MA 214 Calculus IV (Spring 2016)

Section 2

Homework Assignment 10

In what follows the Heaviside function, written as $u_c(t)$ in the text of Boyce and Diprima, is denoted by $H(t-c)$.

In each of Problems 1 through 3, find the solution of the given initial-value problem.

1. $y'' + y = H(t-\pi/2) + 3\delta(t-3\pi/2) - H(t-2\pi), \qquad y(0) = 0, \quad y'(0) = 0.$
2. $2y'' + y' + 4y = \delta(t-\pi/6)\sin t, \qquad y(0) = 0, \quad y'(0) = 0.$
3. $y^{(4)} - y = \delta(t-1), \qquad y(0) = 0, \quad y'(0) = 0, \quad y''(0) = 0, \quad y^{(3)}(0) = 0.$
4. Boyce and DiPrima, Section 6.6, p. 355, Problem 5 and Problem 10.
5. Boyce and DiPrima, Section 6.6, p. 355, Problem 17.
6. Boyce and DiPrima, Section 6.6, p. 355, Problem 19.
7. Boyce and DiPrima, Section 6.6, p. 356, Problem 25(a).
8. Boyce and DiPrima, Section 6.6, p. 356, Problem 27(a).