Modeling and Simulation, MC312
Lab-1
Compartment Model

Due Date: August 8, 2023

System dynamics problem with rate proportional to the amount

For this lab you should first read Module 2.1. We will model the radioactive chains problem (Module 7.1).

1. We first develop an understanding of the dynamics by working on the following problems numerically, 1.(a), (b), (c), (e), (i).

2. Since it is possible to solve the problem exactly we compare the numerical findings with analytical results. This is done by following problem 1.(d), (f), h, (j), (k), (m).

3. **[Report Writing]**: Report is written in latex (sample file is provided). While we solve the problem in parts, the report is a complete analysis of the problem and its behavior. Details will be discussed in the lab.

4. **[Learning outcomes]**

   - Construct and analyze problems through simple compartment models.
   - Drawing *meaningful* inferences from numerical experiments.
   - Comparing numerical results with analytical solutions.
   - Scientific writing and presentation.