AI Assignment - 2

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Find the global min. point & value for the function $f(x) = x^4 + 3x^2 + 10$.

A:- step 1: initialization

$x = 1$, epoch = 2, $\eta = 0.1$

iteration 1:

$$\frac{\partial f}{\partial x} = 4x^3 + 6x = 10$$

$$\Delta x = -\eta \frac{\partial f}{\partial x} = -(0.1)(10) = -1$$

$$x = x + \Delta x = 1 - 1 = 0$$

iteration 2:

$$\frac{\partial f}{\partial x} = 4x^3 + 6x = 0$$

$$\Delta x = -\eta \frac{\partial f}{\partial x} = -(0.1)(0) = 0$$

$$x = x + \Delta x = 0 + 0 = 0$$

Now, the global min. point is $x = 0$.

min. value of the function is $f(0) = 0 + 0 + 10$

$= 10$