4/14/2003 MA423 Numerical Analysis Name:_____
Dr. Lunsford Quiz 7 (20 Points Total)

Use the initial value problem (IVP) given below to answer the following questions. You may use your textbook for any formulas you may need.

$$\frac{dy}{dt} = 1 + y, \quad 0 \le t \le 2$$
$$y(0) = 2$$

1. Explain why the IVP is well-posed and find the exact unique solution of the IVP. Note: Your answer should be $y(t) = 3e^t - 1$. (8 points)

2. Let $N = 10$ and use Euler's method to find w_0, w_1, and w_2. (6 points)

3. Find the actual absolute error from using Euler's method at $t = 0.20$. (2 points)

4. Find an error bound for the maximum absolute error from using Euler's method at $t = 0.20$. (4 points)