**Quiz 04**

**Submitted by - Sagar Kukreja**

1) Compute the optimization solution of the following objective function:

Implement gradient descent and Newton’s method on the function

Ans. Gradient Descent:

Initialization :

theta1 = 2 # initial x1

theta2 = 5 # initial x2

alpha = 0.001 # learning rate

iterations = 0

precision = 1/1000000

maxIterations = 1000

Result :

Gradient descent:

x1 1.38698703880784

x2 1.92496778743453

Newton’s Method

Initialization :

theta1 = 2 # initial x1

theta2 = 3 # initial x2

alpha = 0.001 # learning rate

iterations = 0

precision = 1/1000000

maxIterations = 10

Result :

Newton's Method :

x1 1.99779106646359

x2 3.00990612731023

Newton’s method takes less number of iterations to converge than Gradient Descent.