

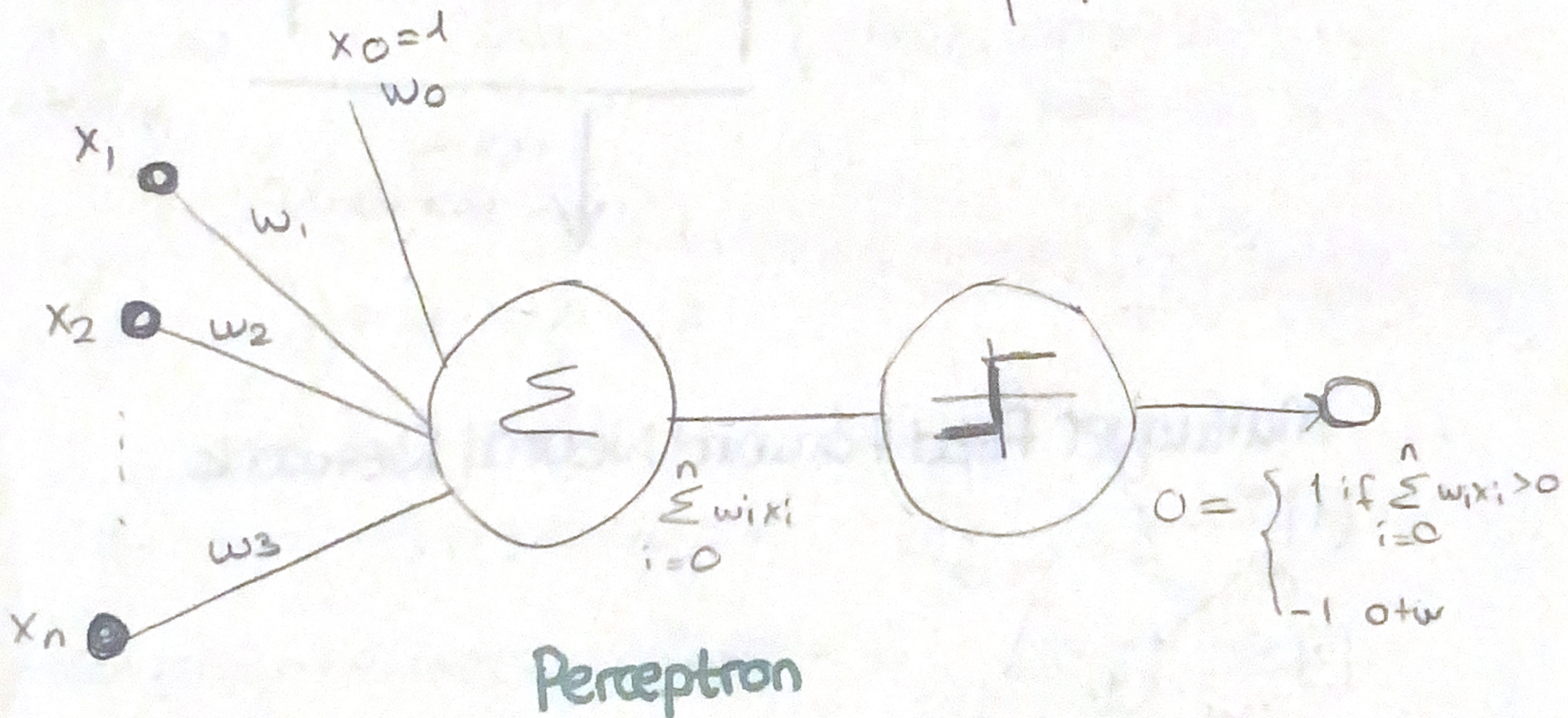
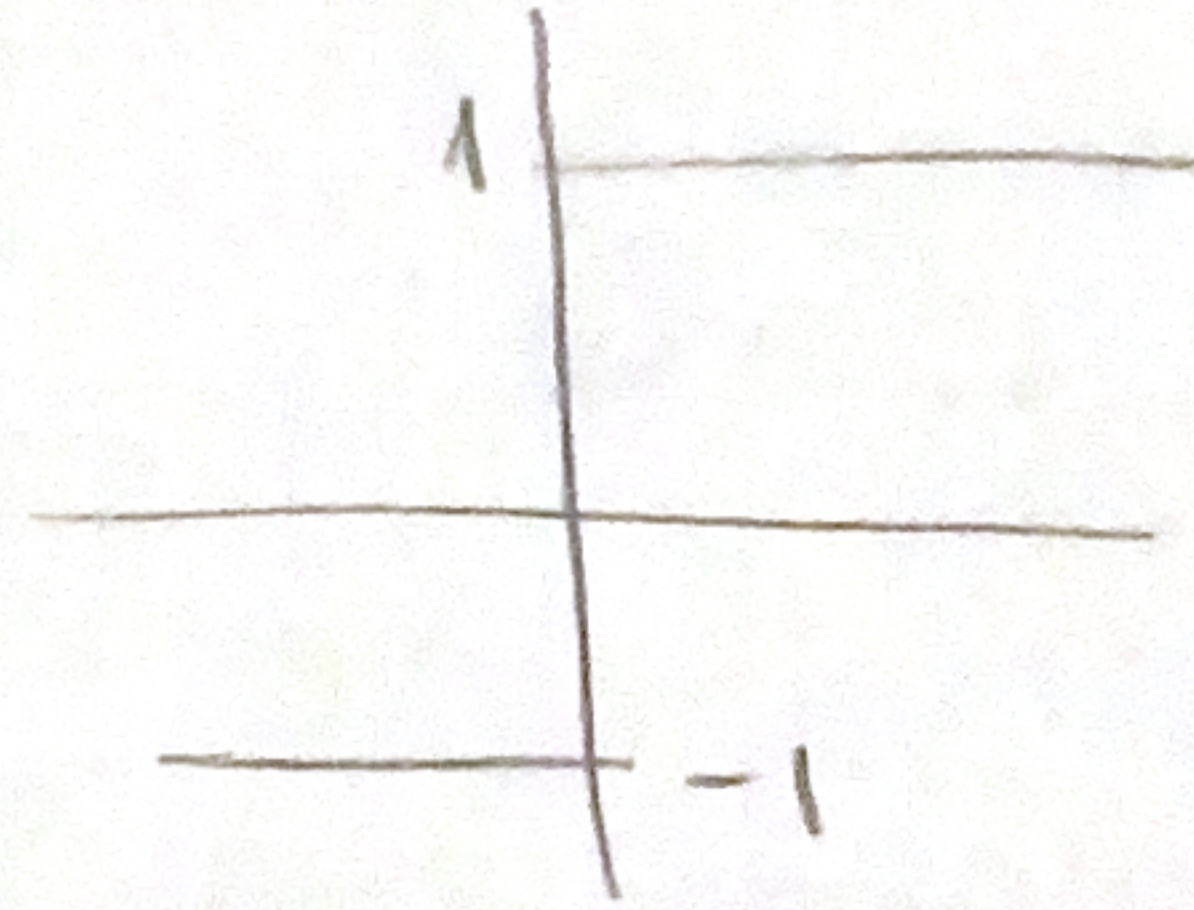
# Artificial Neural Networks

**Perceptrons:** Takes inputs, calculates a linear combination, prompts 1 if result > threshold & -1 if otherwise

$$\underbrace{O(x_1, \dots, x_n)}_{\text{output}} = \begin{cases} 1 & \text{if } w_0 + w_1x_1 + w_2x_2 + \dots + w_nx_n > 0 \\ -1 & \text{otherwise} \end{cases}$$

↳ signum function (sgn)

-w<sub>0</sub> → threshold



Weights for AND → w<sub>0</sub> = -0.8 w<sub>1</sub> = w<sub>2</sub> = 0.5

x <sub>1</sub>	x <sub>2</sub>	res
0	1	0.5 → < 0.8 = 0
1	1	1 → 1
0	0	0 → < 0.8 = 0

OR → w<sub>0</sub> = 0.3 w<sub>1</sub> = w<sub>2</sub> = 0.5

x <sub>1</sub>	x <sub>2</sub>	res
0	1	0.5 → > 0.3 = 1
1	1	1