x_i	y_i
7-6	157
7·1	174

Iteration – 0, Sample – 1

Step 1: $(1.6, 157), \eta = 0.01, m = 1, c = -1$

Step 2:

$$\frac{\partial c}{\partial m}\Big|_{m=1} = +(157 - 1 \times 7.6 - (-1)) \times (7.6)$$

$$= +(158 - 7.6)(7.6) = +1143.04$$

$$\frac{\partial c}{\partial c}\Big|_{c=-1} = +(157 - 1 \times 7.6 - (-1)) = -150.4$$

Step 3: $\Delta m = -(0.01) \times (1143.04) = -11.4304$

$$\Delta c = -(0.01) - (150.4) = 1.50$$

Step 4: $m = m + \Delta m = 1 + (-11.4304) = -10.43$

$$c = c + \Delta c = -1 + (1.50) = 0.50$$

Sample 2

Step 1: $(7.1, 174), \eta = 0.01, m = 1, c = -1$

Step 2:

$$\frac{\partial c}{\partial m}\Big|_{m=1} = (174 - 1 \times 7.1 - (-1)) \times 7.1$$

$$= 167.9 \times 7.1 = 1192.09$$

$$\frac{\partial c}{\partial c}\Big|_{c=-1} = -(174 - 1(7.1)) - (-1))$$

$$= -167.9$$

Step 3: $\Delta m = -(0.01)(1192.09) = -11.92$

$$\Delta c = -(0.01)(-167.9) = 1.679$$

Step 4: $m = 1 + (-11.92) = -10.92, \quad c = -1 + 1.679 = 0.679$

Sample - 1

Step 1: $(7.61, 157)$, $\eta = 0.01$, $m = -10.43$, $c = 0.504$

Step 2:

$$\frac{\partial E}{\partial m}\bigg|_{m = -10.43} = (157 - (-10.43)(7.61) - 0.504)(7.61)$$

$$= (235.868)(7.61)$$

$$= 1794.956$$

$$\frac{\partial E}{\partial c}\bigg|_{c = 0.504} = -(157 - (-10.43)(7.61) - 0.50)$$

$$= -235.868$$

Step 3: $\Delta m = -0.01 (1794.956) = -17.94$

$\Delta c = -0.01 \times -235.868 = 2.35$.

Step 4: $m = -10.43 - 17.94 = -28.379$

$c = 0.504 + 2.358 = 2.862$

Sample - 2

Step 1: $(7.1, 174)$, $\eta = 0.01$, $m = -10.92$, $c = 0.679$

Step 2:

$$\frac{\partial E}{\partial m}\bigg|_{m = -10.92} = (174 - (-10.92)(7.1) - 0.679)(7.1)$$

$$= 1731.056$$

$$\frac{\partial E}{\partial c}\bigg|_{m = 0.679} = -(+174 - (-10.92)(7.1) - 0.679)$$

$$= -250.853$$

Step 3: $\Delta m = -(0.01)(1731.056) = -17.31$

$\Delta c = -0.01 \times -250.853 = 2.50$

Step 4: $m = -10.92 - 17.31 = -28.23$

$c = 0.679 + 2.50 = 3.18$