UNIVERSITI TEKNOLOGI MARA

TECHNICAL REPORT

A NUMERICAL STUDY OF PREDICTING PEOPLE AFFECTED BY HIV/AIDS DISEASE BY USING RUNGE- KUTTA OF ORDER 4 METHOD, EULER'S METHOD, AND TAYLOR SERIES OF ORDER 2 METHOD

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IN THE NAME OF ALLAH, THE MOST GRACIOUS, THE MOST MERCIFUL

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ABSTRACT

HIV (Human Immunodeficiency Virus) is a virus that attacks the body's human immune system. HIV infects only human beings and is also transmitted between humans and not from animal bites such as mosquitoes, bats, or any other species. Numerical methods play a role in solving numerical problems, such as predicting people who are affected by HIV/AIDS disease. In this study, there are three methods applied to determine the number of people affected by HIV/AIDS disease which by using Runge-Kutta of order 4 Method, Euler's Method and Taylor Method. The objective of this research is to know which is the best method in order to forecast the number of people affected in this incidence. By obtain the best result, the number of people got affected by HIV/AIDS can be achieve for the next three years. The result was obtained by comparing the absolute error of the three methods. Even there are many analytical methods for finding the solution, we need to use numerical methods to get the approximate solutions. Furthermore, by obtaining the best numerical method, prediction of the number of people affected by HIV/AIDS can be made. Therefore, the best method from the result is Euler method. As for recommendation, in order to approach the estimating course of an epidemic and including simulation dynamics of disease transmission and recovery, or empirical fitting of data trends, a common model has been used which is a compartmental model such as the susceptible-infected-recovered (SIR) model.