

Example with Kinetic Expression:

A 20L reactor initially contains 10L of a solution containing “A” at a concentration of 100 mmol/L. Into this reactor a stream is fed at 1.0 L/min having a concentration of “B” of 50 mmol/L. “A” and “B” react according to the following:



However, because “A” is always in great excess in this system (true?), the rate of reaction depends only on the concentration of “B”:

$$R_A = R_B = -kC_B$$

Find the concentrations of A, B, and C with time, and in particular ten minutes after the feed has commenced. The densities remain the same throughout the process, and the value of k is 0.9 min^{-1} .

(Note: there is no exiting stream, and therefore all the A, B, C stays in the reactor.)