University of Bahri

College of Computer Sciences and Mathematics

Batch 2018 - Second Year

Ordinary Differential Equations

Assignment (2)

i. Solve the following Equations:

(1) $y'' + 2y' - 15y = 0$

(2) $y'' + 6y' + 9y = 0, \quad y(0) = 1, \quad y'(0) = 3$

(3) $4y'' + y = 0, \quad y(0) = 3, \quad y(\pi) = -4$

(4) $y'' - 4y' + 3y = 1$

(5) $y'' - 6y' + 9y = e^{2x}$

(6) $y'' - y' = \sin^2 x = \dfrac{1}{2}(1 \cos 2x)$

(7) $y'' + 3y' + 2y = \sin e^{-x}$

(8) $y'' + y' - 2y = 2(1 + x + x^2)$

ii. Find the Laplace transformation of the following functions

(i) $f(t) = \sin(at)$

(ii) $f(t) = t\cos(at)$

iii. Using Laplace transformations to solve the following differential equation

$$y'' + y' = 0, \quad y(0) = 2, \quad y'(0) = 1$$

NOTE*: The deadline for submitting this assignment will be on (03/08/2022).

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