Math 321-172 Quiz 4

Name:.....ID#:.....Sec:.....Ser:.....

Q.1: Let $y(t) = \frac{1}{5}te^{3t} - \frac{1}{25}e^{3t} + \frac{1}{25}e^{-2t}$ be the exact solution of the IVP

$$y' = e^{3t} - 2y, \quad 0 \le t \le 1, \quad \text{y(0)=0.}$$

Compute the approximate solution using Euler method with $h = 0.25$.

Also compute actual error at each t_i, $i = 1, 2, 3, 4$.

Q.2: Let $y(t) = \frac{1}{5}te^{3t} - \frac{1}{25}e^{3t} + \frac{1}{25}e^{-2t}$ be the exact solution of the IVP

$$y' = e^{3t} - 2y, \quad 0 \leq t \leq 1, \quad \text{y(0)=0.}$$

Compute the approximate solution using RK2 method with $h = 0.5$.

Also compute actual error at each t_i, $i = 1, 2$.

Q.3: Use Bisection method to find the root x_3 for $f(x) = x^3 - 7x^2 + 14x - 6$ on the interval $[0, 1]$. Write value of $f(x_3)$.