

Gradient descent :-

$$x_{i+1} = x_i - \eta f'(x_i)$$

Let's consider a non machine Learning concept

$$f(x) = 5x^2 + 3x - 4$$

$$f'(x) = 10x + 3$$

Let's take a random number for x

$$x_0 = 4$$

then we calculate x_1 following the rule

$$\Rightarrow x_{i+1} = x_i - \eta f'(x_i)$$

$$\Rightarrow x_1 = 4 - \eta (10 \times 4 + 3)$$

$$= 4 - \eta 43$$

$$x_1 = 4 - \eta 43$$

Here η is Learning rate

$$\text{Similarly } x_2 = x_1 - \eta f'(x_1)$$

$$x_3 = x_2 - \eta f'(x_2)$$