Name:_____
M555: Differential Equations I (Su.19)
Good Problems 3
Sections 2.7, 3.1, 3.3

WICHITA STATE UNIVERSITY

Instructions. Complete all problems, showing enough work. All work must be done on this paper. You may use your own hand-written notes, but you may not use any electronic devices.

1. [20 points] Consider the initial value problem

$$\begin{cases} y' = y(3 - ty), \\ y(0) = \frac{1}{2}. \end{cases}$$

Use Euler's method with a step size of $h = \frac{1}{2}$ to complete the table.

k	t_k	y_k
0		
1		
2		
3		
4		

2. [10 points] Find a differential equation whose general solution is

$$y(t) = C_1 e^{2t} + C_2 e^{-3t}.$$

3. [30 points] Solve the initial value problem,

$$\begin{cases} y'' + 8y' - 9y = 0, \\ y(1) = 1, \quad y'(1) = 0. \end{cases}$$

4. [10 points] Write the number $e^{\ln(2)-\frac{\pi}{6}i}$ in the form $a+bi$.

5. [30 points] Solve the initial value problem,

$$\begin{cases} y''-2y'+5y=0, \\ y(0)=2, \quad y'(0)=-3. \end{cases}$$

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