find the global minimum point & value for the function

$f(x,y) = x^2 + y^2 + 10.$

→ Do manual calculations for '2' iterations.

→ find the Optimal sol^n using python programming.

Step1: $\eta = +0.1$, $f(x,y) = x^2 + y^2 + 10$, iter $= 1$

epochs $= 2$, $x = 3, y = 4$.

Step2: $\dfrac{\partial f}{\partial x} = 2x \Big|_{x=3} = 2(3) = 6$

$\dfrac{\partial f}{\partial y} = 2y \Big|_{x=4} = 2(4) = 8$

Step3: $\Delta x = -\eta \dfrac{\partial f}{\partial x} = -(0.1)(6) = -0.6$

$\Delta y = -\eta \dfrac{\partial f}{\partial y} = -(0.1)(8) = -0.8$

Step4: $x = x + \Delta x = 3 - 0.6 = 2.4$

$y = y + \Delta y = 4 - 0.8 = 3.2$

Step5: iter $= 1 + 1 = 2$

Step6: if (iter > epochs) no
$\quad\quad\quad 2 > 2$
$\quad\quad$ else goto step 2.

Step 2: $\dfrac{\partial f}{\partial x} = 2x = 2(2.4) = 4.8$

$$\frac{\partial f}{\partial y} = 2y = 2(3.2) = 6.4.$$

step 3: $\delta n = -\eta \cdot \frac{\partial f}{\partial n} = -(0.1)(4.8) = -0.48$

$\delta y = -\eta \cdot \frac{\partial f}{\partial y} = -(0.1)(6.4) = -0.64.$

step4: $n = n + \delta n = 2.4 - 0.48 = 1.92$ //

$y = y + \delta y = 3.2 - 0.64 = 2.56$ //

steps5: $iter = 2 + 1 = 3.$

step6: if $(iter > epochs)$ yes, $\Rightarrow$ goto step 7

$3 > 2$

step7: print ($n = 1.92$, $y = 2.56$).

The global minimum value for the function
$n^2 + y^2 + 10$ with global minimum points

$n = 1.92$, $y = 2.56$ is 20.24 //