Some Biomathematical Models Applying the Adomian Method

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Abstract: The approximate interpretation of some natural phenomena has led to introduce in certain types of differential equations changes in the temporal variable called delays, which makes these equations and their solutions have a more consistent behavior with reality. These equations, called differential equations with delay require complex methods for their solution and in most cases, only a numerical approximation is achieved. In this article we initially show a theoretical development on the decomposition method applied to ordinary differential equations with delay in which the most important properties were studied. Subsequently, the most relevant Adomian polynomials were tested; some biological models that involve differential equations with delay and integro-differential equations were solved. Finally, the numerical comparison was made with other approximation methods and the convergence of the method in some solutions was analysed.

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