$ode1$ $\quad diff(x1(t), t) = D \quad (k01 \quad k21) \, x1(t) \quad k12 \, x2(t), \, diff(x2(t), t) = k21$
$\quad x1(t) \quad k12 \, x2(t)$

$$ode1 := \frac{d}{dt} x1(t) = D \quad (k01 \quad k21)\, x1(t) \quad k12\, x2(t), \frac{d}{dt} x2(t) = k21\, x1(t) \tag{1}$$
$\quad k12\, x2(t)$

$ode1$

$$\frac{d}{dt} x1(t) = D \quad (k01 \quad k21)\, x1(t) \quad k12\, x2(t), \frac{d}{dt} x2(t) = k21\, x1(t) \quad k12\, x2(t) \tag{2}$$

$ics \quad x1(0) = 20, \, x2(0) = 0$

$$ics := x1(0) = 20, \, x2(0) = 0 \tag{3}$$

$dsolve([ode1, ics])$

$$x1(t) = \frac{1}{k01} \left(D \quad \frac{1}{2} \left(\left(\quad 10\, k01 \right. \right. \right. \tag{4}$$

$10 \sqrt{k01^2 \quad 2\, k01\, k21 \quad 2\, k12\, k01 \quad k21^2 \quad 2\, k21\, k12 \quad k12^2} \quad D \quad 10\, k12$

$10\, k21 \bigg) \left(\quad \sqrt{k01^2 \quad 2\, k01\, k21 \quad 2\, k12\, k01 \quad k21^2 \quad 2\, k21\, k12 \quad k12^2}\ k21 \right.$

$k01^2 \quad 2\, k01\, k21 \quad 2\, k12\, k01 \quad k21^2 \quad 2\, k21\, k12 \quad k12^2$

$\sqrt{k01^2 \quad 2\, k01\, k21 \quad 2\, k12\, k01 \quad k21^2 \quad 2\, k21\, k12 \quad k12^2}\ k01$

$\sqrt{k01^2 \quad 2\, k01\, k21 \quad 2\, k12\, k01 \quad k21^2 \quad 2\, k21\, k12 \quad k12^2}\ k12 \bigg)$

$e^{\frac{1}{2} \left(k01 \quad k21 \quad k12 \quad \sqrt{k01^2 \quad 2\, k01\, k21 \quad 2\, k12\, k01 \quad k21^2 \quad 2\, k21\, k12 \quad k12^2} \right) t} \bigg) \bigg/ \left(k01^2 \right.$

$$2\,k01\,k21 \quad 2\,k12\,k01 \quad k21^2 \quad 2\,k21\,k12 \quad k12^2) \quad \frac{1}{2}\Big(\big(\quad 10\,k01$$

$$10\sqrt{k01^2 \quad 2\,k01\,k21 \quad 2\,k12\,k01 \quad k21^2 \quad 2\,k21\,k12 \quad k12^2} \quad D \quad 10\,k12$$

$$10\,k21\Big)\Big(\sqrt{k01^2 \quad 2\,k01\,k21 \quad 2\,k12\,k01 \quad k21^2 \quad 2\,k21\,k12 \quad k12^2}\ k21$$

$$\sqrt{k01^2 \quad 2\,k01\,k21 \quad 2\,k12\,k01 \quad k21^2 \quad 2\,k21\,k12 \quad k12^2}\ k01$$

$$\sqrt{k01^2 \quad 2\,k01\,k21 \quad 2\,k12\,k01 \quad k21^2 \quad 2\,k21\,k12 \quad k12^2}\ k12 \quad k01^2$$

$$2\,k01\,k21 \quad 2\,k12\,k01 \quad k21^2 \quad 2\,k21\,k12 \quad k12^2\Big)$$

$$e^{\left(\frac{1}{2}k01 \quad \frac{1}{2}k21 \quad \frac{1}{2}k12 \quad \frac{1}{2}\sqrt{k01^2 \quad 2\,k01\,k21 \quad 2\,k12\,k01 \quad k21^2 \quad 2\,k21\,k12 \quad k12^2}\right)t}\Big)\Bigg/$$

$$(k01^2 \quad 2\,k01\,k21 \quad 2\,k12\,k01 \quad k21^2 \quad 2\,k21\,k12 \quad k12^2)\Big), \ x2(t)$$

$$= \frac{1}{2}\,\frac{1}{k12\,k01}\Bigg(2\,D\,k21 \quad \frac{1}{2}\Big(\big(\quad 10\,k01$$

$$10\sqrt{k01^2 \quad 2\,k01\,k21 \quad 2\,k12\,k01 \quad k21^2 \quad 2\,k21\,k12 \quad k12^2} \quad D \quad 10\,k12$$

$$10\,k21\Big)\Big(\sqrt{k01^2+2\,k01\,k21+2\,k12\,k01+k21^2+2\,k21\,k12+k12^2}\,k21$$

$$+k01^2+2\,k01\,k21+2\,k12\,k01+k21^2+2\,k21\,k12+k12^2$$

$$+\sqrt{k01^2+2\,k01\,k21+2\,k12\,k01+k21^2+2\,k21\,k12+k12^2}\,k01$$

$$+\sqrt{k01^2+2\,k01\,k21+2\,k12\,k01+k21^2+2\,k21\,k12+k12^2}\,k12\Big)$$

$$k01\,e^{\frac{1}{2}\left(k01+k21+k12+\sqrt{k01^2+2\,k01\,k21+2\,k12\,k01+k21^2+2\,k21\,k12+k12^2}\right)t}\Big)\Big/$$

$$\left(k01^2+2\,k01\,k21+2\,k12\,k01+k21^2+2\,k21\,k12+k12^2\right)\;\frac{1}{2}\Big(\Big($$

$$10\,k01+10\sqrt{k01^2+2\,k01\,k21+2\,k12\,k01+k21^2+2\,k21\,k12+k12^2}+D$$

$$+10\,k12+10\,k21\Big)\Big($$

$$\sqrt{k01^2+2\,k01\,k21+2\,k12\,k01+k21^2+2\,k21\,k12+k12^2}\,k21+k01^2$$

$$+2\,k01\,k21+2\,k12\,k01+k21^2+2\,k21\,k12+k12^2$$

$$+\sqrt{k01^2+2\,k01\,k21+2\,k12\,k01+k21^2+2\,k21\,k12+k12^2}\,k01$$

$$+\sqrt{k01^2+2\,k01\,k21+2\,k12\,k01+k21^2+2\,k21\,k12+k12^2}\,k12\Big)$$

$$k21\, e^{\frac{1}{2}\left(k01 + k21 + k12 + \sqrt{k01^2 + 2\,k01\,k21 + 2\,k12\,k01 + k21^2 + 2\,k21\,k12 + k12^2}\right)t}\Big)\Big/$$

$$\left(k01^2 + 2\,k01\,k21 + 2\,k12\,k01 + k21^2 + 2\,k21\,k12 + k12^2\right)\; \frac{1}{2}\Big(\big(\,$$

$$10\,k01 + 10\sqrt{k01^2 + 2\,k01\,k21 + 2\,k12\,k01 + k21^2 + 2\,k21\,k12 + k12^2}\; D$$

$$10\,k12 + 10\,k21\big)\,\Big($$

$$\sqrt{k01^2 + 2\,k01\,k21 + 2\,k12\,k01 + k21^2 + 2\,k21\,k12 + k12^2}\; k21 + k01^2$$

$$2\,k01\,k21 + 2\,k12\,k01 + k21^2 + 2\,k21\,k12 + k12^2$$

$$\sqrt{k01^2 + 2\,k01\,k21 + 2\,k12\,k01 + k21^2 + 2\,k21\,k12 + k12^2}\; k01$$

$$\sqrt{k01^2 + 2\,k01\,k21 + 2\,k12\,k01 + k21^2 + 2\,k21\,k12 + k12^2}\; k12\Big)$$

$$e^{\frac{1}{2}\left(k01 + k21 + k12 + \sqrt{k01^2 + 2\,k01\,k21 + 2\,k12\,k01 + k21^2 + 2\,k21\,k12 + k12^2}\right)t}\; k12\Big)\Big/$$

$$\left(k01^2 + 2\,k01\,k21 + 2\,k12\,k01 + k21^2 + 2\,k21\,k12 + k12^2\right)\; \frac{1}{2}\Big(\big(\,$$

$$10\,k01 + 10\sqrt{k01^2 + 2\,k01\,k21 + 2\,k12\,k01 + k21^2 + 2\,k21\,k12 + k12^2}\; D$$

$$10\,k12 + 10\,k21\big)\,\Big($$

$$\sqrt{k01^2 + 2\,k01\,k21 + 2\,k12\,k01 + k21^2 + 2\,k21\,k12 + k12^2}\,k21 + k01^2$$

$$+ 2\,k01\,k21 + 2\,k12\,k01 + k21^2 + 2\,k21\,k12 + k12^2$$

$$+ \sqrt{k01^2 + 2\,k01\,k21 + 2\,k12\,k01 + k21^2 + 2\,k21\,k12 + k12^2}\,k01$$

$$+ \sqrt{k01^2 + 2\,k01\,k21 + 2\,k12\,k01 + k21^2 + 2\,k21\,k12 + k12^2}\,k12\Big)$$

$$e^{\frac{1}{2}\left(k01 + k21 + k12 + \sqrt{k01^2 + 2\,k01\,k21 + 2\,k12\,k01 + k21^2 + 2\,k21\,k12 + k12^2}\right)t}\Bigg) \Bigg/$$

$$\sqrt{k01^2 + 2\,k01\,k21 + 2\,k12\,k01 + k21^2 + 2\,k21\,k12 + k12^2}\;\frac{1}{2}\Big(\Big($$

$$10\,k01 + 10\sqrt{k01^2 + 2\,k01\,k21 + 2\,k12\,k01 + k21^2 + 2\,k21\,k12 + k12^2}\;D$$

$$+ 10\,k12 + 10\,k21\Big)$$

$$\Big(\sqrt{k01^2 + 2\,k01\,k21 + 2\,k12\,k01 + k21^2 + 2\,k21\,k12 + k12^2}\,k21$$

$$+ \sqrt{k01^2 + 2\,k01\,k21 + 2\,k12\,k01 + k21^2 + 2\,k21\,k12 + k12^2}\,k01$$

$$+ \sqrt{k01^2 + 2\,k01\,k21 + 2\,k12\,k01 + k21^2 + 2\,k21\,k12 + k12^2}\,k12 + k01^2$$

$$+ 2\,k01\,k21 + 2\,k12\,k01 + k21^2 + 2\,k21\,k12 + k12^2\Big)$$

$$k01\, e^{\left(-\frac{1}{2}k01 - \frac{1}{2}k21 - \frac{1}{2}k12 - \frac{1}{2}\sqrt{k01^2 + 2\,k01\,k21 - 2\,k12\,k01 + k21^2 + 2\,k21\,k12 + k12^2}\right)t}$$

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

$$10\,k01 + 10\sqrt{k01^2 + 2\,k01\,k21 - 2\,k12\,k01 + k21^2 + 2\,k21\,k12 + k12^2}\,D$$

$$+ 10\,k12 - 10\,k21\big)$$

$$\Big(\sqrt{k01^2 + 2\,k01\,k21 - 2\,k12\,k01 + k21^2 + 2\,k21\,k12 + k12^2}\,k21$$

$$- \sqrt{k01^2 + 2\,k01\,k21 - 2\,k12\,k01 + k21^2 + 2\,k21\,k12 + k12^2}\,k01$$

$$- \sqrt{k01^2 + 2\,k01\,k21 - 2\,k12\,k01 + k21^2 + 2\,k21\,k12 + k12^2}\,k12 + k01^2$$

$$+ 2\,k01\,k21 - 2\,k12\,k01 + k21^2 + 2\,k21\,k12 + k12^2\Big)$$

$$k21\, e^{\left(-\frac{1}{2}k01 - \frac{1}{2}k21 - \frac{1}{2}k12 - \frac{1}{2}\sqrt{k01^2 + 2\,k01\,k21 - 2\,k12\,k01 + k21^2 + 2\,k21\,k12 + k12^2}\right)t}$$

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

$$10\,k01 + 10\sqrt{k01^2 + 2\,k01\,k21 - 2\,k12\,k01 + k21^2 + 2\,k21\,k12 + k12^2}\,D$$

$$+ 10\,k12 - 10\,k21\big)$$

$$\Big(\Big(\sqrt{k01^2 + 2\,k01\,k21 + 2\,k12\,k01 + k21^2 + 2\,k21\,k12 + k12^2}\;k21$$
$$+ \sqrt{k01^2 + 2\,k01\,k21 + 2\,k12\,k01 + k21^2 + 2\,k21\,k12 + k12^2}\;k01$$
$$+ \sqrt{k01^2 + 2\,k01\,k21 + 2\,k12\,k01 + k21^2 + 2\,k21\,k12 + k12^2}\;k12 + k01^2$$
$$+ 2\,k01\,k21 + 2\,k12\,k01 + k21^2 + 2\,k21\,k12 + k12^2 \Big)$$
$$e^{\left(-\frac{1}{2}k01 - \frac{1}{2}k21 - \frac{1}{2}k12 + \frac{1}{2}\sqrt{k01^2 + 2\,k01\,k21 + 2\,k12\,k01 + k21^2 + 2\,k21\,k12 + k12^2}\right)t}\,k12 \Big)$$
$$\Big/ \Big(k01^2 + 2\,k01\,k21 + 2\,k12\,k01 + k21^2 + 2\,k21\,k12 + k12^2 \Big) - \frac{1}{2}\Big(\Big($$
$$-10\,k01 + 10\sqrt{k01^2 + 2\,k01\,k21 + 2\,k12\,k01 + k21^2 + 2\,k21\,k12 + k12^2}\;D$$
$$-10\,k12 - 10\,k21 \Big)$$
$$\Big(-\sqrt{k01^2 + 2\,k01\,k21 + 2\,k12\,k01 + k21^2 + 2\,k21\,k12 + k12^2}\;k21$$
$$-\sqrt{k01^2 + 2\,k01\,k21 + 2\,k12\,k01 + k21^2 + 2\,k21\,k12 + k12^2}\;k01$$
$$-\sqrt{k01^2 + 2\,k01\,k21 + 2\,k12\,k01 + k21^2 + 2\,k21\,k12 + k12^2}\;k12 + k01^2$$
$$+ 2\,k01\,k21 + 2\,k12\,k01 + k21^2 + 2\,k21\,k12 + k12^2 \Big)$$
$$e^{\left(-\frac{1}{2}k01 - \frac{1}{2}k21 - \frac{1}{2}k12 - \frac{1}{2}\sqrt{k01^2 + 2\,k01\,k21 + 2\,k12\,k01 + k21^2 + 2\,k21\,k12 + k12^2}\right)t} \Big) \Big/$$
$$\sqrt{k01^2 + 2\,k01\,k21 + 2\,k12\,k01 + k21^2 + 2\,k21\,k12 + k12^2} \Big\}$$