

**CHRIST(Deemed to be University), Bengaluru**  
**Department of Mathematics**

**Mathematical Modelling using Python (MAT 451)**

**Asynchronous Activity**

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1. Write a python program to multiply two matrices entered by the user.
2. Solve the following initial value problems and plot the graph:
  - (a)  $\frac{dy}{dx} = -6xy; y(0) = 3$
  - (b)  $\frac{dy}{dx} = k + \frac{y}{2}; y(0) = 1$  (Solve and plot for three different values of  $k$ ).
3. Plot the graphs of the equations  $y = \sin(x)$  ,  $y = \sin(x^2)$ ,  $y = \cos(x)$  and  $y = \cos(x^2)$  as subplots.
4. The sum of the digits of a three digit number is 16. The unit digit is two more than the sum of the other two digits. And the tens digit is five more than the hundreds digit. What is the number?