Assignment 2

Problems 1, 2, 3 and 5

1) Baby Hippo is 2.25 years of age

2) Conversion for baby Hippo is 0.395

3) conversion decreases for this autocatalytic reaction where 3 catalysts are used

4) Transient catalyst or semibatch problem
3 problem 27

d) PFR → CSTR

\[ x_{A1} = 0.4, \quad 24 = (x_{A2} - 0.4) \cdot [(x_{A2} - 0.6) \cdot 80 - 60] \]

\[ x_{A2} = 0.64 \]

e) CSTR → PFR

\[ 0.4 \cdot 60 = 24, \quad x_{A1} = 0.4 \]

\[ 12 = \left[ 60 + (50 + 80) \cdot (x_{A1} - 0.6) \right] \cdot (x_{A2} - 0.6) \]

\[ x_{A2} = 0.85 \quad (0.9 \text{ if use } C, R) \]