$y' = 2y, \quad y(0) = 1 = U_0$

PREDICTOR: $U^0_{n+1} = U_n + hf(U_n)$

CORRECTOR: $U^{k+1}_{n+1} = U_n + \frac{h}{2}\left(f(U_n) + f(U^k_{n+1})\right)$

$$U^{k+1}_{n+1} = U_n + \frac{h}{2}\left(2U_n + 2U^k_{n+1}\right)$$

FOR $k = 0, n = 0$:

ONE CORRECTION $U^1_1 = U_0 + \frac{h}{2}\left(2U_0 + 2U^0_1\right)$

$$U^0_1 = U_0 + h2U_0 = 1 + 2h$$

$$U^1_1 = 1 + \frac{h}{2}\left(2 + 2(1+2h)\right)$$

TWO CORRECTION $U^2_1 = U_0 + \frac{h}{2}\left(2U_0 + 2U^1_1\right)$

$(k=1, n=0)$

$$U^1_1 = U_0 + \frac{h}{2}\left(2U_0 + 2U^0_1\right) = 1 + \frac{h}{2}\left(2 + 2(1+2h)\right)$$

$$U^2_1 = 1 + \frac{h}{2}\left(2 + 2\left(1 + \frac{h}{2}\left(2 + 2(1+2h)\right)\right)\right)$$