

## Quiz No. 3

### Linear Algebra & DE's

Fall 2007

Name: \_\_\_\_\_

Date: \_\_\_\_\_ Section: \_\_\_\_\_

Complete each of the following problems. Show all work. Make sure to clearly label your answer. Any work that is crossed out will not be assessed. Any incorrect work will be assessed. Make sure that all work is legible.

1. Apply Euler's method twice to approximate  $y(1)$  where  $y$  is the solution to the initial value problem  $\frac{dy}{dx} = x - y + 1$ ,  $y(0) = 2$ . Use step size  $h = 1/2$ .

2. Consider the following system of linear equations:

$$2x - y + 3z = a$$

$$x + 2y + z = b$$

$$7x + 4y + 9z = c$$

For which values of the constants  $a$ ,  $b$ , and  $c$  does this system have  
(*i*) a unique solution, (*ii*) no solution, and (*iii*) infinitely many solutions?