

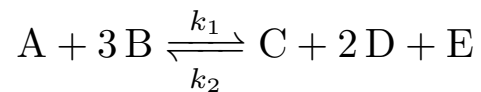
Homework 1

2.18/2.180

Due Wednesday February 18 at beginning of class

This problem set is on reduced order models. It should help you familiarize with how to construct models of simple processes. Problems with a star (*) are for graduate students only.

Problem 1: (4 points) Consider the following reactions:



Write down the reaction rate equations (RRE). Then, write them in the form using the stoichiometry matrix and the reaction vector. Determine the left kernel of the stoichiometry matrix and use that to find what all the conserved quantities are. Use this knowledge to reduce the set of ODEs to the minimum possible number.

Problem 2: (3 points) Exercise 2.2

Problem 3: (3 points) Exercise 2.3

Problem 4*: (3 points) Exercise 2.4

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2.18 / 2.180 Biomolecular Feedback Systems
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