

Homework 5

1. Find the general solution of the differential equations

$$y'' - 10y' + 25y = 30x + 3,$$

$$y'' - y = e^{2x},$$

$$y'' - 2y' - 3y = 3e^{2t},$$

$$y'' + 2y' = 3 + 4 \sin(2t),$$

$$y'' + 9y = 9 \sec^2(3t),$$

$$y'' - 4y' + 4y = (x + 1)e^{2x}$$

$$y'' + 3y' + 2y = \frac{1}{1 + e^x}.$$

2. Solve the initial value problems

$$y'' + y' - 2y = 2t, \quad y(0) = 0, y'(0) = 1,$$

$$y'' - 2y' + y = te^t + 4, \quad y(0) = 1, y'(0) = 1,$$

$$5y'' + y' = -6x, \quad y(0) = 0, y'(0) = -10.$$