**Case Study 2:**

A population of bacteria in a culture grows according to the differential equation N′(t) =k N(t), and N(t) is the number of bacteria present after t hours. If at present time, there are approximately 5000 bacteria, estimate their number after 10 hours.

(i) Solve the problem manually and upload the image to wxmaxima

Using Wx MAXIMA, do the following:

(ii) Find the general solution using WxMAXIMA (maintain k as unknown)

(iii) Find the particular solution using the data given (maintain k as unknown)

(iv) For the values of k = 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9 represent the particular solutions graphically (in one graph window).

(v) Highlight the particular solution obtained through k = 0.5