2 = (-1.85) \times 0.44 + 1.12 \times (-0.05) + (-2.27) \times (-0.79) + (-0.03)$

$= 1.01$

$e^{Z_2} = 2.75 \Rightarrow \sigma_2 = \frac{2.75}{2.75 + 99.48} = 0.03$

$X_{new} = [-1, -1]$



$V = (-1) \times (-0.24) + (-1) \times (-0.44) + 1 \times 0.35$

$relu(V) = 1.03$

$V = (-1) \times 1.65 + (-1) \times 0.08 + 1 \times 0.72$

$relu(V) = -1.01$

$V = (-1) \times (-0.01) + (-1) \times (-0.41) + 1 \times (-0.22)$

$relu(V) = 0.20$

$Z_1 = 1.03 \times (-1.41) + (-1.01) \times 0.98 + 0.20 \times (-0.38) + 0.03$

$= -2.49$

$e^{Z_1} = 0.08 \Rightarrow \sigma_1 = \frac{0.08}{0.08 + 1.38} = 0.05$

$Z_2 = 1.03 \times 0.44 + (-1.01) \times (-0.05) + 0.20 \times (-0.79) + (-0.03)$

$= 0.32$

$e^{Z_2} = 1.38 \Rightarrow \sigma_2 = \frac{1.38}{1.38 + 0.08} = 0.95$