

1. Solve the initial value problem:

$$y'' - 6y' + 9y = 0, \quad y(0) = 2, \quad y'(0) = \frac{25}{3}$$

2. Find the general solution of

$$y''' - 7y'' + 7y' + 15y = 0$$

3. Find the general solution of

$$y'' + 10y' + 41y = 0$$

4. Solve the initial value problem:

$$y''' - 4y'' + 7y' - 6y = 0, \quad y(0) = 1, \quad y'(0) = 0, \quad y''(0) = 0$$

5. Find the general solution of

$$y'' - 5y' + 6y = xe^x$$

6. Solve the initial value problem:

$$y'' + y' - 12y = e^t + e^{2t} - 1, \quad y(0) = 1, \quad y'(0) = 3$$