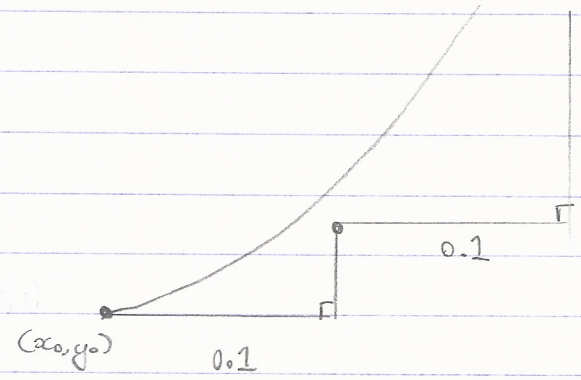
Deriving Euler's Step-by-Step Method



This approximation will be an underestimate ∵ it is concave up. Others will be over for concave down.

For $\frac{dy}{dx} = F(x, y)$, we have the gradient at (x_0, y_0) ~~also~~ equal to $F(x_0, y_0) = \frac{y_1 - y_0}{h}$

$\therefore y_1 = y_0 + h F(x_0, y_0)$

Thus... $y_{r+1} = y_r + h F(x_r, y_r)$ where $x_{r+1} = x_r + h$