

Homework 4

1. Find the general solution of the differential equations

$$y'' + 2y' - 3y = 0,$$

$$6y'' - y' - y = 0,$$

$$y'' - 2y' + 2y = 0,$$

$$y'' - 10y' + 25y = 0,$$

$$y'' + 9y = 0,$$

$$y^{(4)} - 2y'' + y = 0,$$

$$y'' + 6y' + 13y = 0.$$

2. Solve the initial value problems

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

$$y'' + 2y' + 2y = 0, \quad y(\pi/4) = 2, y'(\pi/4) = -2,$$

$$3y'' - y' + 2y = 0, \quad y(0) = 2, y'(0) = 0,$$

$$y''' + 12y'' + 36y' = 0, \quad y(0) = 0, y'(0) = 1, y''(0) = -7,$$

$$y'' + 8y' - 9y = 0, \quad y(1) = 1, y'(1) = 0.$$