

Higher Order Nonhomogeneous Equations

MATH 211 - 01

1. Solve the following higher order homogeneous equations.

- a. $y'' + 2y' + y = x$
- b. $y'' + 5y' + 6y = 3x^2$
- c. $y'' - 7y' + 6y = e^x$
- d. $y'' - 2y' + 7y = xe^{2x}$
- e. $2y'' + 5y = \sin x$
- f. $3y'' - 2y' + 4y = \cos 2x$
- g. $y'' + y = \sin x$
- h. $y''' - y' = 3e^x$
- i. $2y^{(4)} - 8y'' = 2$
- j. $y^{(4)} - 4y'' + 4y = \sin x + e^x$
- k. $y''' - 3y'' + 3y' - y = x^2e^x$

2. Solve the following initial value problems.

- a. $y'' + 6y' + 9y = x^2 - 2x$, $y(0) = 0$, $y'(0) = -1$
- b. $y'' - y' = \sin 2x$, $y(0) = 1$, $y'(0) = 0$
- c. $y'' + 3y' = \cos x$, $y(0) = 1$, $y'(0) = 1$
- d. $y^{(5)} - y''' = 2$, $y(0) = y'(0) = y''(0) = 0$, $y'''(0) = y^{(4)}(0) = 1$