Homework 3

1. Find the general solution of the differential equations

$$y'' + 2y' - 3y = 0,$$
$$6y'' - y' - y = 0,$$
$$y'' - 2y' + 2y = 0,$$
$$y'' + 6y' + 13y = 0.$$

2. Solve the initial value problems

$$y'' + 4y = 0, \quad y(0) = 0, y'(0) = 1,$$
$$y'' + 2y' + 2y = 0, \quad y(\pi/4) = 2, y'(\pi/4) = -2,$$
$$3y'' - y' + 2y = 0, \quad y(0) = 2, y'(0) = 0,$$
$$y'' + 8y' - 9y = 0, \quad y(1) = 1, y'(1) = 0.$$