

عملی مبادیء علم الحاسب 4 علوم الرياضيات

(1) Implement a MATLAB program using GUI and OOP to solve the following Mathematical problem:

The spread of an infection from a single individual to a population of N uninfected persons can be described by the equation

$$\frac{dx}{dt} = -Rx(N+1-x) \text{ with initial condition } x(0) = N$$

where x is the number of uninfected individuals and R is a positive rate constant. Solve this differential equation symbolically for $x(t)$. Also, determine symbolically the time t at which the infection rate dx/dt is maximum.

(2) Plot t versus x for constant prefixed value N and different three values of R (i.e, in a single figure, there are three curves).

(3) Write the required code to **deploy** this program.

(4) Write the required code to **publish** this program in HTML format.

Run the program and put all the executions and output windows in MS-Word file.