

Assignment - 5A

x	y
75.1	577.8
74.3	577
88.7	570.9

Iteration 1 $\eta = 0.1, m = 1, c = -1$

$$\frac{\partial E}{\partial m} = \frac{1}{2} \left[((577.8 - (-1)(75.1) + 1)^2 \cdot 75.1) + ((577 - (-1)(74.3) + 1)^2 \cdot 74.3) + ((570.9 - (-1)(88.7) + 1)^2 \cdot 88.7) \right] = -59056.31$$

$$\frac{\partial E}{\partial c} = -\frac{1}{2} [503.7 + 503.7 + 482.2] = -745.3$$

$$\Delta m = -0.1 (-59056.31) = 5905.631$$

$$\Delta c = -0.1 (-745.3) = 74.53$$

$$m = 5906.631$$

$$c = 73.53$$

Iteration 2

$$m = 5906.631, c = 73.53$$

$$\begin{aligned} \frac{\partial E}{\partial m} &= -\frac{1}{2} \left[((577.8 - (5906.631)(75.1) - 73.53) \cdot 75.1) + ((577 - (5906.631)(74.3) - 73.53) \cdot 74.3) + ((570.9 - (5906.631)(88.7) - 73.53) \cdot 88.7) \right] \\ &= 56136542.928 \end{aligned}$$

$$\frac{\partial E}{\partial c} = -\frac{1}{2} (-1404863.731) = 702431.865$$

$$\Delta m = -0.1 (56136542.928) = -5613654.293$$

$$\Delta c = -0.1 (702431.865) = -70243.1865$$

$$\begin{aligned} m &= -5607747.662 \quad c = 72.52 - 70243.1865 \\ &= -70169.637 \end{aligned}$$