c) Equation 5 is listed as

$$|y(t_i) - w_i| \leq \frac{hM}{2L}[e^{L(t_i-a)-1]}$$

Finding M:

$$\begin{aligned} M \geq |y''(t)| &= |(t^2 + 4t + 2)e^t - 2e| \\ max(M) &= (4 + 8 + 2)e^2 - 2e \\ &= 14e^2 - 2e \end{aligned}$$

Finding L:

$$L = max(|f'(y, t|) = 2$$

Finding required step for error to be less than 0.1:

$$\begin{aligned} h &= \frac{(.1)(2)(L)}{M(e^{L(t_i-a)} - 1)} \\ &= \frac{.4}{(14e^2 - 2e)(e^2 - 1)} \\ &= 6.387808944 * 10^{-4} \end{aligned}$$