$$> \quad la1 := -\frac{1\cdot\left((k01+k21+k12)-\left((k01+k21+k12)^2-4\cdot k01\cdot k12\right)^{0.5}\right)}{2}$$

$$la1 := -\frac{1}{2}\,k01-\frac{1}{2}\,k21-\frac{1}{2}\,k12+\frac{1}{2}\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5} \tag{1}$$

$$> \quad la2 := -\frac{1\cdot\left((k01+k21+k12)+\left((k01+k21+k12)^2-4\cdot k01\cdot k12\right)^{0.5}\right)}{2}$$

$$la2 := -\frac{1}{2}\,k01-\frac{1}{2}\,k21-\frac{1}{2}\,k12-\frac{1}{2}\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5} \tag{2}$$

$$> \quad a := \frac{(k01+k21+la1)}{k12}$$

$$a := \frac{\frac{1}{2}\,k01+\frac{1}{2}\,k21-\frac{1}{2}\,k12+\frac{1}{2}\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}}{k12} \tag{3}$$

$$> \quad b := \frac{k21}{(k12+la2)}$$

$$b := \frac{k21}{\frac{1}{2}\,k12-\frac{1}{2}\,k01-\frac{1}{2}\,k21-\frac{1}{2}\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}} \tag{4}$$

$$> \quad x1s := \frac{\left(\frac{Dose}{\tau}\right)}{k01}$$

$$x1s := \frac{Dose}{\tau\,k01} \tag{5}$$

$$> \quad x2s := x1s\cdot\left(\frac{k21}{k12}\right)$$

$$x2s := \frac{Dose\,k21}{\tau\,k01\,k12} \tag{6}$$

$$> \quad y1s := \frac{\rho}{k01}$$

$$y1s := \frac{\rho}{k01} \tag{7}$$

$$> \quad y2s := y1s\cdot\left(\frac{k21}{k12}\right)$$

$$y2s := \frac{\rho\,k21}{k01\,k12} \tag{8}$$

$$> \quad M1 := \frac{((x10-x1s)\cdot b-(x20-x2s))}{(b-a)}$$

$$M1 := \left(\frac{\left(x10-\frac{Dose}{\tau\,k01}\right)k21}{\frac{1}{2}\,k12-\frac{1}{2}\,k01-\frac{1}{2}\,k21-\frac{1}{2}\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}}-x20\right) \tag{9}$$

$$+\frac{Dose\,k21}{\tau\,k01\,k12}\Bigg)\Bigg/\left(\frac{k21}{\frac{1}{2}\,k12-\frac{1}{2}\,k01-\frac{1}{2}\,k21-\frac{1}{2}\,\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}}-\frac{\frac{1}{2}\,k01+\frac{1}{2}\,k21-\frac{1}{2}\,k12+\frac{1}{2}\,\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}}{k12}\right)$$

> $M2 := \dfrac{((x20-x2s)-(x10-x1s)\cdot a)}{(b-a)}$

$$M2 := \left(x20-\frac{Dose\,k21}{\tau\,k01\,k12}-\frac{1}{k12}\left(\left(x10-\frac{Dose}{\tau\,k01}\right)\left(\frac{1}{2}\,k01+\frac{1}{2}\,k21-\frac{1}{2}\,k12+\frac{1}{2}\,\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}\right)\right)\right)\Bigg/\left(\frac{k21}{\frac{1}{2}\,k12-\frac{1}{2}\,k01-\frac{1}{2}\,k21-\frac{1}{2}\,\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}}-\frac{\frac{1}{2}\,k01+\frac{1}{2}\,k21-\frac{1}{2}\,k12+\frac{1}{2}\,\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}}{k12}\right) \tag{10}$$

> $x1tau := M1\cdot\exp(la1\cdot\tau)+M2\cdot\exp(la2\cdot\tau)+x1s$

$$x1tau := \left(\left(\frac{\left(x10-\frac{Dose}{\tau\,k01}\right)k21}{\frac{1}{2}\,k12-\frac{1}{2}\,k01-\frac{1}{2}\,k21-\frac{1}{2}\,\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}}-x20+\frac{Dose\,k21}{\tau\,k01\,k12}\right)e^{\left(-\frac{1}{2}\,k01-\frac{1}{2}\,k21-\frac{1}{2}\,k12+\frac{1}{2}\,\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}\right)\tau}\right)\Bigg/$$

$$\left(\frac{k21}{\frac{1}{2}\,k12 - \frac{1}{2}\,k01 - \frac{1}{2}\,k21 - \frac{1}{2}\,\left((k01+k21+k12)^2 - 4\,k01\,k12\right)^{0.5}} - \frac{\frac{1}{2}\,k01 + \frac{1}{2}\,k21 - \frac{1}{2}\,k12 + \frac{1}{2}\,\left((k01+k21+k12)^2 - 4\,k01\,k12\right)^{0.5}}{k12} \right)$$

$$+ \left(\left(x20 - \frac{Dose\,k21}{\tau\,k01\,k12} - \frac{\left(x10 - \frac{Dose}{\tau\,k01}\right)\left(\frac{1}{2}\,k01 + \frac{1}{2}\,k21 - \frac{1}{2}\,k12 + \frac{1}{2}\,\left((k01+k21+k12)^2 - 4\,k0\right.\right.\right.}{k12}$$

$$\left(\frac{k21}{\frac{1}{2}\,k12 - \frac{1}{2}\,k01 - \frac{1}{2}\,k21 - \frac{1}{2}\,\left((k01+k21+k12)^2 - 4\,k01\,k12\right)^{0.5}} - \frac{\frac{1}{2}\,k01 + \frac{1}{2}\,k21 - \frac{1}{2}\,k12 + \frac{1}{2}\,\left((k01+k21+k12)^2 - 4\,k01\,k12\right)^{0.5}}{k12} \right) + \frac{Dose}{\tau\,k01}$$

```
> x2tau := M1·a·exp(la1·τ) + M2·b·exp(la2·τ) + x2s
```

$$x2tau := \left(\left(\left(\frac{\left(x10 - \frac{Dose}{\tau\,k01}\right)k21}{\frac{1}{2}\,k12 - \frac{1}{2}\,k01 - \frac{1}{2}\,k21 - \frac{1}{2}\,\left((k01+k21+k12)^2 - 4\,k01\,k12\right)^{0.5}} - x20 + \frac{Dose\,k21}{\tau\,k01\,k12} \right)\left(\frac{1}{2}\,k01 + \frac{1}{2}\,k21 - \frac{1}{2}\,k12 + \frac{1}{2}\,\left((k01+k21+k12)^2 - 4\,k01\,k12\right)^{0.5}\right) e^{\left(-\frac{1}{2}\,k01 - \frac{1}{2}\,k21 - \frac{1}{2}\,k12 + \frac{1}{2}\,\left((k01+k21+k12)^2 - 4\,k01\,k12\right)^{0.5}\right)\tau} \right) \Bigg/ \left(\left(\frac{k21}{\frac{1}{2}\,k12 - \frac{1}{2}\,k01 - \frac{1}{2}\,k21 - \frac{1}{2}\,\left((k01+k21+k12)^2 - 4\,k01\,k12\right)^{0.5}} - \frac{\frac{1}{2}\,k01 + \frac{1}{2}\,k21 - \frac{1}{2}\,k12 + \frac{1}{2}\,\left((k01+k21+k12)^2 - 4\,k01\,k12\right)^{0.5}}{k12} \right) k12 \right)$$

$$+\left(\left(x20-\frac{Dose\,k21}{\tau\,k01\,k12}-\frac{\left(x10-\frac{Dose}{\tau\,k01}\right)\left(\frac{1}{2}\,k01+\frac{1}{2}\,k21-\frac{1}{2}\,k12+\frac{1}{2}\left((k01+k21+k12)^2-4\,k0\right.\right.\right.}{k12}$$

$$\left(\left(\frac{k21}{\frac{1}{2}\,k12-\frac{1}{2}\,k01-\frac{1}{2}\,k21-\frac{1}{2}\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}}\right.\right.$$

$$\left.\left.-\frac{\frac{1}{2}\,k01+\frac{1}{2}\,k21-\frac{1}{2}\,k12+\frac{1}{2}\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}}{k12}\right)\left(\frac{1}{2}\,k12\right.\right.$$

$$\left.\left.-\frac{1}{2}\,k01-\frac{1}{2}\,k21-\frac{1}{2}\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}\right)\right)+\frac{Dose\,k21}{\tau\,k01\,k12}$$

> $N1 := \dfrac{\left((x1tau-y1s)\cdot b-\dfrac{(x2tau-y2s)}{1}\right)}{(b-a)}$

$$N1 := \left(\left(\left(\left(\left(\frac{\left(x10-\frac{Dose}{\tau\,k01}\right)k21}{\frac{1}{2}\,k12-\frac{1}{2}\,k01-\frac{1}{2}\,k21-\frac{1}{2}\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}}-x20\right.\right.\right.\right.\right.$$

$$\left.\left.\left.\left.\left.+\frac{Dose\,k21}{\tau\,k01\,k12}\right)e^{\left(-\frac{1}{2}\,k01-\frac{1}{2}\,k21-\frac{1}{2}\,k12+\frac{1}{2}\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}\right)\tau}\right)\right/\right.$$

$$\left(\frac{k21}{\frac{1}{2}\,k12-\frac{1}{2}\,k01-\frac{1}{2}\,k21-\frac{1}{2}\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}}\right.$$

$$-\frac{\frac{1}{2}\,k01+\frac{1}{2}\,k21-\frac{1}{2}\,k12+\frac{1}{2}\,\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}}{k12}\Bigg)$$

$$+\Bigg(\Bigg(x20-\frac{Dose\,k21}{\tau\,k01\,k12}-\frac{\left(x10-\frac{Dose}{\tau\,k01}\right)\left(\frac{1}{2}\,k01+\frac{1}{2}\,k21-\frac{1}{2}\,k12+\frac{1}{2}\,\left((k01+k21+k12)^2-4\,k0\right.}{k12}$$

$$\left(\frac{k21}{\frac{1}{2}\,k12-\frac{1}{2}\,k01-\frac{1}{2}\,k21-\frac{1}{2}\,\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}}\right.$$

$$\left.-\frac{\frac{1}{2}\,k01+\frac{1}{2}\,k21-\frac{1}{2}\,k12+\frac{1}{2}\,\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}}{k12}\right)+\frac{Dose}{\tau\,k01}$$

$$\left.-\frac{\rho}{k01}\right)k21\Bigg)\Bigg/\left(\frac{1}{2}\,k12-\frac{1}{2}\,k01-\frac{1}{2}\,k21-\frac{1}{2}\,\left((k01+k21+k12)^2\right.\right.$$

$$-4\,k01\,k12\Big)^{0.5}\Big)$$

$$-\left(\left(\left(\frac{\left(x10-\frac{Dose}{\tau\,k01}\right)k21}{\frac{1}{2}\,k12-\frac{1}{2}\,k01-\frac{1}{2}\,k21-\frac{1}{2}\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}}-x20+\frac{Dose\,k21}{\tau\,k01\,k12}\right)\left(\frac{1}{2}\,k\right.\right.\right.$$

$$\left.\left.\left.-4\,k01\,k12\right)^{0.5}\right)e^{\left(-\frac{1}{2}\,k01-\frac{1}{2}\,k21-\frac{1}{2}\,k12+\frac{1}{2}\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}\right)\tau}\right)\Bigg/$$

$$\left(\left(\left(\frac{k21}{\frac{1}{2}\,k12-\frac{1}{2}\,k01-\frac{1}{2}\,k21-\frac{1}{2}\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}}\right.\right.\right.$$

$$\left.\left.\left.-\frac{\frac{1}{2}\,k01+\frac{1}{2}\,k21-\frac{1}{2}\,k12+\frac{1}{2}\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}}{k12}\right)k12\right)$$

$$-\left(\left(\left(x20-\frac{Dose\,k21}{\tau\,k01\,k12}-\frac{\left(x10-\frac{Dose}{\tau\,k01}\right)\left(\frac{1}{2}\,k01+\frac{1}{2}\,k21-\frac{1}{2}\,k12+\frac{1}{2}\left((k01+k21+k12)^2-4\,k0\right.\right.\right.\right.\right.$$

$$\left.\left.\left.\left.\left.k12\right.\right.\right.\right.\right.$$

$$\left(\left(\frac{k21}{\frac{1}{2}\,k12-\frac{1}{2}\,k01-\frac{1}{2}\,k21-\frac{1}{2}\,\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}}-\frac{\frac{1}{2}\,k01+\frac{1}{2}\,k21-\frac{1}{2}\,k12+\frac{1}{2}\,\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}}{k12}\right)\left(\frac{1}{2}\,k12-\frac{1}{2}\,k01-\frac{1}{2}\,k21-\frac{1}{2}\,\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}\right)-\frac{Dose\,k21}{\tau\,k01\,k12}\right)\Bigg/\left(\frac{k21}{\frac{1}{2}\,k12-\frac{1}{2}\,k01-\frac{1}{2}\,k21-\frac{1}{2}\,\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}}-\frac{\frac{1}{2}\,k01+\frac{1}{2}\,k21-\frac{1}{2}\,k12+\frac{1}{2}\,\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}}{k12}\right)+\frac{\rho\,k21}{k01\,k12}\right)$$

> $N2 := \dfrac{\left((x2tau-y2s)-\dfrac{(x1tau-y1s)\cdot a}{1}\right)}{(b-a)}$

$$N2 := \left(\left(\left(\frac{\left(x10 - \frac{Dose}{\tau \, k01} \right) k21}{\frac{1}{2} k12 - \frac{1}{2} k01 - \frac{1}{2} k21 - \frac{1}{2} \left((k01 + k21 + k12)^2 - 4 \, k01 \, k12 \right)^{0.5}} - x20 \right. \right. \right.$$

$$\left. \left. \left. + \frac{Dose \, k21}{\tau \, k01 \, k12} \right) \left(\frac{1}{2} k01 + \frac{1}{2} k21 - \frac{1}{2} k12 + \frac{1}{2} \left((k01 + k21 + k12)^2 \right. \right. \right.$$

$$\left. \left. \left. - 4 \, k01 \, k12 \right)^{0.5} \right) e^{\left(-\frac{1}{2} k01 - \frac{1}{2} k21 - \frac{1}{2} k12 + \frac{1}{2} \left((k01 + k21 + k12)^2 - 4 \, k01 \, k12 \right)^{0.5} \right) \tau} \right) \Big/$$

$$\left(\left(\frac{k21}{\frac{1}{2}\,k12-\frac{1}{2}\,k01-\frac{1}{2}\,k21-\frac{1}{2}\,\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}}\right.\right.$$

$$\left.\left.-\frac{\frac{1}{2}\,k01+\frac{1}{2}\,k21-\frac{1}{2}\,k12+\frac{1}{2}\,\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}}{k12}\right)k12\right)$$

$$+\left(\left(x20-\frac{Dose\,k21}{\tau\,k01\,k12}-\frac{\left(x10-\frac{Dose}{\tau\,k01}\right)\left(\frac{1}{2}\,k01+\frac{1}{2}\,k21-\frac{1}{2}\,k12+\frac{1}{2}\,\left((k01+k21+k12)^2-4\,k0\right.\right.\right.$$

$$\left.\left.\left.\vphantom{\frac{1}{2}}\right)\right)}{k12}\right)$$

$$\left(\left(\frac{k21}{\frac{1}{2}\,k12-\frac{1}{2}\,k01-\frac{1}{2}\,k21-\frac{1}{2}\,\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}}\right.\right.$$

$$-\frac{\frac{1}{2}\,k01+\frac{1}{2}\,k21-\frac{1}{2}\,k12+\frac{1}{2}\,\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}}{k12}\Bigg)\left(\frac{1}{2}\,k12\right.$$

$$\left.-\frac{1}{2}\,k01-\frac{1}{2}\,k21-\frac{1}{2}\,\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}\right)\Bigg)+\frac{Dose\,k21}{\tau\,k01\,k12}$$

$$-\frac{\rho\,k21}{k01\,k12}$$

$$-\frac{1}{k12}\left(\left(\left(\left(\left(\frac{\left(x10-\frac{Dose}{\tau\,k01}\right)k21}{\frac{1}{2}\,k12-\frac{1}{2}\,k01-\frac{1}{2}\,k21-\frac{1}{2}\,\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}}\right.\right.\right.\right.$$

$$\left.\left.\left.\left.-x20+\frac{Dose\,k21}{\tau\,k01\,k12}\right)e^{\left(-\frac{1}{2}\,k01-\frac{1}{2}\,k21-\frac{1}{2}\,k12+\frac{1}{2}\,\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}\right)\tau}\right)\right/$$

$$\left(\frac{k21}{\frac{1}{2}\,k12 - \frac{1}{2}\,k01 - \frac{1}{2}\,k21 - \frac{1}{2}\,\left((k01 + k21 + k12)^2 - 4\,k01\,k12\right)^{0.5}} \right.$$

$$\left. - \frac{\frac{1}{2}\,k01 + \frac{1}{2}\,k21 - \frac{1}{2}\,k12 + \frac{1}{2}\,\left((k01 + k21 + k12)^2 - 4\,k01\,k12\right)^{0.5}}{k12} \right)$$

$$+ \left(\left(x20 - \frac{Dose\,k21}{\tau\,k01\,k12} - \frac{\left(x10 - \frac{Dose}{\tau\,k01}\right)\left(\frac{1}{2}\,k01 + \frac{1}{2}\,k21 - \frac{1}{2}\,k12 + \frac{1}{2}\,\left((k01 + k21 + k12)^2 - 4\,k0\right.\right.}{k12} \right.$$

$$\left(\frac{k21}{\frac{1}{2}\,k12 - \frac{1}{2}\,k01 - \frac{1}{2}\,k21 - \frac{1}{2}\,\left((k01 + k21 + k12)^2 - 4\,k01\,k12\right)^{0.5}} \right.$$

$$\left. \left. - \frac{\frac{1}{2}\,k01 + \frac{1}{2}\,k21 - \frac{1}{2}\,k12 + \frac{1}{2}\,\left((k01 + k21 + k12)^2 - 4\,k01\,k12\right)^{0.5}}{k12} \right) + \frac{Dose}{\tau\,k01} \right.$$

$$\left. \left. - \frac{\rho}{k01} \right) \left(\frac{1}{2}\,k01 + \frac{1}{2}\,k21 - \frac{1}{2}\,k12 + \frac{1}{2}\,\left((k01 + k21 + k12)^2 - 4\,k01\,k12\right)^{0.5} \right) \right) \right)$$

$$\left(\frac{k21}{\frac{1}{2}\,k12 - \frac{1}{2}\,k01 - \frac{1}{2}\,k21 - \frac{1}{2}\left((k01 + k21 + k12)^2 - 4\,k01\,k12\right)^{0.5}} - \frac{\frac{1}{2}\,k01 + \frac{1}{2}\,k21 - \frac{1}{2}\,k12 + \frac{1}{2}\left((k01 + k21 + k12)^2 - 4\,k01\,k12\right)^{0.5}}{k12} \right)$$

> $eq1 := N1 = 190.862$

$$eq1 := \left(\left(\left(\left(\left(\frac{\left(x10 - \frac{Dose}{\tau\,k01}\right) k21}{\frac{1}{2}\,k12 - \frac{1}{2}\,k01 - \frac{1}{2}\,k21 - \frac{1}{2}\left((k01 + k21 + k12)^2 - 4\,k01\,k12\right)^{0.5}} - x20 \right) + \frac{Dose\,k21}{\tau\,k01\,k12} \right) e^{\left(-\frac{1}{2}\,k01 - \frac{1}{2}\,k21 - \frac{1}{2}\,k12 + \frac{1}{2}\left((k01 + k21 + k12)^2 - 4\,k01\,k12\right)^{0.5}\right)\tau} \right) \Big/ \left(\frac{k21}{\frac{1}{2}\,k12 - \frac{1}{2}\,k01 - \frac{1}{2}\,k21 - \frac{1}{2}\left((k01 + k21 + k12)^2 - 4\,k01\,k12\right)^{0.5}} - \frac{\frac{1}{2}\,k01 + \frac{1}{2}\,k21 - \frac{1}{2}\,k12 + \frac{1}{2}\left((k01 + k21 + k12)^2 - 4\,k01\,k12\right)^{0.5}}{k12} \right) \right)$$

$$+\left(\left(\left(x20-\frac{Dose\,k21}{\tau\,k01\,k12}-\frac{\left(x10-\frac{Dose}{\tau\,k01}\right)\left(\frac{1}{2}\,k01+\frac{1}{2}\,k21-\frac{1}{2}\,k12+\frac{1}{2}\left((k01+k21+k12)^2-4\,k0\right.\right.\right.\right.$$

$$\left.\left.\left.\left.\frac{k21}{\frac{1}{2}\,k12-\frac{1}{2}\,k01-\frac{1}{2}\,k21-\frac{1}{2}\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}}\right.\right.\right.\right.$$

$$\left.\left.\left.\left.-\frac{\frac{1}{2}\,k01+\frac{1}{2}\,k21-\frac{1}{2}\,k12+\frac{1}{2}\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}}{k12}\right.\right.\right.\right)+\frac{Dose}{\tau\,k01}$$

$$\left.\left.-\frac{\rho}{k01}\right)k21\right)\Big/\left(\frac{1}{2}\,k12-\frac{1}{2}\,k01-\frac{1}{2}\,k21-\frac{1}{2}\left((k01+k21+k12)^2\right.\right.$$

$$\left.\left.-4\,k01\,k12\right)^{0.5}\right)$$

$$-\left(\left(\left(\frac{\left(x10-\frac{Dose}{\tau\, k01}\right) k21}{\frac{1}{2}\, k12-\frac{1}{2}\, k01-\frac{1}{2}\, k21-\frac{1}{2}\left((k01+k21+k12)^2-4\, k01\, k12\right)^{0.5}}-x20+\frac{Dose\, k21}{\tau\, k01\, k12}\right)\left(\frac{1}{2}\, k\right.\right.\right.$$

$$\left.\left.\left.-4\, k01\, k12\right)^{0.5}\right) e^{\left(-\frac{1}{2}\, k01-\frac{1}{2}\, k21-\frac{1}{2}\, k12+\frac{1}{2}\left((k01+k21+k12)^2-4\, k01\, k12\right)^{0.5}\right)\tau}\right)\Bigg/$$

$$\left(\left(\left(\frac{k21}{\frac{1}{2}\, k12-\frac{1}{2}\, k01-\frac{1}{2}\, k21-\frac{1}{2}\left((k01+k21+k12)^2-4\, k01\, k12\right)^{0.5}}\right.\right.\right.$$

$$\left.\left.\left.-\frac{\frac{1}{2}\, k01+\frac{1}{2}\, k21-\frac{1}{2}\, k12+\frac{1}{2}\left((k01+k21+k12)^2-4\, k01\, k12\right)^{0.5}}{k12}\right) k12\right)$$

$$-\left(\left(\left(x20-\frac{Dose\, k21}{\tau\, k01\, k12}-\frac{\left(x10-\frac{Dose}{\tau\, k01}\right)\left(\frac{1}{2}\, k01+\frac{1}{2}\, k21-\frac{1}{2}\, k12+\frac{1}{2}\left((k01+k21+k12)^2-4\, k\right.\right.\right.\right.\right.$$

$$\left(\left(\left(\frac{k21}{\frac{1}{2}\, k12-\frac{1}{2}\, k01-\frac{1}{2}\, k21-\frac{1}{2}\left((k01+k21+k12)^2-4\, k01\, k12\right)^{0.5}}\right.\right.\right.$$

$$\left.\left.\left.-\frac{\frac{1}{2}\, k01+\frac{1}{2}\, k21-\frac{1}{2}\, k12+\frac{1}{2}\left((k01+k21+k12)^2-4\, k01\, k12\right)^{0.5}}{k12}\right)\left(\frac{1}{2}\, k12\right.\right.\right.$$

$$-\frac{1}{2}\,k01-\frac{1}{2}\,k21-\frac{1}{2}\,\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}\Bigg)-\frac{Dose\,k21}{\tau\,k01\,k12}$$

$$+\frac{\rho\,k21}{k01\,k12}\Bigg)\Bigg/\Bigg(\frac{k21}{\frac{1}{2}\,k12-\frac{1}{2}\,k01-\frac{1}{2}\,k21-\frac{1}{2}\,\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}}$$

$$-\frac{\frac{1}{2}\,k01+\frac{1}{2}\,k21-\frac{1}{2}\,k12+\frac{1}{2}\,\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}}{k12}\Bigg)=190.862$$

> $eq2 := N2 = 195.523$

$$eq2 := \Bigg(\Bigg(\Bigg(\frac{\left(x10-\frac{Dose}{\tau\,k01}\right)k21}{\frac{1}{2}\,k12-\frac{1}{2}\,k01-\frac{1}{2}\,k21-\frac{1}{2}\,\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}}-x20$$

$$+\frac{Dose\,k21}{\tau\,k01\,k12}\Bigg)\left(\frac{1}{2}\,k01+\frac{1}{2}\,k21-\frac{1}{2}\,k12+\frac{1}{2}\,\left((k01+k21+k12)^2\right.\right.$$

$$\left.\left.-4\,k01\,k12\right)^{0.5}\right)e^{\left(-\frac{1}{2}\,k01-\frac{1}{2}\,k21-\frac{1}{2}\,k12+\frac{1}{2}\,\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}\right)\tau}\Bigg)\Bigg/$$

$$\left(\left(\frac{k21}{\frac{1}{2}\,k12-\frac{1}{2}\,k01-\frac{1}{2}\,k21-\frac{1}{2}\,\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}}\right.\right.$$

$$- \frac{\frac{1}{2}\, k01 + \frac{1}{2}\, k21 - \frac{1}{2}\, k12 + \frac{1}{2}\, \left((k01 + k21 + k12)^2 - 4\, k01\, k12 \right)^{0.5}}{k12} \Bigg) k12 \Bigg)$$

$$+ \left(\left(x20 - \frac{Dose\, k21}{\tau\, k01\, k12} - \frac{\left(x10 - \frac{Dose}{\tau\, k01} \right) \left(\frac{1}{2}\, k01 + \frac{1}{2}\, k21 - \frac{1}{2}\, k12 + \frac{1}{2}\, \left((k01 + k21 + k12)^2 - 4\, k0 \right.}{k12} \right.$$

$$\left(\left(\frac{k21}{\frac{1}{2}\, k12 - \frac{1}{2}\, k01 - \frac{1}{2}\, k21 - \frac{1}{2}\, \left((k01 + k21 + k12)^2 - 4\, k01\, k12 \right)^{0.5}} \right. \right.$$

$$- \frac{\frac{1}{2}\, k01 + \frac{1}{2}\, k21 - \frac{1}{2}\, k12 + \frac{1}{2}\, \left((k01 + k21 + k12)^2 - 4\, k01\, k12 \right)^{0.5}}{k12} \Bigg) \left(\frac{1}{2}\, k12 \right.$$

$$-\frac{1}{2}\,k01-\frac{1}{2}\,k21-\frac{1}{2}\,\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}\Bigg)\Bigg)+\frac{Dose\,k21}{\tau\,k01\,k12}$$

$$-\frac{\rho\,k21}{k01\,k12}$$

$$-\frac{1}{k12}\Bigg(\Bigg(\Bigg(\Bigg(\Bigg(\frac{\left(x10-\frac{Dose}{\tau\,k01}\right)k21}{\frac{1}{2}\,k12-\frac{1}{2}\,k01-\frac{1}{2}\,k21-\frac{1}{2}\,\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}}$$

$$-x20+\frac{Dose\,k21}{\tau\,k01\,k12}\Bigg)\,e^{\left(-\frac{1}{2}\,k01-\frac{1}{2}\,k21-\frac{1}{2}\,k12+\frac{1}{2}\,\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}\right)\tau}\Bigg)\Bigg/$$

$$\left(\frac{k21}{\frac{1}{2}\,k12-\frac{1}{2}\,k01-\frac{1}{2}\,k21-\frac{1}{2}\,\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}}\right.$$

$$-\frac{\frac{1}{2}\,k01+\frac{1}{2}\,k21-\frac{1}{2}\,k12+\frac{1}{2}\,\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}}{k12}\Bigg)$$

$$+\Bigg(\Bigg(\Bigg(x20-\frac{Dose\,k21}{\tau\,k01\,k12}-\frac{\left(x10-\frac{Dose}{\tau\,k01}\right)\left(\frac{1}{2}\,k01+\frac{1}{2}\,k21-\frac{1}{2}\,k12+\frac{1}{2}\,\left((k01+k21+k12)^2-4\,k0\right.\right.}{k12}$$

$$\left(\frac{k21}{\frac{1}{2}\,k12-\frac{1}{2}\,k01-\frac{1}{2}\,k21-\frac{1}{2}\,\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}}\right.$$

$$\left.-\frac{\frac{1}{2}\,k01+\frac{1}{2}\,k21-\frac{1}{2}\,k12+\frac{1}{2}\,\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}}{k12}\right)+\frac{Dose}{\tau\,k01}$$

$$\left.-\frac{\rho}{k01}\right)\left(\frac{1}{2}\,k01+\frac{1}{2}\,k21-\frac{1}{2}\,k12+\frac{1}{2}\,\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}\right)\Bigg)\Bigg)$$

$$\left(\frac{k21}{\frac{1}{2}\,k12-\frac{1}{2}\,k01-\frac{1}{2}\,k21-\frac{1}{2}\,\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}}\right.$$

$$\left.-\frac{\frac{1}{2}\,k01+\frac{1}{2}\,k21-\frac{1}{2}\,k12+\frac{1}{2}\,\left((k01+k21+k12)^2-4\,k01\,k12\right)^{0.5}}{k12}\right)=195.523$$

> $eq3 := la1 = -6.298\cdot 10^{-3}$

$$eq3 := -\frac{1}{2}\,k01 - \frac{1}{2}\,k21 - \frac{1}{2}\,k12 + \frac{1}{2}\,\left((k01 + k21 + k12)^2 - 4\,k01\,k12\right)^{0.5} = -0.006298000000 \quad \textbf{(17)}$$

> $eq4 := la2 = -0.052$

$$eq4 := -\frac{1}{2}\,k01 - \frac{1}{2}\,k21 - \frac{1}{2}\,k12 - \frac{1}{2}\,\left((k01 + k21 + k12)^2 - 4\,k01\,k12\right)^{0.5} = -0.052 \quad \textbf{(18)}$$

> $Dose := 2500;\ \tau := 1;\ \rho := 0;\ x10 := 0;\ x20 := 0$

$$Dose := 2500$$
$$\tau := 1$$
$$\rho := 0$$
$$x10 := 0$$
$$x20 := 0 \quad \textbf{(19)}$$

> $solve([eq1, eq2, eq3, eq4], [k01, k21, k12])$

$$[\ ] \quad \textbf{(20)}$$

>