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ANALYTICAL APPROXIMATIONS WITH EXACT NON-INTEGRAL PART FOR VOLTERRA'S POPULATION MODEL

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Abstract: The present paper is strongly motivated by the brilliant work of Wazwaz [9, Sections 4 and 5] computing analytical approximation in the form of a series truncated at t^8 and applying [4/4] Pade approximant to the series. In this paper, we make an attempt to workout analytical approximations in the form of the series truncated at t^4 and apply suitable Pade approximations as well as asymptotic approximations with the following features: i) The solution contains exact non integral part. ii) The solution exhibits the population rapid rise along logistic curve followed by decay to zero in the long run. iii) The solution is reasonably comparable with that of Wazwaz [9] using the information from the series with terms only upto t^4.

Keywords and Phrases: Volterra Population Model, Adomian decomposition method, Pade approximants, Asympote approximations.

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