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Assignment - 3

Mathematical Methods

1. Construct the Green's function for the following BVP

(i) $\dfrac{d^4 y}{dx^4} = 0$; $y(0) = y'(0) = y''(1) = y'''(1) = 0$

(ii) $\dfrac{d^3 y}{dx^3} = 0$; $y(0) = y'(1) = 0$; $y'(0) = y(1)$

(iii) $y''' = 0$; $y(0) = y(1) = 0$; $y'(0) = y'(1)$.

(iv) $y'' + y = 0$; $y(0) = y(1)$; $y'(0) = y'(1)$.

2. Solve the following BVP using Green's function

(i) $y'' + \pi^2 y = \cos \pi x$; $y(0) = y(1)$; $y'(0) = y'(1)$

(ii) $y'' + y = x^2$; $y(0) = y\left(\dfrac{\pi}{2}\right) = 0$

(iii) $y'' - y = 2 \sinh 1$; $y(0) = y(1) = 0$

(iv) $y'' - y = -2e^x$; $y(0) = y'(0)$; $y(1) + y'(1) = 0$

* * *   The End   * * *