

MAT 2384 B Assignment # 3
due Friday, October 21st

Solve the following initial value problems:

1. $y''' - 6y'' + 11y' - 6y = 0, \quad y(0) = 6, \quad y'(0) = 14, \quad y''(0) = 36$
2. $y^{(4)} + 5y'' + 4y = 0, \quad y(0) = -1, \quad y'(0) = 2, \quad y''(0) = 4, \quad y'''(0) = -2$
3. $x^3y''' - x^2y'' + 2xy' - 2y = 0, \quad x > 0, \quad y(1) = -3, \quad y'(1) = -7, \quad y''(1) = -9$

Find the general solutions of the differential equations:

4. $y'' - 4y = 3e^{2x} + 12x - 2$
5. $y'' - 5y' + 6y = 2e^x + 40 \cos x$
6. Construct a natural cubic spline interpolant on the interval $[-1, 1]$ for the function f such that $f(-1) = 1, f(0) = 0, f(1) = 2$.