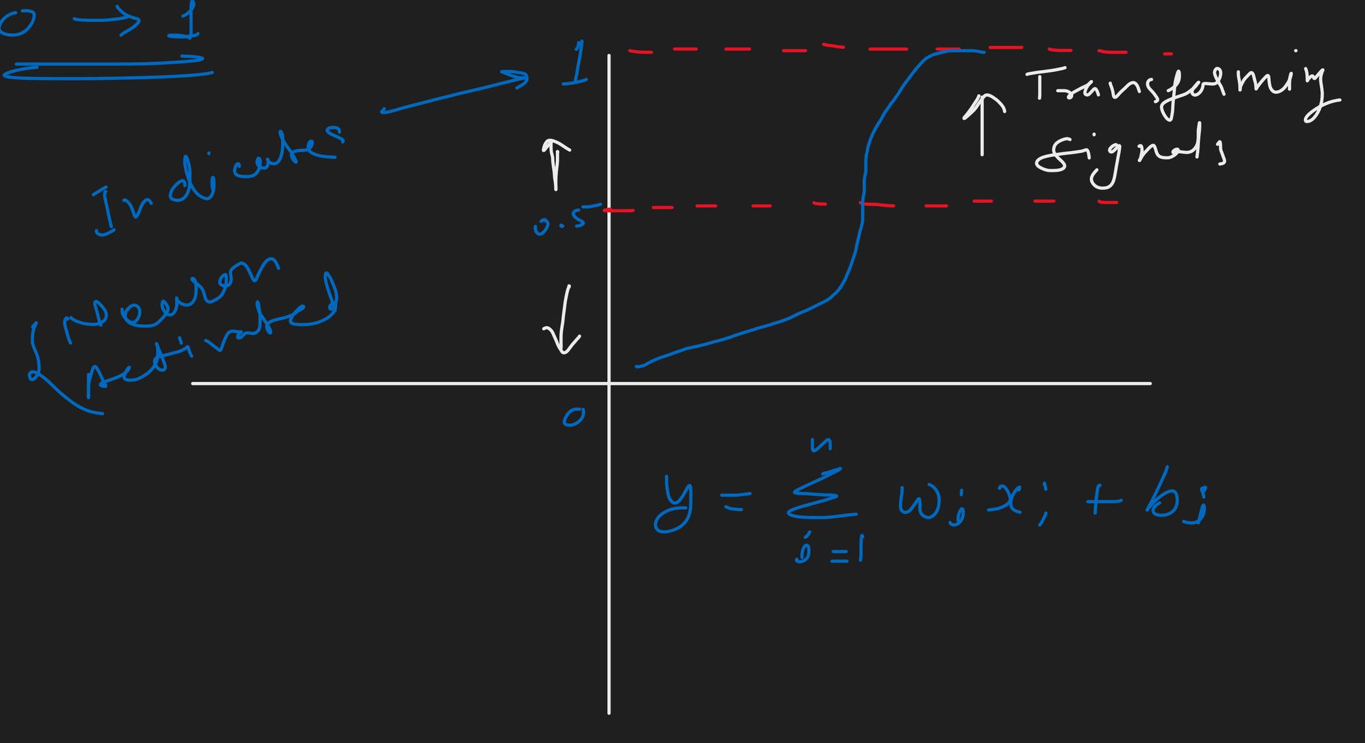
Activation functions

$Act(y)$

$y = [w_i x_i + w_2 x_i] + b_i$

① Sigmoid Activation function

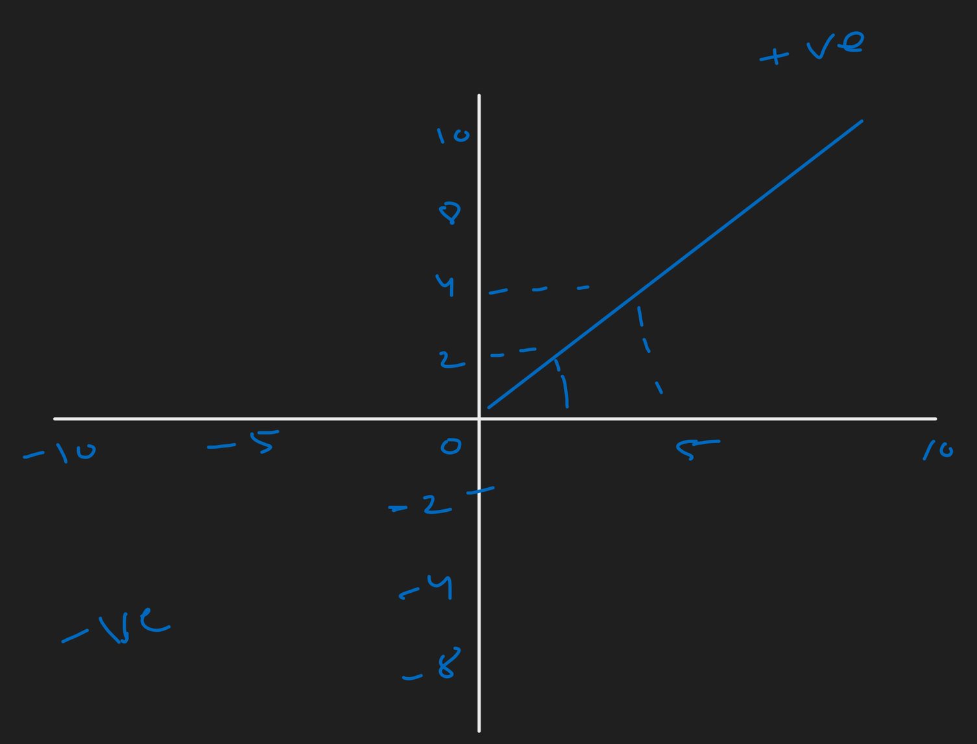
$1/1+e^{\wedge}(-y)$ ↓ $\frac{1}{1+e^{-y}}$] $0 \to 1$



② Rectified Linear Unit (ReLU)

(+ve, -ve)

max(y, 0)



-ve max(-ve, 0) = 0

+ve max(+ve, 0) = +ve

If y is -ve → Transform to {0}

y is +v → to {1}

Neural Network Training

① Forward Propogation

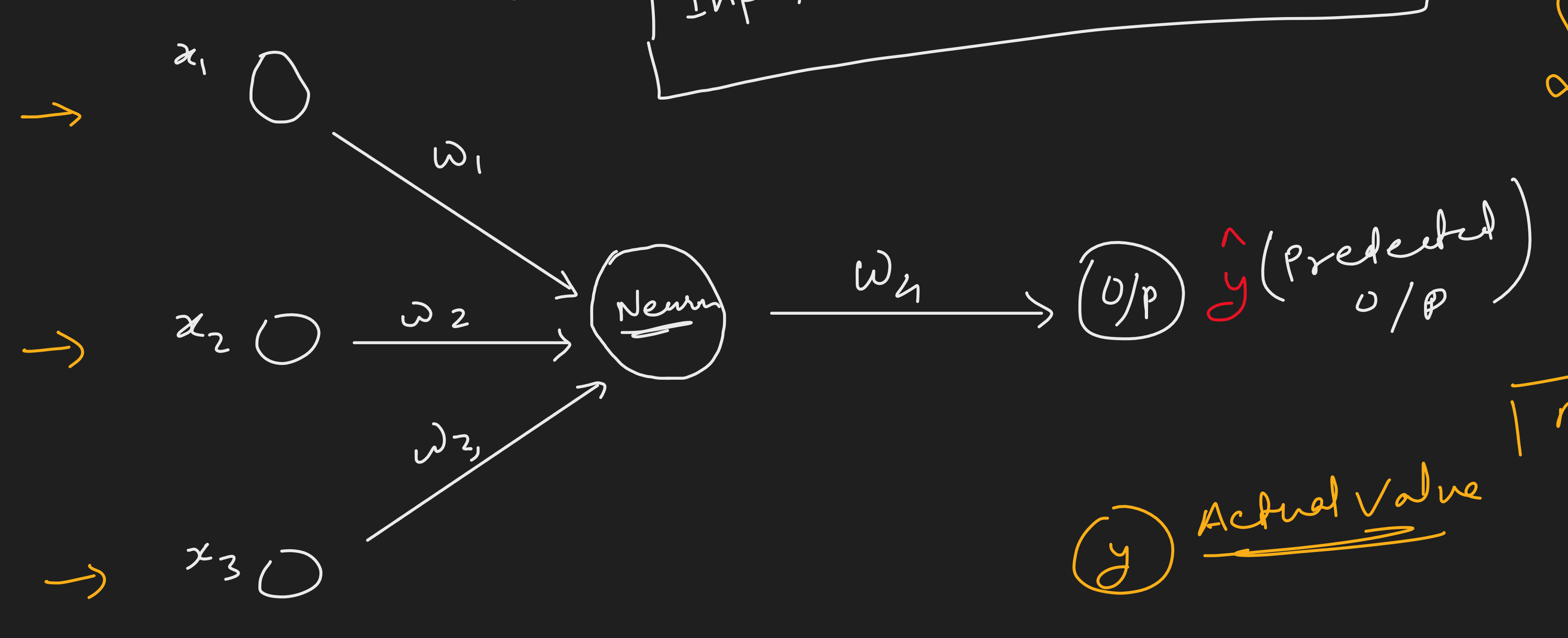
② Backward Propogation

Dataset

x_1	x_2	x_3
-	-	-
-	-	-

Input Layer

FP: Input → Neurons → O/P



$y = [w_1 x_1 + w_2 x_2 + w_3 x_3] + b_i$

$Z = Act(y)$

| max(y, 0)

(y) Actual Value

Difference b/w ($\hat{y}$) and (y) ⇒ called LOSS

$Loss = (y - \hat{y})^2$

if $\hat{y} = 0$ and $y = 1$

$\to (1-0)^2$

$\to (1)^2 \Rightarrow 1$

If $\hat{y} = 1$ and $y = 0$

$\to (0-1)^2$

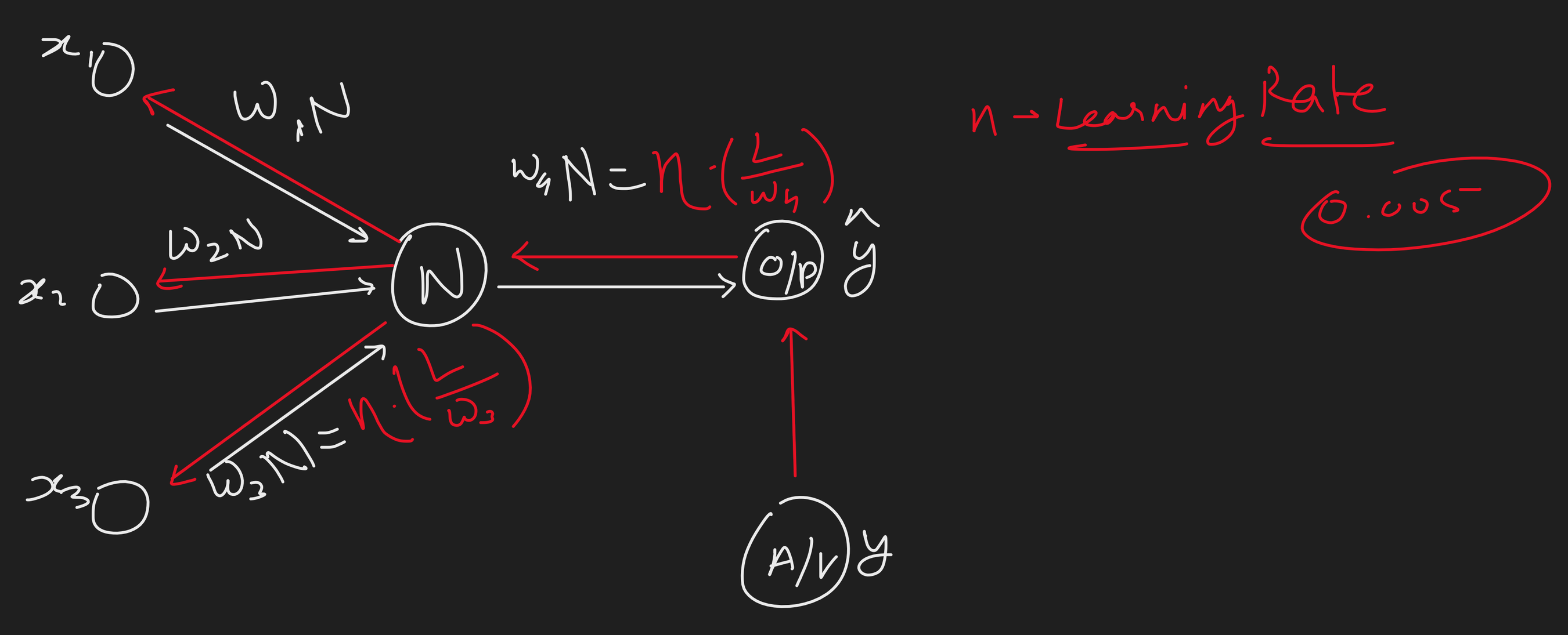
$\to (1)^2 \Rightarrow 1$

Now. The loss value should be reduced

→ updating (w_n)

It will be done by [Optimizers]

In order to reduce loss value, we have to back Propogate.



η → Learning Rate

0.005

We have to use a Cost Function on Multiple Records

Cost function $\sum_{i=1}^{n} (y - \hat{y})^2$