Math 33b, Winter 2013, Tonći Antunović - Homework 4

From the textbook solve the problems:

Section 2.9: 8, 10, 14, 18, 20

Section 4.1: 2, 6, 8, 16, 18

Section 4.3: 2, 4, 6, 8, 26, 30, 32

And also the problems below:

Problem 1. Find the general solution of the differential equation

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

Problem 2. Find the solution of the initial value problem

$$y'' + y' = 20y, \quad y(0) = 1, \quad y'(0) = 1.$$

Problem 3. Write down the linear homogeneous second order differential equation whose general solution is given by

$$y(t) = C_1 e^{6t} + C_2 e^{-2t}.$$

Problem 4. Use the substitution $z = y^2$ to find the general solution of the differential equation

$$yy'' + (y')^2 - yy' - 3y^2 = 0$$