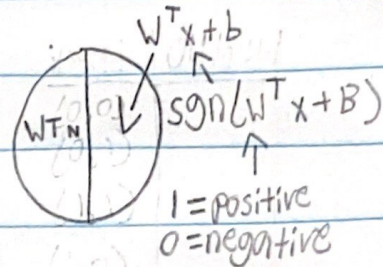


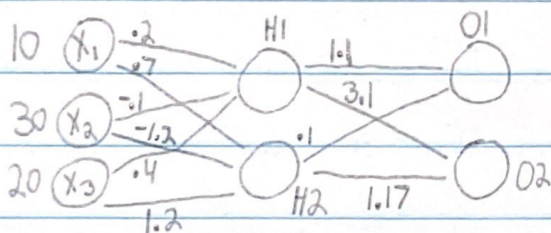
#Problem 1 In-class 9

$(b) \xrightarrow{-1.5} -1.5 + 1 \cdot X_1 + 1 \cdot X_2$
 $(X_1) \xrightarrow{1} -0.5 + 1 \cdot X_1 + 1 \cdot X_2$
 $(X_2) \xrightarrow{1}$



input	Bios at -1.5		Bios at -0.5	
	$W^T x + b$	output	$W^T x + b$	output
(0,0)	-1.5	0	-0.5	0
(0,1)	-0.5	0	0.5	1
(1,1)	0.5	1	1.5	1
(1,0)	-0.5	0	0.5	1

#Problem 2 In-class 9



activation function: $\frac{1}{1+e^{-x}}$

$$h_1 = 10(0.2) - 0.1(30) + 20(0.4) = 7$$

$$H_1 = \frac{1}{1+e^{-7}} \approx .99$$

$$h_2 = 10(0.7) + 30(-1.2) + 20(1.2) = -5$$

$$H_2 = \frac{1}{1+e^5} \approx .00669$$

$$O_1 = .99(1.1) + .00669(0.1) \approx 1.099$$

$$O_1 = \frac{1}{1+e^{-1.099}} \approx .75$$

$$O_2 = .99(3.1) + .00669(1.17) \approx 3.104$$

$$O_2 = \frac{1}{1+e^{-3.104}} \approx .957$$

$$PO_1 = \frac{.75}{.75 + .957} \approx 44\%$$

$$PO_2 = \frac{.957}{.957 + .75} \approx 56\%$$