20KU5A0228

$F(x) = x^4 + 3x^2 + 10$

$\text{grad } f = \frac{\partial}{\partial x}(x^4 + 3x^2 + 10)$

$= 4x^3 + 6x^2$

let learning rate = 0.04 (# range → 0.0 to 1.0)

let $x_0 = 3$

⇒ grad f at $x_0 = (3) \Rightarrow 4(3)^3 + 6(4) = 126$

iteration - 1 :

$x_1 = x_0 - (\text{learning rate} * \text{grad } f$

$= 3 - (0.04 * 126)$

$= -2.04$

⇒ grad f at $(x_1) = 4(-2.04)^3 + 6(-2.04)$

$= -46.198$

iteration - 2

$x_2 = x_1 - (\text{learning rate} * \text{grad } f)$

$= -2.04 - (0.04 * (-46.198))$

$= -0.192$