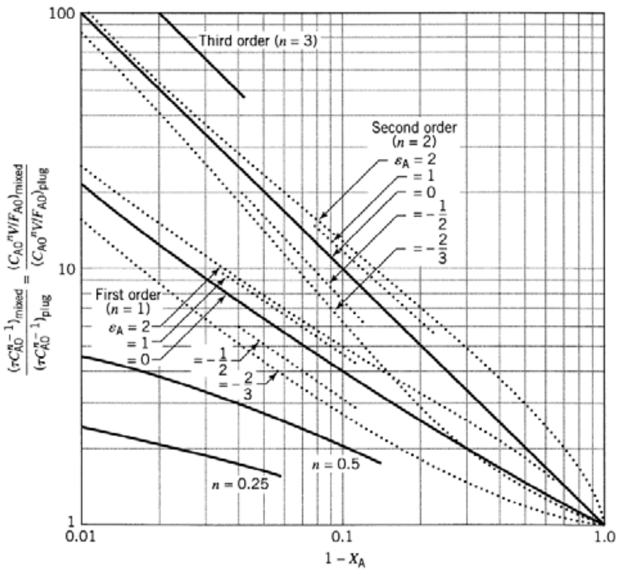
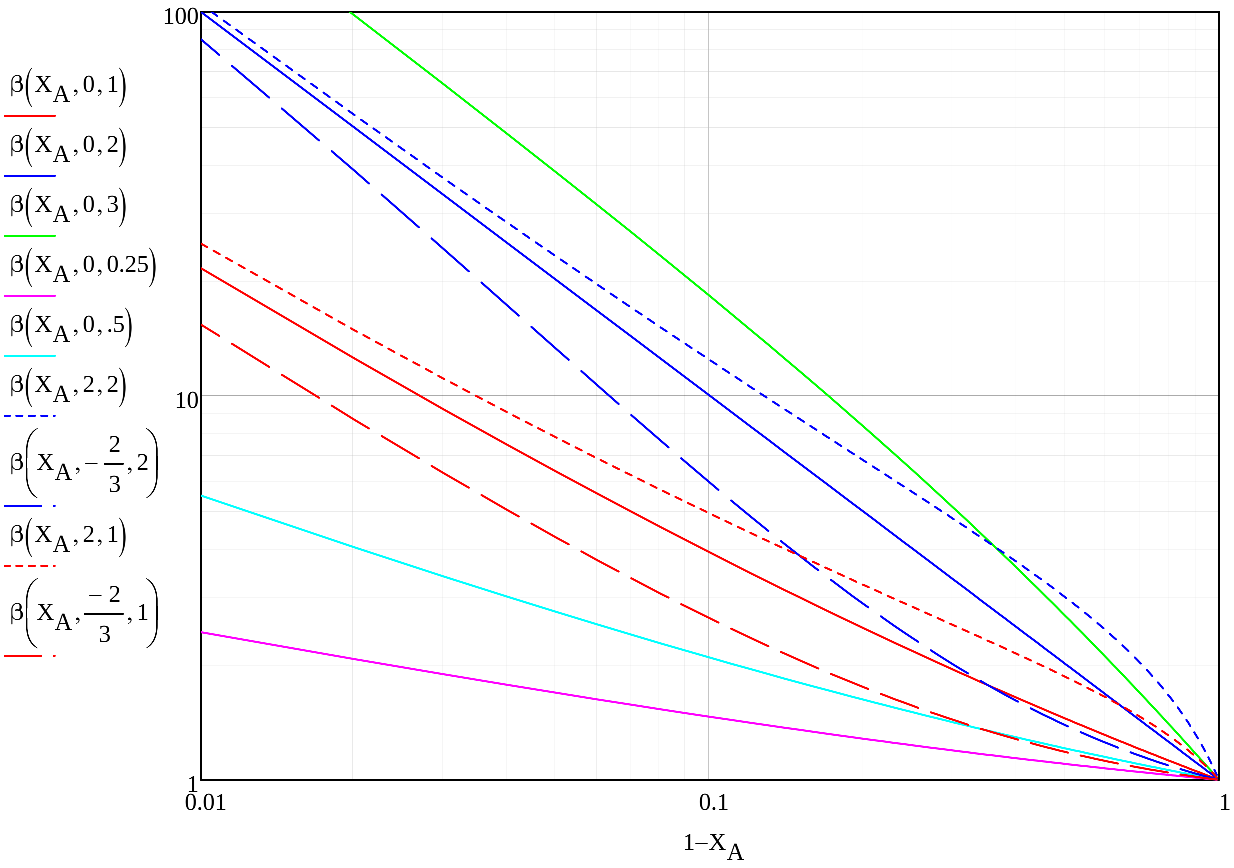
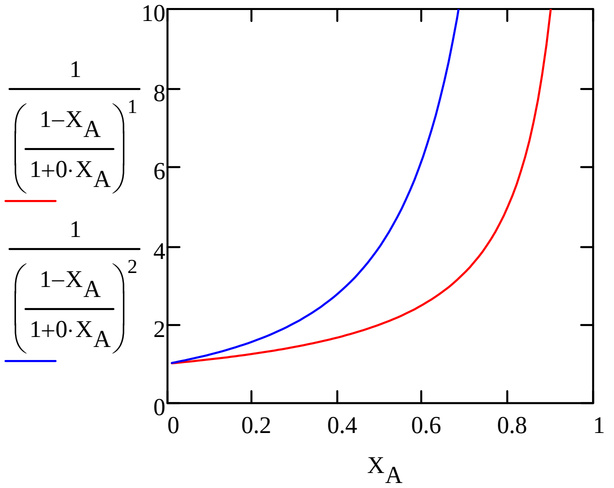


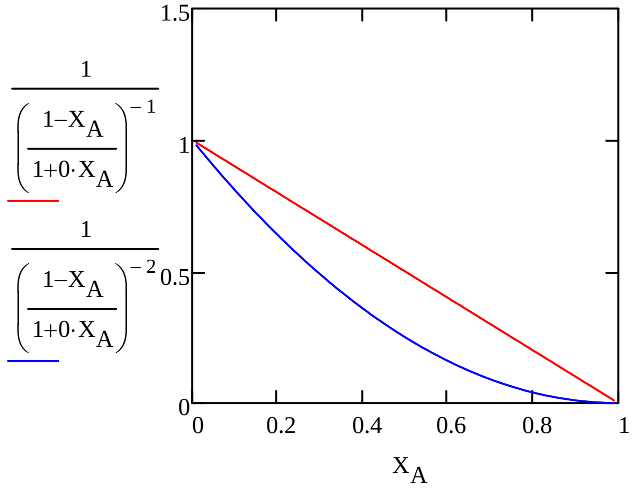
$$X_A := 0.01, 0.02 .. 1$$

$$\beta(X_A, \varepsilon_A, n) := \frac{X_A \cdot \left(\dfrac{1 + \varepsilon_A \cdot X_A}{1 - X_A}\right)^n}{\displaystyle\int_0^{X_A} \left(\dfrac{1 + \varepsilon_A \cdot X°_A}{1 - X°_A}\right)^n dX°_A}$$

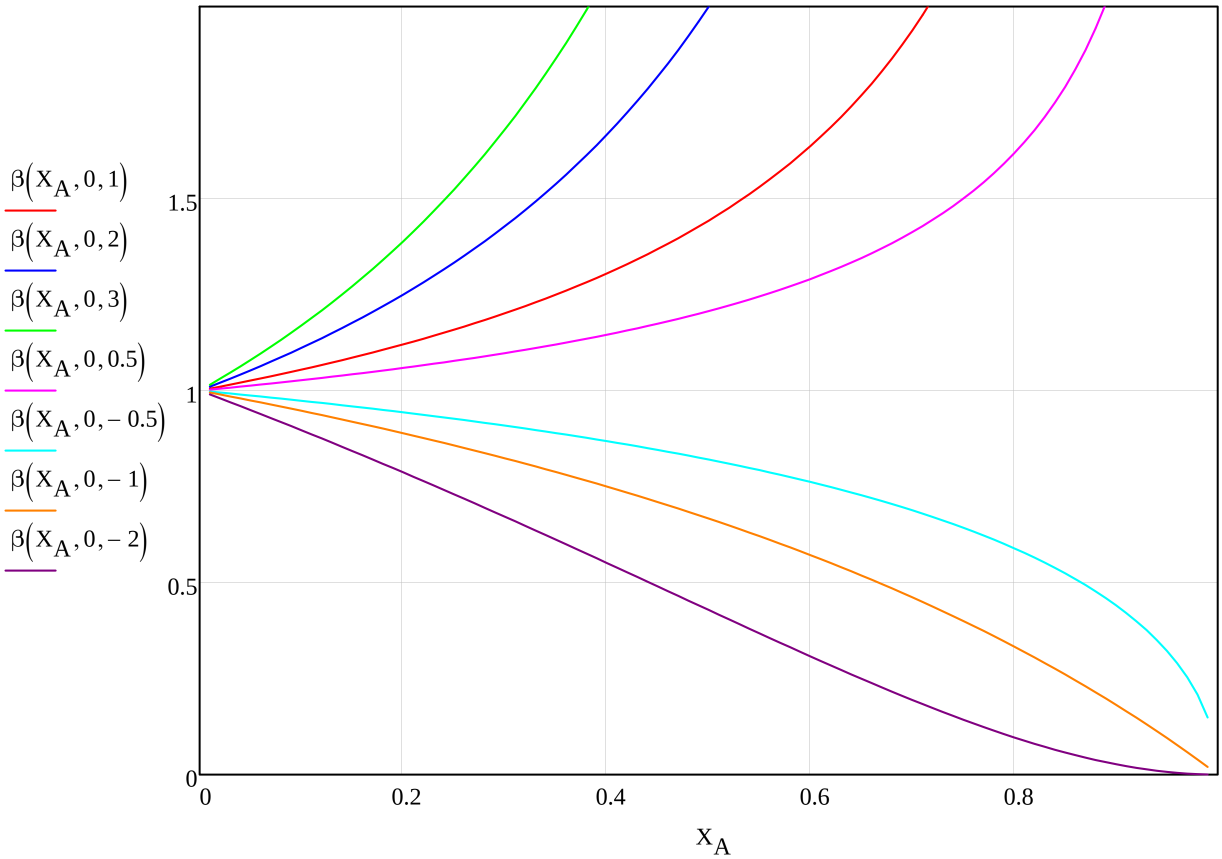




$\frac{1}{\left(\frac{1-X_A}{1+0\cdot X_A}\right)^{1}}$
$\frac{1}{\left(\frac{1-X_A}{1+0\cdot X_A}\right)^{2}}$
0
2
4
6
8
10
0
0.2
0.4
0.6
0.8
1
X_A



$\frac{1}{\left(\frac{1-X_A}{1+0\cdot X_A}\right)^{-1}}$
$\frac{1}{\left(\frac{1-X_A}{1+0\cdot X_A}\right)^{-2}}$
0
0.5
1
1.5
0
0.2
0.4
0.6
0.8
1
X_A



$\beta(X_A, 0, 1)$
$\beta(X_A, 0, 2)$
$\beta(X_A, 0, 3)$
$\beta(X_A, 0, 0.5)$
$\beta(X_A, 0, -0.5)$
$\beta(X_A, 0, -1)$
$\beta(X_A, 0, -2)$
0
0.5
1
1.5
0
0.2
0.4
0.6
0.8
X_A

$$\tau_{N\,\text{reactors}} = N\tau_i = \frac{N}{k}\left[\left(\frac{C_0}{C_N}\right)^{1/N} - 1\right]$$

$$\tau_p = \frac{1}{k}\ln\frac{C_0}{C}$$

$$k\tau_p(X_A) := \ln\left(\frac{1}{1 - X_A}\right)$$

$$k\tau_N(X_A, N) := N\cdot\left[\left(\frac{1}{1 - X_A}\right)^{\frac{1}{N}} - 1\right]$$

$j := 0..6 \quad k := 0..5 \qquad n := 1..65$

$N_j :=$

1
2
3
4
6
10
500

$k\tau_k :=$

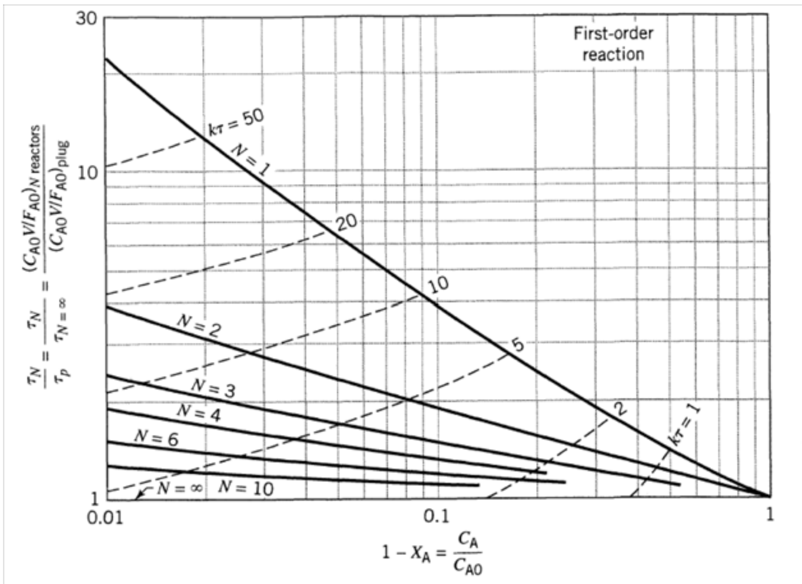
1
2
5
10
20
50

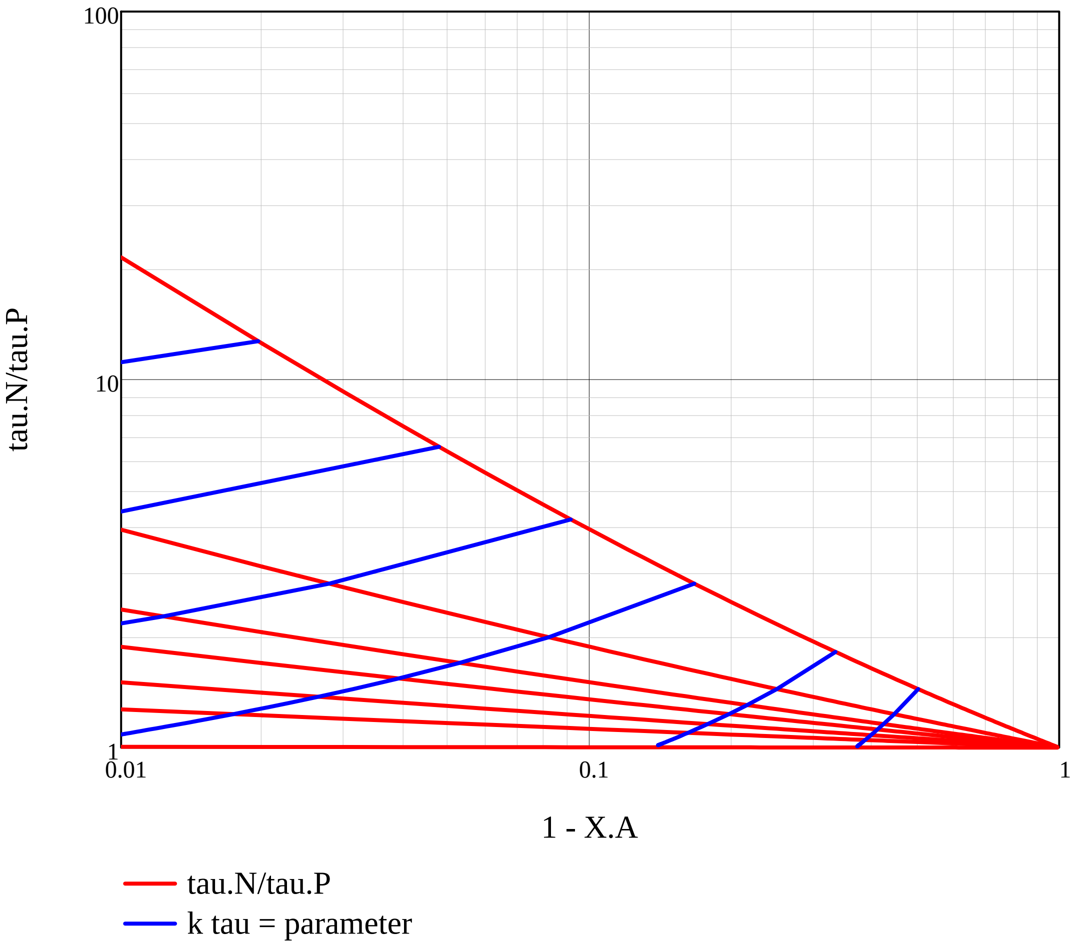
$$x(k\tau, N) := 1 - \left(\frac{k\tau}{N} + 1\right)^{-N}$$

$$X_{n,k} := 1 - x\left(k\tau_k, n\right)$$

$$Y_{n,k} := \frac{k\tau_N\left(x\left(k\tau_k, n\right), n\right)}{k\tau_p\left(x\left(k\tau_k, n\right)\right)}$$

$X_A := 0, 0.01..1$





$$f_N(k\tau C_0, N) := \left| \begin{array}{l} f_1 \leftarrow \dfrac{-2 + 2\cdot\sqrt{1 + 4\cdot k\tau C_0}}{4\cdot k\tau C_0} \\ \left(\begin{array}{l} \text{for } i \in 2..N \\ \quad f_i \leftarrow \dfrac{-2 + 2\cdot\sqrt{1 + 4\cdot k\tau C_0\cdot f_{i-1}}}{4\cdot k\tau C_0} \end{array} \right) \text{ if } N > 1 \\ f_N \end{array} \right.$$

$$C_N = \frac{1}{4k\tau_i}\left(-2 + 2\sqrt{-1 \cdots + 2\sqrt{-1 + 2\sqrt{1 + 4C_0 k\tau_i}}}\ \right\}N\Bigg)$$

$$\frac{C_0}{C} = 1 + C_0 k\tau_p$$

$$kC0\tau_N(X_A, N) := N\cdot \left| \begin{array}{l} y \leftarrow 0.01 \\ \text{root}\left[f_N(y, N) - (1 - X_A), y\right] \end{array} \right.$$

$n := 1..100 \qquad k := 0..9$

$$f_P(k\tau C_0) := \frac{1}{1 + k\tau C_0}$$

$N_j =$

1
2
3
4
6
10
500

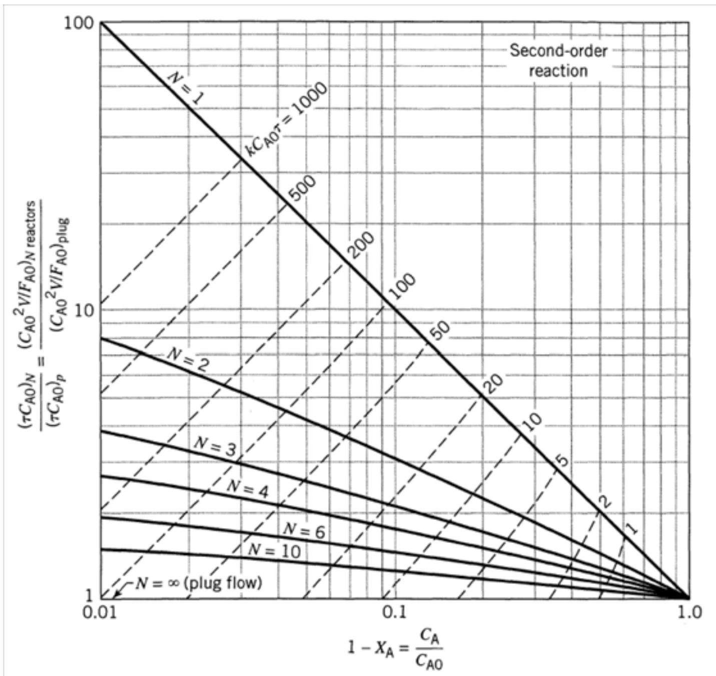
$k\tau C_{0_k} :=$

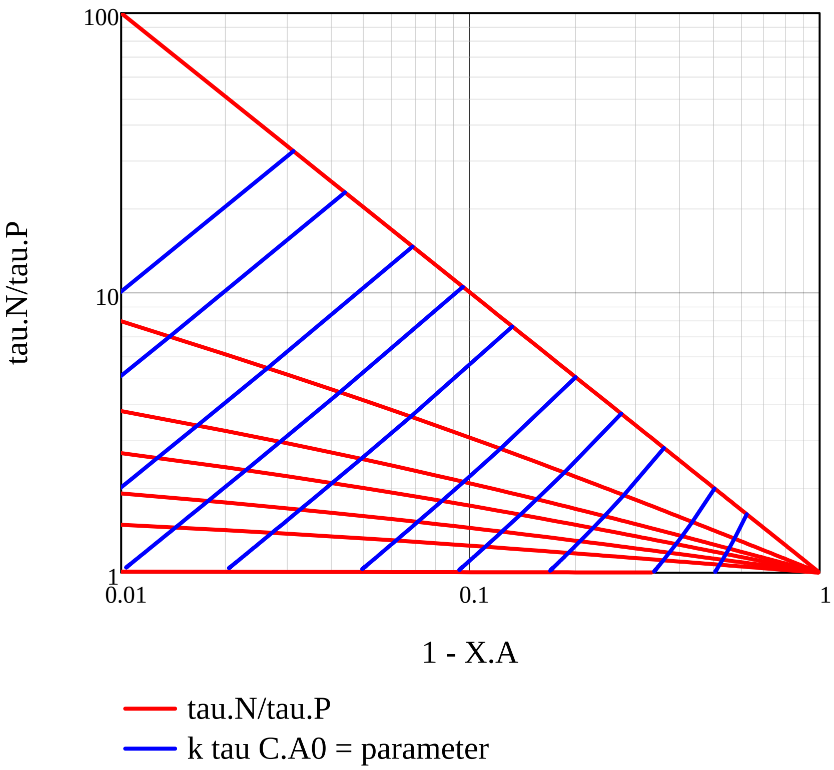
1
2
5
10
20
50
100
200
500
1000

$$kC0\tau_P(X_A) := \frac{X_A}{1 - X_A}$$

$$X_{n,k} := f_N\left(\frac{k\tau C_{0_k}}{n}, n\right)$$

$$Y_{n,k} := \frac{kC0\tau_N\left(1 - f_N\left(\frac{k\tau C_{0_k}}{n}, n\right), n\right)}{kC0\tau_P\left(1 - f_N\left(\frac{k\tau C_{0_k}}{n}, n\right)\right)}$$





$$\frac{k\tau}{R+1} = \ln\left[\frac{C_{A0}+RC_{Af}}{(R+1)C_{Af}}\right]$$

$X_A := 0.01, 0.02 .. 1$

$k\tau_R(X_A, R) := \text{if}\left[X_A \neq 1, (R+1)\cdot\ln\left[\frac{1+R\cdot(1-X_A)}{(R+1)\cdot(1-X_A)}\right], 1\right]$ $\quad k\tau_p(X_A) := \text{if}\left(X_A = 1, 1, \ln\left(\frac{1}{1-X_A}\right)\right)$

$x(k\tau_R, R) := \frac{(1+R)\cdot\left(\exp\left(\frac{k\tau_R}{R+1}\right)-1\right)}{(1+R)\cdot\exp\left(\frac{k\tau_R}{R+1}\right)-R}$

$X := 0 \quad Y := 0$

$r := 0 .. 1000 \quad k := 0 .. 5$

$X_{r,k} := 1 - x(k\tau R_k, r) \quad Y_{r,k} := \frac{k\tau_R(x(k\tau R_k, r), r)}{k\tau_p(x(k\tau R_k, r))}$

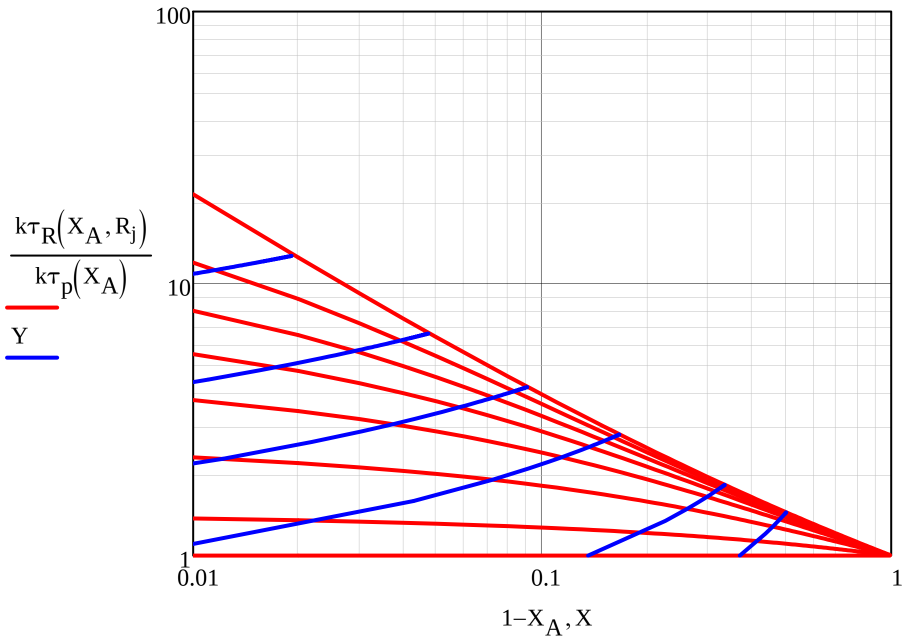
$j := 0 .. 7$

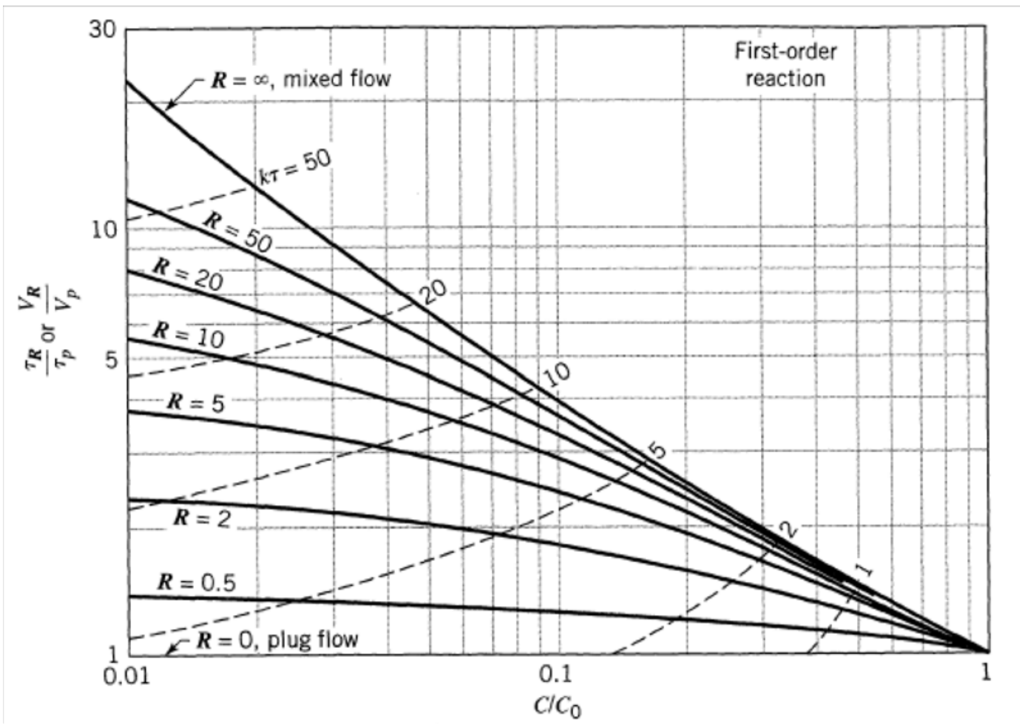
$R_j :=$

0
0.5
2
5
10
20
50
5000

$k\tau R_k :=$

1
2
5
10
20
50





$$kCA0\tau_R(X_A, R) := \text{if}\left[X_A = 1, 1, (R+1)\cdot\left[\frac{X_A}{(1-X_A)\cdot[1+R\cdot(1-X_A)]}\right]\right]$$

$$\frac{kC_{A0}\tau}{R+1} = \frac{C_{A0}(C_{A0}-C_{Af})}{C_{Af}(C_{A0}+RC_{Af})}$$

$$kC0\tau_P(X_A) := \text{if}\left(X_A = 1, 1, \frac{X_A}{1-X_A}\right) \qquad X := 0 \qquad Y := 0$$

$$k := 0..9 \qquad r := 0..1000 \qquad \varepsilon := 10^{-5}$$

$kC0\tau R_k :=$

0
1
2
5
10
20
50
100
200
500

$$x(kC0\tau R, R) := \left| \begin{array}{l} A \leftarrow \dfrac{kC0\tau R}{R+1} \\ 1 - \dfrac{-(A+1)+\sqrt{(A+1)^2+4\cdot A\cdot R}}{2\cdot A\cdot R} \end{array} \right.$$

$$X_{r,k} := 1 - x(kC0\tau R_k, r+\varepsilon)$$

$$Y_{r,k} := \frac{kCA0\tau_R\left(x(kC0\tau R_k, r+\varepsilon), r+\varepsilon\right)}{kC0\tau_P\left(x(kC0\tau R_k, r+\varepsilon)\right)}$$