

MAT 207 Matematikte Bilişim ve Teknoloji Kullanımı I

Quiz Sınavı Cevap Anahtarı(B-Grubu)

Öğrencilerden aşağıdaki metnin Bilgisayar Laboratuvar ortamında Microsoft Word kelime işlemcide 12 punto Times New Roman yazı stilinde yazımı istenmiştir:

The Adomian's technique consists of approximating the solution of (1) as an infinite series

$$y = \sum_{n=0}^{\infty} y_n \quad (2)$$

and decomposing the nonlinear operator N as

$$N(y) = \sum_{n=0}^{\infty} A_n, \quad (3)$$

where A_n are Adomian polynomials of y_0, y_1, \dots, y_n (see [3], [4], [5]) given by

$$A_n = \frac{1}{n!} \frac{d^n}{d\mu^n} \left[N \left(\sum_{i=0}^{\infty} \mu^i y_i \right) \right]_{\mu=0}, \quad n = 0, 1, 2, \dots \quad (4)$$

Substituting (2) and (3) into (1) yields

$$\sum_{n=0}^{\infty} y_n - \sum_{n=0}^{\infty} A_n = f. \quad (5)$$

Thus, we can identify

$$\begin{aligned} y_0 &= f, \\ y_{n+1} &= A_n(y_0, y_1, \dots, y_n), \quad n = 0, 1, 2, \dots \end{aligned} \quad (6)$$

We then define the M -term approximant to the solution y by

$$\phi_M[y] = \sum_{n=0}^M y_n$$

with

$$\lim_{M \rightarrow \infty} \phi_M[y] = y.$$

Convergence of the Adomian decomposition scheme was established by many authors by using fixed point theorems [1], [2], [5], [10].

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