Assignment 4 a:

Sample	x	y
1	7.6	157
2	7.1	174

η = 0.1 epochs = 1, m = 1 and c = -1

set iteration = 1

set sample = 1

Iteration 1 sample(1) η = 0.1 epochs = 1, m = 1 and c = -1:

Y = 1*(7.6)-1 = 6.6

E = $0.5*(157 - (1)(7.6)-(-1))^2$ = 11310.08

dE/dm = -(157-6.6)*7.6 = -1143.04 and dE/dc = -(157-6.6)=-150.4

Δ m = -(0.1)(-1143.4) = 114.304 and Δ c = -(0.1)(-150.4) = 15.04

m = 1 + 114.304 = 115.304 and c = -1 + 15.04 = 14.04

Iteration 1 sample 2 η = 0.1 epochs = 1, m = 115.304 and c = 14.04:

Y = (115.304) (7.1) + (14.04) = 832.6984

E = $0.5(174 - 832.6984)^2$ = 216941.791

 dE/dm =-(174 -832.6984) * 7.1 = 4676.759 and dE/dc =- (174 - 832.6984) = 658.698

 Δ m = -(0.1)(4676.759) = -467.676 and Δ c = -(0.1)(658.698) = -65.8698

m = 115.304 - 467.676 = -352.372 and c = 14.04 - 65.8698 = -51.8298

Iteration 2 sample(1)η = 0.1 epochs = 1, m = -352.372 and c = -51.8298:

Y = (-352.372) (7.6) + (-51.8298) = -2729.857

E = $0.5(157 + 2729.857)^2$ = 4166971.669

 dE/dm =-(157+2729.857) * 7.6 = -21940.1132 and dE/dc =- (157+2729.857) = -2886.857

 Δ m = -(0.1)(-21940.1132) = 2194.01132 and Δ c = -(0.1)(-2886.857) = 288.6857

m = -352.372+2194.01132 = 1841.63932 and c = -51.8298+288.6857 = 236.8559

Iteration 2 sample(2) η = 0.1 epochs = 1, m = 1841.63932 and c = 236.8559:

Y = (1841.63932) (7.1) + (236.8559) = 13312.49507

E = $0.5(174 - 13312.49507)^2$ = 86310026.35

 dE/dm =-(174 - 13312.49507) * 7.1 = 93283.315 and dE/dc =-(174 - 13312.49507)= 13138.49507

Δ m = -(0.1)(93283.315) = -9328.3315 and Δ c = -(0.1)(13138.49507) = -1313.849507

m = 1841.63932 − 9328.3315 = -7486.69218 and c = 236.8559 − 1313.849507= -1076.993607