Euler method

* $\frac{dy}{dx} = x^2 + y$; $y(0) = 1$ to $y(0.02)$, $y(0.04)$ and $y(0.06) = ?$

+ From Euler method

$$y_{n+1} = y_n + hf(x_n, y_n)$$

here $f(x,y) = x^2 + y$

$x_0 = 0$

$y_0 = y(0) = 1$

$h = .01$

Now

~~$y_1 = y(.01) = y(0) + .01 f(0, 1)$~~

$y_1 = y(.01) = y(0) + .01 \times f(0,1) = 1 + .01 \times 1 = 1.01$

$y_2 = y(.02) = y(.01) + .01 \times f(.01, 1.01) = 1.0201$

$y_3 = y(.03) = y(.02) + .01 \times f(.02, 1.0201) = 1.0303$

$y_4 = y(.04) = y(.03) + .01 \times f(.03, 1.0303) = 1.0408$

$y_5 = y(.05) = y(.04) + .01 \times f(.04, 1.0406) = 1.0510$

$y_6 = y(.06) = y(.05) + .01 \times f(.05, 1.0510) = 1.0615$