

• Equação da Reta do Perceptron 2D

$$x_1 \cdot w_1 + x_2 \cdot w_2 + \underbrace{b}_{w_0} = 0$$

$$x_1 \cdot w_1 + x_2 \cdot w_2 + \underbrace{1}_{w_0} \cdot w_0 = 0$$

* Passo 01, se $x_1 = 0$

$$\text{ponto} = \left(0, -\frac{w_0}{w_2} \right)$$

$$0 \cdot w_1 + x_2 w_2 + w_0 = 0$$

$$x_2 w_2 = -w_0$$

$$x_2 = -\frac{w_0}{w_2} \quad \left. \vphantom{x_2} \right\} \text{intercept}$$

* passo 02, se $x_2 = 0$

$$x_1 \cdot w_1 + 0 \cdot w_2 + w_0 = 0$$

$$x_1 w_1 + w_0 = 0$$

$$x_1 = -\frac{w_0}{w_1}$$

$$\text{ponto} = \left(-\frac{w_0}{w_1}, 0 \right)$$

* passo 03

equação da reta reduzida

$$Y = mx + N$$

$$m = \operatorname{tg} \alpha = \frac{\Delta Y}{\Delta X}$$

$$m = \frac{Y_2 - Y_1}{X_2 - X_1}$$

$$P_1 = \left(0, -\frac{w_0}{w_2} \right)$$

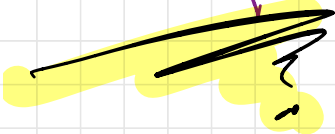
$$P_2 = \left(-\frac{w_0}{w_1}, 0 \right)$$

$$\frac{= \left(0 + \frac{w_0}{w_2} \right)}{-\frac{w_0}{w_1} - 0} = \frac{\frac{w_0}{w_2}}{-\frac{w_0}{w_1}} = \frac{\cancel{w_0}}{w_2} \cdot \left(-\frac{w_1}{\cancel{w_0}} \right)$$

$$= -\frac{w_1}{w_2}$$

* Logo

$$Y = mX + N$$

$$Y = \left(-\frac{w_1}{w_2}\right)x - \left(\frac{w_0}{w_2}\right)$$


$$m = -\frac{w_1}{w_2}$$

$$N = -\frac{w_0}{w_2}$$