1c RUNGE-KUTTA METHOD ("ONE-STEP")

THE 1ST STEP IS ALWAYS TO FIND THE μ_{n+1} (RULE(?))

$\therefore f(y(t)) = 2y(t) = 2e^t$

FOR 1C THIS IS $(\mu_0 = 1), (h = 0.1)$

$\mu_1 = (1) + \frac{0.1}{6}\Big(\underbrace{2 \cdot 1}_{k_1} + \underbrace{2 \cdot \left(2\left(1 + \frac{0.1}{2}(2 \cdot 1)\right)\right)}_{k_2}$

$2 \cdot (2($

$+ 2 \cdot \left(2 \cdot \left(1 + \frac{0.1}{2}\left(2 \cdot \left(2 \cdot \left(1 + \frac{0.1}{2}(2 \cdot 1)\right)\right)\right)\right)\right)$

$+ 2 \cdot \left(1 + 0.1\left(\left(2 \cdot \left(1 + \frac{0.1}{2}\left(2 \cdot \left(1 + \frac{0.1}{2}(2 \cdot 1)\right)\right)\right)\right)\right)\right)$

$= 1 + (0.01667)(2 + 8.4)$

$+ 2 \cdot (2 \cdot (1 + (0.01667) \cdot 4.4$

$+ 2 \cdot (1 + 0.1(2 \cdot (1 + 0.01667 \cdot 2.067)))$