



DEEP LEARNING

NEURAL NETWORKS

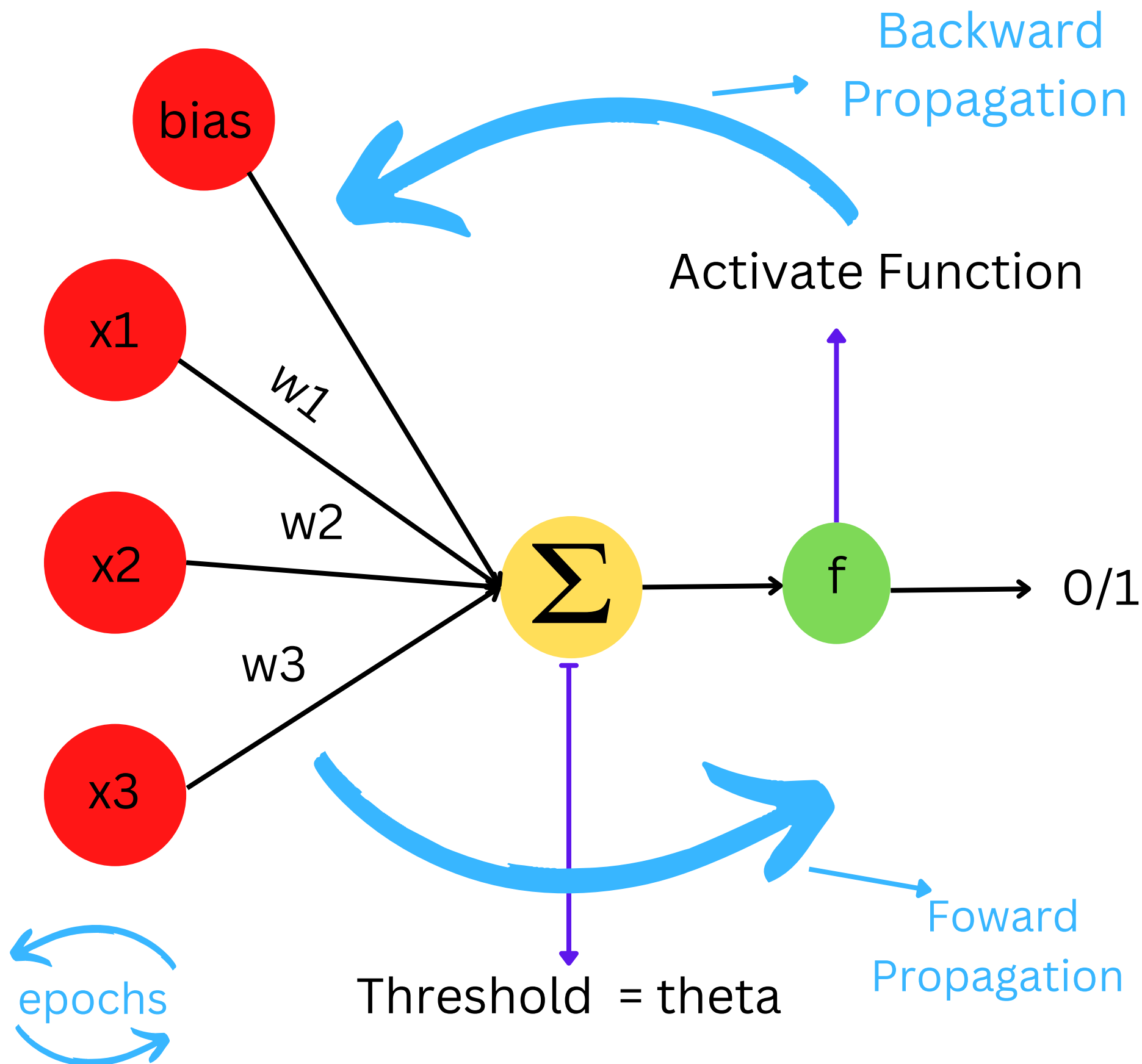
PERCEPTRON

perceptron is a **single layer** Neural Network

Perceptron is a linear classifier (binary). It is used in machine learning and deep learning. It is the primary step to learn Deep Learning Technologies. **Perceptron is a building block of an Artificial Neural Network.** This algorithm enables neurons to learn elements and processes them one by one during preparation .

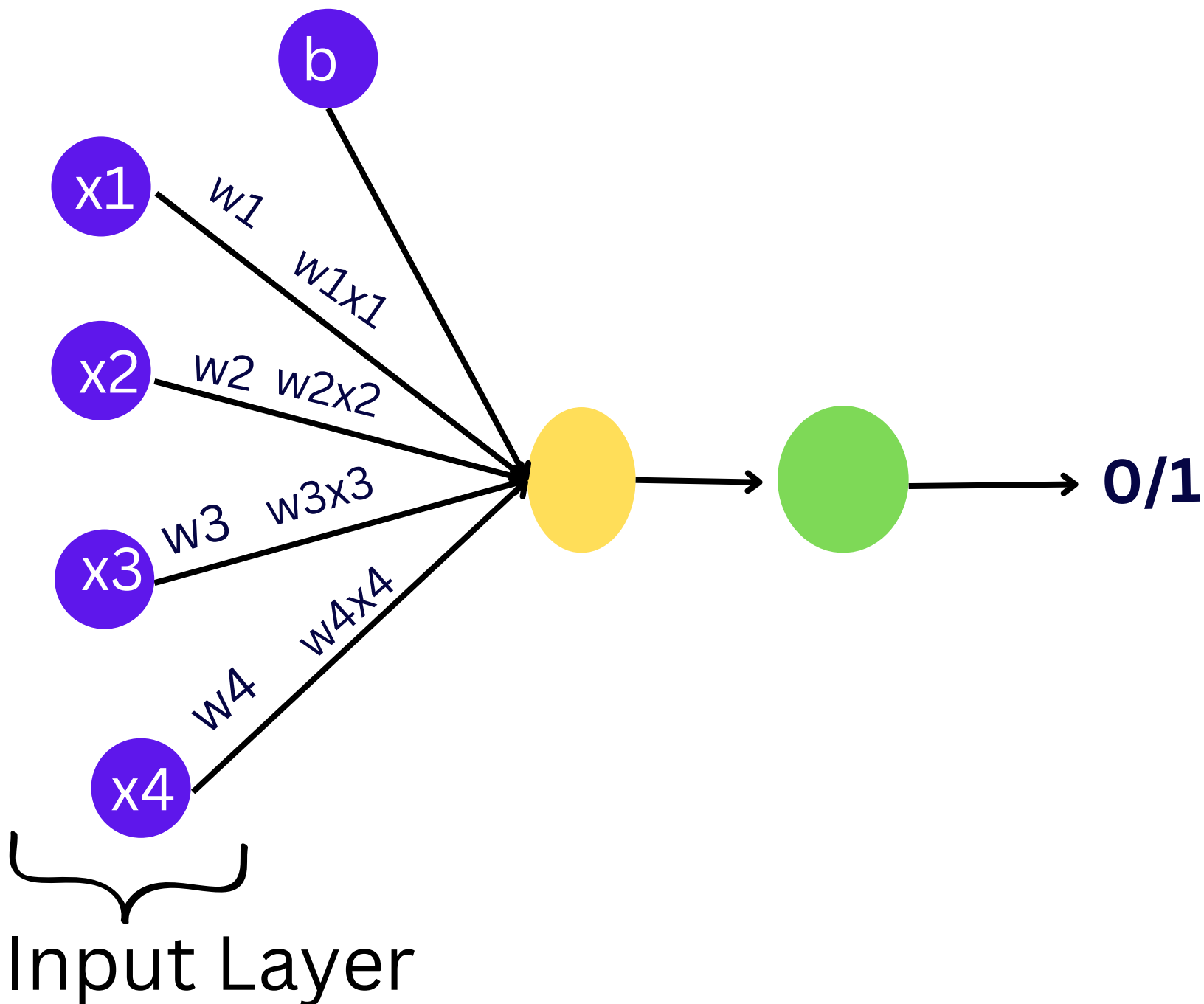
Perceptron consists 4 parts:

- 1. Input Values or Input Layers**
- 2. Weights and Bias**
- 3. NetSum**
- 4. Activation Function**



How Does it work?

1) All the inputs of **x** are multiplied with their weights **w**.



Multiplying inputs with their weights

2) Add all the multiple values and call them with weighted sum.

The diagram illustrates the components of a summation formula. A large black sigma symbol (Σ) is the central element. Above it is the number 4, with an upward-pointing arrow and the text "Length of the features". To the left of the sigma is the text "sigma of summation" with an arrow pointing to the symbol. To the right is the text "Formula for nth term" with an arrow pointing to the variable k . Below the sigma is the text "K=1", with a downward-pointing arrow and the text "starts with".

$$\Sigma_{k=1}^4$$

Length of the features

4

sigma of summation

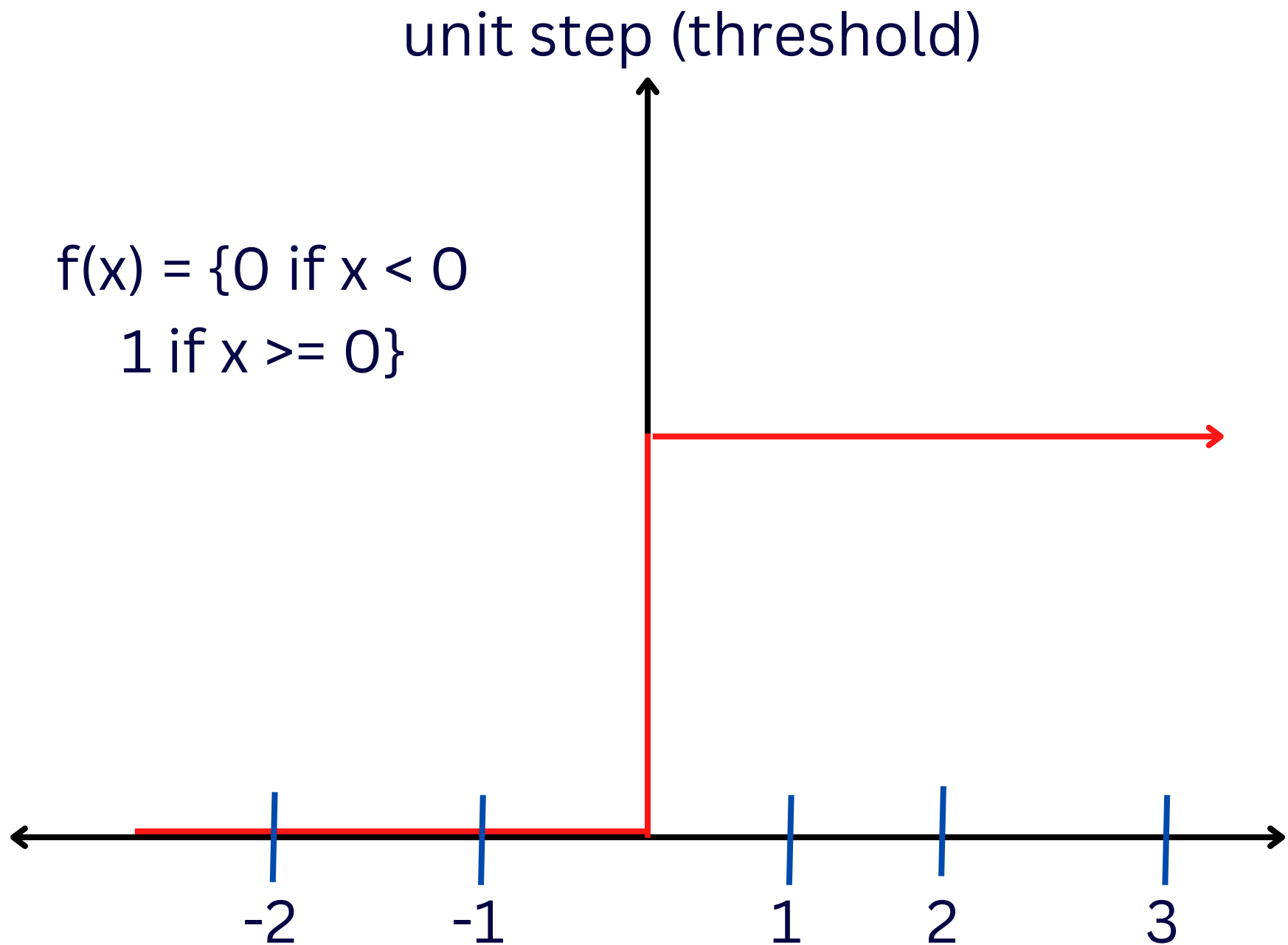
k

Formula for nth term

K=1

starts with

3) Apply the weighted sum to the correct Activation Function.



Why do we need to Activate Function?

Activate Function: This will use to get the output of node. It has also known as Transfer Function.

It is used to determine the output of Neural Network likes Yes or No, It maps the resulting values in between 0 and 1 or -1 to 1, It depends on the function that we take.

Types of Activate Functions:

1. **Linear Activation Function:** It can be separable.
2. **Non-Linear Activation Functions:** It cannot be separable.