$f(x_0, y_0) = x_0 + y_0$

$= 0 + 1$

$= 1$ //

2) Find $y(0.1)$ by Modified Euler

$y' = y - \frac{2x}{y}$, $y(0) = 1$

Given:

$f(x, y) = y - 2x/y$

$x_0 = 0$, $y_0 = 1$ $\quad h = x_1 - x_0$

$x_1 = 0.1$ $\quad y_1 = ?$ $\quad = 0.1$ //

By Modified euler Method.

$n = 0$

$y_1 = y_0 + hf\left[x_0 + h/2,\ y_0 + h/2\ f(x_0, y_0)\right]$

$= 1 + 0.1\ f\left[0.05,\ 1 + 0.05 f(0,1)\right]$

$= 1 + 0.1\ f\left[0.05,\ 1 + 0.05\left[1 - 2\times\frac{0}{1}\right]\right]$

$= 1 + 0.1\left[1.05 - 2\times\frac{0.05}{1.05}\right]$

$= 1 + 0.1\left[1.05 - 0.095\right]$

$= 1 + 0.095$

$= 1.095$

$y_1 = 1.095$