Show all work. You may leave arithmetic expressions in any form that a calculator could evaluate. By putting your name on this paper, you agree to abide by the university's code of academic integrity in completing the quiz. Use no books, calculators, cellphones, other electronic devices, communication with others, scratchpaper, etc.

Name _____

1. (10) Let
$$y'' = y' + 6y$$
with $y(0) = 2$ and $y(1) = 3$. Let $h = 1/5$, and write a set of finite difference equations that approximates the solution to this problem at $t = jh$, $j = 0, \ldots, 5$.

2. (10) Let

$$y_1' = 6y_2 - y_1$$
$$y_2' = y_1^2 - y_2$$

with $y_1(0) = 2$ and $y_1(1) = 3$. Write Matlab code to solve this problem using the shooting method. You may use `ode45` and `fzero`.