• Equação da Reta do Perceptron 2D

$$x_1 \cdot w_1 + x_2 \cdot w_2 + b = 0$$

$$x_1 \cdot w_1 + x_2 \cdot w_2 + 1 \cdot w_0 = 0$$

* Passo 01, se $x_1 = 0$

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

$$x_2 w_2 = -w_0$$

$$x_2 = -\frac{w_0}{w_2}$$ } Intercept

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

* 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

$$Y = mx + N$$

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

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

$P_1 = \left(0, -\frac{W0}{W2}\right)$

$P_2 = \left(-\frac{W0}{W1}, 0\right)$

$$= \frac{\left(0 + \frac{W0}{W2}\right)}{-\frac{W0}{W1} - 0} = \frac{\frac{W0}{W2}}{-\frac{W0}{W1}} = \frac{W0}{W2} \cdot \left(-\frac{W1}{W0}\right)$$

$$= -\frac{W1}{W2}$$

* Logo

$$Y = mX + N$$

$$Y = \left(-\frac{W1}{W2}\right)x - \left(\frac{W0}{W2}\right)$$

$$m = -\frac{W1}{W2}$$

$$N = -\frac{W0}{W1}$$