

HOMEWORK #8 (Chapter 3 Higher –Order Differential Equations)

Solve the given differential equation by undetermined coefficients.

1.  $y'' + y = 2x \sin x$  (Exercises 3.4 Problem 15)
2.  $y^{(4)} - y'' = 4x + 2xe^{-x}$  (Exercises 3.4 Problem 26)

Solve the given initial-value problem.

3.  $\frac{d^2x}{dt^2} + \omega^2x = F_0 \sin \omega t$ ,  $x(0) = 0$ ,  $x'(0) = 0$  (Exercises 3.4 Problem 33)

Solve the given differential equation by using the variation of parameters.

4.  $x^2y'' + 10xy' + 8y = x^2$  (Exercises 3.6 Problem 29)
5.  $x^2y'' - 3xy' + 13y = 4 + 3x$  (Exercises 3.6 Problem 31)