Homework 5

Homework 5 is to solve three ordinary differential equations. For each equation, solve it for the range 0-7, with 700 data points. **Use the python function odeint! (**For reference, see m10_odeint.py and some of the other examples.)

You will turn in a single python file called hw5.py which solves the three problems. For each problem graph the requested items. Note that y' is the first derivative of y with respect to t. Likewise, y'' is the second derivative of y with respect to t. Note that np.cos() and np.sin() are computing values in radians.

Problem 1: $y' = \cos(t)$; initial value: $y(0)=1$. Plot y vs t. Since this is easily solvable, you know what the answer is so you should be able to refine your technique with this problem.

Problem 2: $y' = -y + t^2 e^{-2t} + 10$; initial value $y(0) = 0$. Plot y vs t.

Problem 3: $y''+4y'+4y = 25\cos(t) + 25\sin(t)$; initial values $y(0) = 1$, $y'(0) = 1$. Plot y vs t and y' vs t on the same plot.