mplODEsuolat

```
restart
with(LinearAlgebra) :
A := <<-1/50 | 1/50>, <1/50 | -1/50>>
```

$$\begin{bmatrix} -\frac{1}{50} & \frac{1}{50} \\ \frac{1}{50} & -\frac{1}{50} \end{bmatrix} \tag{1.1}$$

```
(lambda, ov) := Eigenvectors(A)
```

$$\begin{bmatrix} 0 \\ -\frac{1}{25} \end{bmatrix}, \begin{bmatrix} 1 & -1 \\ 1 & 1 \end{bmatrix} \tag{1.2}$$

```
> lambda; ov;
```

$$\begin{bmatrix} 0 \\ -\frac{1}{25} \end{bmatrix}$$

$$\begin{bmatrix} 1 & -1 \\ 1 & 1 \end{bmatrix} \tag{1.3}$$

```
x1 := ov[1..2, 1];
x2 := ov[1..2, 2]
```

$$\begin{bmatrix} 1 \\ 1 \end{bmatrix}$$

$$\begin{bmatrix} -1 \\ 1 \end{bmatrix} \tag{1.4}$$

```
Y := C1·exp(lambda[1]·t)·x1 + C2·exp(lambda[2]·t)·x2
```

$$\begin{bmatrix} C1 - C2\, e^{-\frac{1}{25}t} \\ C1 + C2\, e^{-\frac{1}{25}t} \end{bmatrix} \tag{1.5}$$

```
Y0 := subs(t = 0, Y)
```

$$\begin{bmatrix} C1 - C2 \\ C1 + C2 \end{bmatrix} \quad (1.6)$$

$AE := Y0[1] = 0,\ Y0[2] = 1.5$

$$C1 - C2 = 0,\ C1 + C2 = 1.5 \quad (1.7)$$

$C12 := solve(\{AE\}, \{C1, C2\})$

$$\{C1 = 0.7500000000,\ C2 = 0.7500000000\} \quad (1.8)$$

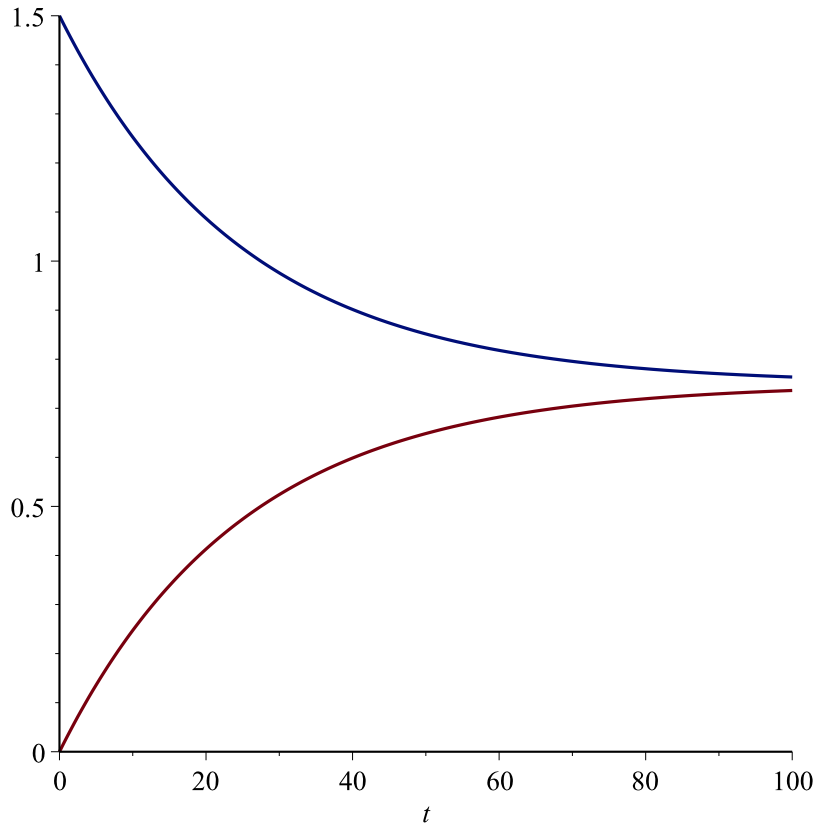
$assign(C12)$
$C1; C2$

$$0.7500000000$$
$$0.7500000000 \quad (1.9)$$

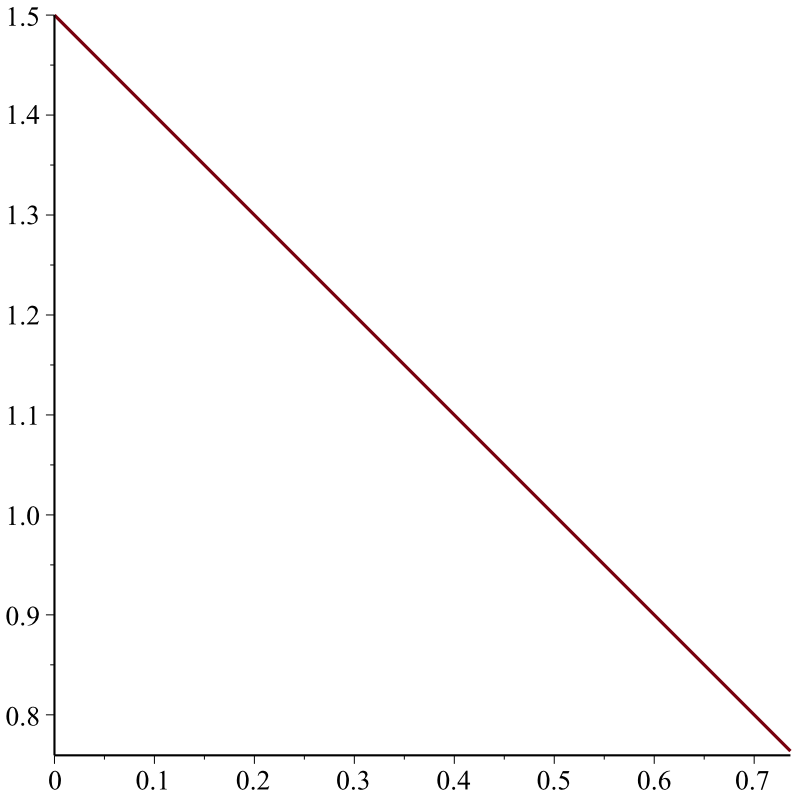
$Y;$

$$\begin{bmatrix} 0.7500000000 - 0.7500000000\, e^{-\frac{1}{25} t} \\ 0.7500000000 + 0.7500000000\, e^{-\frac{1}{25} t} \end{bmatrix} \quad (1.10)$$

> $plot([Y[1], Y[2]], t = 0..100)$



```
> plot([Y[1], Y[2], t = 0..100])
```

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>
```

$$t0 = t0 \qquad (1.11)$$