```
> restart;
```
Load http://www.ccas.ru/ca/_media/lqrs.zip
Put two files from lqrs.zip to some directory, for example, to "/usr/userlib"
```
> libname := "/usr/userlib", libname :
```

$$S := \begin{bmatrix} x & q\,x^2 \\ 2\,q\,x + x^2 & q^2\,x^2 + x^3\,q \end{bmatrix} \cdot y(q^2 x) + \begin{bmatrix} -q^3\,x^2 + q^2 - q\,x & -q^3\,x^3 + q^2\,x - q\,x^2 \\ -q^4\,x^2 - q^3\,x^3 + q^3 - q^2\,x & -q^4\,x^3 - q^3\,x^4 + q^3\,x - x^3\,q \end{bmatrix} \cdot y(q\,x)$$

$$+ \begin{bmatrix} -q^4\,x + q^3\,x^2 & -q^3\,x^2 + q^2\,x^3 \\ -x\,q^5 + q^3\,x^3 - q^2\,x^2 & -q^4\,x^2 + q^2\,x^4 \end{bmatrix} \cdot y(x) = \left[\left[\left(q^9\,x^3 - q^7\,x^3 + q^6\,x + q^4\,x^2 - q^4\,x + q^2 \right. \right. \right.$$

$$\left. \left. - q\,x + x \right) \left(\prod_{k1=0}^{k-1} \left(q^4\,q^{k1} + 1 \right) \right) - q^2\,x^2 \left(q^2\,x^2 - x^2 - q + x \right) \right],$$

$$\left[\left(2\,q^{10}\,x^3 + q^9\,x^4 - q^8\,x^3 - q^7\,x^4 + q^7\,x + q^6\,x^2 + q^5\,x^3 + 2\,q^5\,x^2 + q^4\,x^3 - x\,q^5 - q^4\,x^2 - q^2\,x^2 + q^3 - q^2\,x \right. \right.$$

$$\left. \left. + 2\,q\,x + x^2 \right) \left(\prod_{k1=0}^{k-1} \left(q^4\,q^{k1} + 1 \right) \right) - (x+q)\,q^2\,x^2 \left(q^2\,x^2 - x^2 - q + x \right) \right] \right] :$$

```
> LqRS:-HypergeometricSolution(S, y(x), k);
```

$$\begin{bmatrix} \_c_2\,q^k + \displaystyle\prod_{k1=0}^{k-1} \left(q^4\,q^{k1} + 1 \right) \\[2mm] \_c_1\,q^{\frac{1}{2}k^2 - \frac{1}{2}k}\,q^k - \_c_2\,q + q^k \end{bmatrix} \tag{1}$$

```
> LqRS:-HypergeometricSolution(S, y(x), k, output = basis);
```

$$\left[\left[\begin{bmatrix} 0 \\ q^{\frac{1}{2}k^2 - \frac{1}{2}k}\,q^k \end{bmatrix}, \begin{bmatrix} q^k \\ -q \end{bmatrix} \right], \begin{bmatrix} \displaystyle\prod_{k1=0}^{k-1} \left(q^4\,q^{k1} + 1 \right) \\ q^k \end{bmatrix} \right] \tag{2}$$

```
> LqRS:-HypergeometricSolution(S, y(x), k, output = partsol);
```

$$\begin{bmatrix} \displaystyle\prod_{k1=0}^{k-1} \left(q^4\,q^{k1} + 1 \right) \\[2mm] q^k \end{bmatrix} \tag{3}$$

```
>
```