

Name

M#

1. Do you know how to numerically solve a system of ODEs and plot the solution? What languages can you do this in?
2. Do you know how to solve the ODE  $y''' + 3y'' + 2y = t^2$ ? Tell me an appropriate set of initial conditions.
3. Do you know how to solve the ODE system 
$$\begin{aligned} y_1' &= -3y_1 + 2y_2 + t \\ y_2' &= -2y_2 + y_1 - t^2 \end{aligned}$$
? Tell me an appropriate set of initial conditions.
4. Do you know how to solve the ODE system  $y'' + y = \frac{1}{2+\cos(t)}$ ? What is the technique called?
5. Do you know an existence and uniqueness theorem for ODEs? Tell me a name for the theorem that will work on Wikipedia.