OTHER'S [illegible]:

$y' = y$

$y(5) = 1$

$y(t)$?

HERE WE KNOW, $y(t) = e^t$ TRULY

HW PROB 1 (HW6):

$y' = 2y$; $y(2) = 1$

$y(x)$?

HERE WE KNOW NOT $y(x)$

SUPPOSE WE WANT TO COMPUTE AN APPROXIMATION OF $e^{t=1}$

COMPARE APPROX @ $x = 1$

$\rightarrow y(1) = ?$

$\longrightarrow$ TRULY, $y(1) = e^1 = e = y(1)$

ONE CAN CHOOSE ANY $n \geq 1$ $\xrightarrow{\text{THEN IT MUST BE}}$ $h = \frac{1-0}{n} = \frac{1}{n}$ ..? n?

(RECALL $U_{n+1} = U_n - h f(U_n)$)

SO, $U_0 = 0$, SINCE $y(0) = 1$

$U_1 = U_0 + h \underbrace{f(U_0)}_{=U_0} = U_0 - h U_0 = U_0 (1 - h)$ ... $= 1 - h$

$U_2 = U_1 - h \underbrace{f(U_1)}_{=U_1} = U_1 + h U_1 = U_1 (1 + h)$ $\rightarrow = (1-h)^2$

? WHY $1 = 3$? LEADING TO LOGICAL?

$\rightarrow$ GENERALLY $U_n = (1-h)^n$