OPTIMAL CONTROL OF CANCER CELL MATHEMATICS MODEL WITH IMMUNE SYSTEM THERAPY

by Fitriaana Yuli Saptaningtyas, Sri Andayani

ABSTRACT

This study examines the mathematical model of the interaction of cancer cells and immune cells, this model is based on the SIR model. The model that can be derived is the model of spreading viruses on computer networks. This study will describe the spread of viruses in computer networks referring to the immune cancer model. The model involves treatment, namely vaccination of the susceptible and treatment of the sick. In addition, the saturation used is non-linear, non-polynomial, making it more complex. Through the study of reproduction numbers and the provision of optimal control, it is proposed that the appropriate treatment variations are proposed so that the virus does not spread in the network at optimal costs. Numerical simulations are provided to support the analysis results.

Kata Kunci: *virus invection, non-linear saturation, vaccination, treatment, optimal control*