For the first sample :→

$x^{(1)} = [x_0^{(1)}, x_1^{(1)}, x_2^{(1)}] = [1, 5.1, 3.5]$

$\omega = [\omega_0, \omega_1, \omega_2] = [0.2, 0.3, -0.5]$

$\eta = 0.1$ [Learning rate]

$\phi(3) = \phi(\omega_0 x_0 + \omega_1 x_1 + \omega_2 x_2)$

$\hat{y} = \phi(0.2 \times 1 + 0.3 \times 5.1 + (-0.5) \times (3.5))$

$\phi(0.2 + 1.53 - 1.75)$

$\phi(1.73 - 1.75)$

-0.02

For the second sample :→

$x^{(2)} = [x_0^{(2)}, x_1^{(2)}, x_2^{(2)}] = [1, 4.9, 3.0]$

$\omega = [\omega_0, \omega_1, \omega_2] = [0.2, 0.3, -0.5]$

$\eta = 0.1$ [Learning rate]

$$\hat{y} = \phi(w_0 x_2^{(2)} + w_1 x_1^{(2)} + w_2 x_2^{(2)})$$

$$\phi(0.2 \times 1 + 0.3 \times 4.9 + (-05) \times 3.0)$$

$$\phi(0.2 + 1.47 + (-1.5)]$$

$$\hat{y} = 0.17$$

Weight updates in the first iteration over the two samples

$$\Delta w_0 = \eta \sum_{i=1} (y^{(i)} - \phi(z^{(i)})) x_0^{(i)}$$

$$0.1 \times [y^{(1)} - \phi(z^{(1)}) \times x_0^{(1)} + (y^{(2)} - \phi(z^{2}) \times x_0^{(2)}]$$

$$0.1 \times [1 - (-0.02) \times 1 + (1 - 0.17) \times 1]$$

$$0.1 \times [1.02 + 0.83]$$

$$\Delta w_0 = 0.185$$

$$\Delta w_1 \Rightarrow \eta \sum_{i=1} (y^{(i)} - \phi(z^{(i)})) x_i$$

$$0.1 \times [1 - (-0.02) \times 5.1 + (1 - 0.17) 4.9]$$

$$0.1 \times [5.202 + 4.067]$$

$$\Delta w_1 \Rightarrow 9.269 \times 0.1 \Rightarrow 0.9269$$

$$\Delta w_2 = \eta \sum_{i=1} \left(y^{(i)} - \phi(z^{(i)}) \right) x_2^{(i)}$$

$$0.1 \times \left[(y^1 - \phi z^1) x_2^1 + (y^{(2)} - \phi(z^2) \times x_2^{(2)} \right]$$

$$0.1 \times \left[(1 - (-0.02) 3.5 + (1 - 0.17) \times 3.0 \right]$$

$$0.1 \times \left[3.57 + 2.49 \right]$$

$$\Delta w_2 = 6.06 \times 0.1 \Rightarrow 0.606$$

Therefore, by adding the update to the current weight and they become

$[0.2 + 0.185, 0.3 + 0.9269, -0.5 + 0.606]$

$[0.385, 1.2269, 0.106]$