MTH 256 Lesson 15 - Second-Order ODEs as Systems

1. Set up the 2nd-order ordinary differential equation $y'' - 3y' + 2y = 0$ as a system of linear equations, then find the general solution using eigenvalues. Finally, find a particular solution which satisfies the initial conditions $y(0) = 1$ and $y'(0) = 0$.

2. Solve the initial value problem $y'' - 4y' + 3y = 0$, $y(0) = 7$, and $y'(0) = 11$ using the characteristic equation shortcut.

3. Solve the initial value problem $y'' + 2y' + 10y = 0$, $y(0) = 3$, and $y'(0) = 6$.