

HOMWORK #5 (Chapter 3 Exercises--- Homogeneous Linear Equations with Constant Coefficients, Undetermined Coefficients)

**Due on Nov. 9**

1) Find the general solution of the given second-order differential equation.

$$3y'' + 2y' + y = 0 \quad (\text{page 122, Problem 13})$$

2) Find the general solution of the given higher-order differential equation.

$$y''' + 3y'' + 3y' + y = 0 \quad (\text{page 122, Problem 21})$$

3) Solve the given initial-value problem.

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

(page 122 problem 35)

4) Solve the given differential equation by undetermined coefficients.

$$y'' + 2y' + y = \sin(x) + 3\cos(2x) \quad (\text{page 131, Problem 19})$$

5) Solve the given initial-value problem

$$\frac{d^2x}{dt^2} + \omega^2x = F_0 \sin(\omega t); \quad x(0) = 0, x'(0) = 0 \quad (\text{page 131, Problem 33})$$

6) Solve the given initial-value problem

$$y''' - 2y'' + y' = 2 - 24e^x + 40e^{5x}; \quad y(0) = \frac{1}{2}, y'(0) = \frac{5}{2}, y''(0) = -\frac{9}{2}$$

(page 131, Problem 35)