

```

[ > restart;
[ > with(JanetOre):
[ > with(OreModules):
[ > with(homalg):
[ > RPS := `OreModulesStafford/homalg`;
[                               RPS := OreModulesStafford/homalg
[ > RPM := `OreModules/homalg`;
[                               RPM := OreModules/homalg
[ > RPO := `JanetOre/homalg`;
[                               RPO := JanetOre/homalg
[ > `homalg/default` := RPS;
[                               homalg/default := OreModulesStafford/homalg
[ > homalg_options("Heuristics"=true,RPM);
[                               "Heuristics" = true
[ > homalg_options("Heuristics"=true,RPO);
[                               "Heuristics" = true
[ > Alg := DefineOreAlgebra(diff=[Dt,t], polynom=[t]):
[ > Ore := [[Dt,t],[],[weyl(Dt,t)]];
[                               Ore := [[Dt, t], [ ], [weyl(Dt, t)]]

```

Example 3:

```

[ > R3 := matrix([[Dt,0,-t,0,0],[0,Dt,0,-t,0],[0,0,Dt,0,-t]]);

```

$$R3 := \begin{bmatrix} Dt & 0 & -t & 0 & 0 \\ 0 & Dt & 0 & -t & 0 \\ 0 & 0 & Dt & 0 & -t \end{bmatrix}$$

Without Stafford:

```

[ > homalg_options("debug_Heuristics"=true, RPM):
[   N3 := Cokernel(R3, Alg, RPM);
[   homalg_options("debug_Heuristics"=false, RPM):
[   {--> enter eliminate_units, args =

```

$$\text{"M="}, \begin{bmatrix} 0 & 0 & Dt & 0 & -t \\ 0 & Dt & 0 & -t & 0 \\ Dt & 0 & -t & 0 & 0 \end{bmatrix}$$

pos :=

```

[   <-- exit eliminate_units (now in homalg/BetterGenerators) = "eliminate_units: NO
[   new obsolete generators:", []}
[   {--> enter eliminate_all_but_one_gcd_1_columns, args =
[   {--> enter get_all_but_one_gcd_1_column_position, args =
[       r := [2, 3]
[       f := [[0], [Dt]]
[       h := FAIL
[       r := [1, 3]

```

```

f:= [[0], [Dt]]
h := FAIL
r := [1, 2]
f:= [[0], [0]]
h := FAIL
r := [2, 3]
f:= [[Dt], [0]]
h := FAIL
r := [1, 3]
f:= [[0], [0]]
h := FAIL
r := [1, 2]
f:= [[0], [Dt]]
h := FAIL
r := [2, 3]
f:= [[0], [-t]]
h := FAIL
r := [1, 3]
f:= [[Dt], [-t]]
h := [-t -Dt]
<-- exit get_all_but_one_gcd_1_column_position (now in
eliminate_all_but_one_gcd_1_columns) = [2, 3, [1, 3], h]}
pos := [2, 3, [1, 3], h]
b := false
i := 2
j := 3
r := [1, 3]
h := h
h := [-t -Dt]
c := [1, 2, 4, 5]
MM:=  $\begin{bmatrix} 0 & 0 & Dt & 0 & -t \\ Dt & 0 & -t & 0 & 0 \end{bmatrix}$ 
MM:=  $\begin{bmatrix} 0 & 0 & 0 & -t \\ Dt & 0 & 0 & 0 \end{bmatrix}$ 
MM:=  $[-Dt^2 \quad 0 \quad 0 \quad t^2]$ 
Mi_ := [0 Dt 0 -t 0]
Mi_ := [0 Dt -t 0]

```

$$MM := [-Dt^2 \quad Dt \quad -t \quad t^2]$$

$$M_{2,1} := -Dt^2$$

$$M_{2,2} := Dt$$

$$M_{2,4} := -t$$

$$M_{2,5} := t^2$$

$$M_{2,3} := 1$$

{--> enter eliminate_units, args = [2, 3]

$$\text{"M="}, \begin{bmatrix} 0 & 0 & Dt & 0 & -t \\ -Dt^2 & Dt & 1 & -t & t^2 \\ Dt & 0 & -t & 0 & 0 \end{bmatrix}$$

$$pos := [2, 3]$$

$$b := false$$

$$i := 2$$

$$j := 3$$

$$pos_list := [3]$$

$$v := \begin{bmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{bmatrix}$$

$$vi := \begin{bmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{bmatrix}$$

$$r := -Dt^2$$

$$v_{3,1} := Dt^2$$

$$vi_{3,1} := -Dt^2$$

$$r := Dt$$

$$v_{3,2} := -Dt$$

$$vi_{3,2} := Dt$$

$$\begin{aligned}
& r := -t \\
& v_{3,4} := t \\
& vi_{3,4} := -t \\
& r := t^2 \\
& v_{3,5} := -t^2 \\
& vi_{3,5} := t^2 \\
& VI := \begin{bmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ -Dt^2 & Dt & 1 & -t & t^2 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{bmatrix} \\
& M := \begin{bmatrix} Dt^3 & -Dt^2 & Dt & 1 + Dt t & -Dt t^2 - 3 t \\ 0 & 0 & 1 & 0 & 0 \\ Dt - t Dt^2 & Dt t & -t & -t^2 & t^3 \end{bmatrix}
\end{aligned}$$

$k := 1$

$M_{1,3} := 0$

$k := 3$

$M_{3,3} := 0$

$pos :=$

$clean_rows := [2]$

`<-- exit eliminate_units (now in eliminate_all_but_one_gcd_1_columns) =
"eliminate_units: the NEW list of obsolete generators:", [3]}`

`"eliminate_units: the NEW list of obsolete generators:", [3]`

`{--> enter get_all_but_one_gcd_1_column_position, args =`

$r := [3]$

$f := [[Dt - t Dt^2]]$

$h := FAIL$

$r := [1]$

$f := [[Dt^3]]$

$h := FAIL$

$r := [3]$

$f := [[Dt t]]$

$h := FAIL$

$r := [1]$

```

f := [[-Dt2]]
h := FAIL
r := [3]
f := [[-t2]]
h := FAIL
r := [1]
f := [[1 + Dt t]]
h := FAIL
r := [3]
f := [[t3]]
h := FAIL
r := [1]
f := [[-Dt t2 - 3 t]]
h := FAIL
<-- exit get_all_but_one_gcd_1_column_position (now in
eliminate_all_but_one_gcd_1_columns) = }
pos :=
<-- exit eliminate_all_but_one_gcd_1_columns (now in homalg/BetterGenerators) =
"eliminate_all_but_one_gcd_1_columns: the NEW list of obsolete generators:", [3]}
{--> enter eliminate_all_but_one_gcd_1_rows, args =
{--> enter get_all_but_one_gcd_1_row_position, args =
c := [2, 4, 5]
f := [[-Dt2, 1 + Dt t, -Dt t2 - 3 t]]
h :=  $\begin{bmatrix} 0 \\ 1 + Dt t \\ Dt \end{bmatrix}$ 
<-- exit get_all_but_one_gcd_1_row_position (now in
eliminate_all_but_one_gcd_1_rows) = [1, 1, [2, 4, 5], h]}
pos := [1, 1, [2, 4, 5], h]
b := false
i := 1
j := 1
c := [2, 4, 5]
h := h
h :=  $\begin{bmatrix} 0 \\ -(1 + Dt t)(-1 + Dt^3) \\ -Dt(-1 + Dt^3) \end{bmatrix}$ 

```

$$vi := \begin{bmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{bmatrix}$$

$$vi_{2,1} := 0$$

$$vi_{4,1} := (1 + Dt t)(-1 + Dt^3)$$

$$vi_{5,1} := Dt(-1 + Dt^3)$$

$$VI := \begin{bmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ -Dt^2 & Dt & 1 & -t & t^2 \\ -1 + Dt^3 - Dt t + Dt^4 t & 0 & 0 & 1 & 0 \\ -Dt + Dt^4 & 0 & 0 & 0 & 1 \end{bmatrix}$$

$$r := [3]$$

$$MM := \begin{bmatrix} -Dt^2 & 1 + Dt t & -Dt t^2 - 3 t \\ 0 & 0 & 0 \\ Dt t & -t^2 & t^3 \end{bmatrix}$$

$$MM := [Dt t \quad -t^2 \quad t^3]$$

$$MM := [-t^2 + t^2 Dt^3]$$

$$M_j := \begin{bmatrix} Dt^3 \\ 0 \\ Dt - t Dt^2 \end{bmatrix}$$

$$M_j := [Dt - t Dt^2]$$

$$MM := [Dt - t Dt^2 - t^2 + t^2 Dt^3]$$

$$M_{3,1} := Dt - t Dt^2 - t^2 + t^2 Dt^3$$

$$M_{1,1} := 1$$

`{--> enter eliminate_units, args = [1, 1]}`

$$\text{"M="}, \begin{bmatrix} 1 & -Dt^2 & 0 & 1+Dt t & -Dt t^2 - 3 t \\ 0 & 0 & 1 & 0 & 0 \\ Dt - t Dt^2 - t^2 + t^2 Dt^3 & Dt t & 0 & -t^2 & t^3 \end{bmatrix}$$

$$pos := [1, 1]$$

$$b := false$$

$$i := 1$$

$$j := 1$$

$$pos_list := [3, 1]$$

$$v := \begin{bmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{bmatrix}$$

$$vi := \begin{bmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{bmatrix}$$

$$r := -Dt^2$$

$$v_{1,2} := Dt^2$$

$$vi_{1,2} := -Dt^2$$

$$r := 1 + Dt t$$

$$v_{1,4} := -1 - Dt t$$

$$vi_{1,4} := 1 + Dt t$$

$$r := -Dt t^2 - 3 t$$

$$v_{1,5} := Dt t^2 + 3 t$$

$$vi_{1,5} := -Dt t^2 - 3 t$$

$$VI := \begin{bmatrix} Dt^3 & -Dt^2 & 0 & 1+Dt & t & -Dt^2-3t \\ 0 & 1 & 0 & 0 & 0 & 0 \\ -Dt^2 & Dt & 1 & -t & t^2 & t^2 \\ -1+Dt^3-Dt^2t+Dt^4t & 0 & 0 & 1 & 0 & 0 \\ -Dt+Dt^4 & 0 & 0 & 0 & 0 & 1 \end{bmatrix}$$

$M :=$

$[1, 0, 0, 0, 0]$

$[0, 0, 1, 0, 0]$

$[Dt - tDt^2 - t^2 + t^2Dt^3, Dt^3 - Dt^4t - Dt^2t^2 + Dt^5t^2 + Dtt, 0,$

$-2Dt + t^3Dt - t^3Dt^4 + 2tDt^2 - 3t^2Dt^3, 9Dt^2t^2 - 3Dtt + 8t^3Dt^3 - t^4Dt - 2t^3 + t^4Dt^4 + 3]$

$k := 2$

$M_{2,1} := 0$

$k := 3$

$M_{3,1} := 0$

$pos :=$

$clean_rows := [2, 1]$

`<-- exit eliminate_units (now in eliminate_all_but_one_gcd_1_rows) = "eliminate_units: the NEW list of obsolete generators:", [3, 1]`

`"eliminate_units: the NEW list of obsolete generators:", [3, 1]`

`{--> enter get_all_but_one_gcd_1_row_position, args =`

`c := [4, 5]`

$f :=$

$[[-2Dt + t^3Dt - t^3Dt^4 + 2tDt^2 - 3t^2Dt^3, 9Dt^2t^2 - 3Dtt + 8t^3Dt^3 - t^4Dt - 2t^3 + t^4Dt^4 + 3]]$

$h := FAIL$

$c := [2, 5]$

$f := [[Dt^3 - Dt^4t - Dt^2t^2 + Dt^5t^2 + Dtt, 9Dt^2t^2 - 3Dtt + 8t^3Dt^3 - t^4Dt - 2t^3 + t^4Dt^4 + 3]]$

$$h := \begin{bmatrix} \frac{2}{15}Dt^5t^5 + \frac{19}{15}t^4Dt^4 + \frac{26}{15}t^3Dt^3 - Dt^2t^2 + Dtt - \frac{2}{15}Dt^2t^5 - \frac{1}{15}t^4Dt + \frac{2}{3}t^3 \\ -\frac{2}{15}Dt^6t^3 - \frac{9}{5}Dt^5t^2 - \frac{83}{15}Dt^4t - \frac{37}{15}Dt^3 - 1 + \frac{2}{15}t^3Dt^3 + \frac{3}{5}Dt^2t^2 - \frac{3}{5}Dtt \end{bmatrix}$$

`<-- exit get_all_but_one_gcd_1_row_position (now in eliminate_all_but_one_gcd_1_rows) = [3, 4, [2, 5], h]`

$pos := [3, 4, [2, 5], h]$

$i := 3$

$j := 4$

$c := [2, 5]$

$$h := h$$

$h :=$

$$\begin{aligned} & \left[Dt t + \frac{2}{3} t^3 - \frac{4}{15} Dt^6 t^8 - Dt^2 t^2 - \frac{68}{15} t^7 Dt^5 + \frac{11}{3} Dt^8 t^7 - \frac{134}{5} t^6 Dt^4 - \frac{91}{15} t^3 Dt + \frac{74}{3} t^3 Dt^4 \right. \\ & + \frac{487}{15} Dt^7 t^6 + \frac{26}{15} t^3 Dt^3 - \frac{1}{15} t^4 Dt + \frac{19}{15} t^4 Dt^4 - \frac{869}{15} t^4 Dt^2 + \frac{358}{3} Dt^5 t^4 + \frac{2}{15} Dt^9 t^8 + \frac{1}{3} Dt t^6 \\ & \left. - \frac{2}{15} Dt^2 t^5 - 67 Dt^3 t^5 + \frac{2}{15} Dt^5 t^5 + \frac{541}{5} Dt^6 t^5 + \frac{2}{15} Dt^3 t^8 + \frac{13}{15} t^7 Dt^2 \right] \\ & \left[-1 - \frac{3}{5} Dt t + \frac{64}{5} Dt + \frac{896}{5} t Dt^2 - \frac{23}{5} Dt^9 t^5 - \frac{37}{15} Dt^3 + \frac{3}{5} Dt^2 t^2 - \frac{83}{15} Dt^4 t - \frac{148}{3} Dt^4 - \frac{2}{15} t^6 Dt^4 \right. \\ & + \frac{1632}{5} t^2 Dt^3 - \frac{8}{5} t^3 Dt + \frac{3008}{15} t^3 Dt^4 + \frac{4}{15} Dt^7 t^6 - \frac{9}{5} Dt^5 t^2 + \frac{2}{15} t^3 Dt^3 - \frac{27}{5} t^4 Dt^2 - \frac{817}{15} Dt^8 t^4 \\ & + \frac{808}{15} Dt^5 t^4 - \frac{2}{15} Dt^6 t^3 - \frac{1148}{3} Dt^5 t - \frac{8282}{15} Dt^6 t^2 - \frac{9}{5} Dt^3 t^5 - \frac{2}{15} Dt^{10} t^6 + \frac{32}{5} Dt^6 t^5 \\ & \left. - \frac{4058}{15} Dt^7 t^3 \right] \end{aligned}$$

$$vi := \begin{bmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{bmatrix}$$

$$\begin{aligned} vi_{2,4} := & -Dt t - \frac{2}{3} t^3 + \frac{4}{15} Dt^6 t^8 + Dt^2 t^2 + \frac{68}{15} t^7 Dt^5 - \frac{11}{3} Dt^8 t^7 + \frac{134}{5} t^6 Dt^4 + \frac{91}{15} t^3 Dt - \frac{74}{3} t^3 Dt^4 \\ & - \frac{487}{15} Dt^7 t^6 - \frac{26}{15} t^3 Dt^3 + \frac{1}{15} t^4 Dt - \frac{19}{15} t^4 Dt^4 + \frac{869}{15} t^4 Dt^2 - \frac{358}{3} Dt^5 t^4 - \frac{2}{15} Dt^9 t^8 - \frac{1}{3} Dt t^6 \\ & + \frac{2}{15} Dt^2 t^5 + 67 Dt^3 t^5 - \frac{2}{15} Dt^5 t^5 - \frac{541}{5} Dt^6 t^5 - \frac{2}{15} Dt^3 t^8 - \frac{13}{15} t^7 Dt^2 \end{aligned}$$

$$\begin{aligned} vi_{5,4} := & 1 + \frac{3}{5} Dt t - \frac{64}{5} Dt - \frac{896}{5} t Dt^2 + \frac{23}{5} Dt^9 t^5 + \frac{37}{15} Dt^3 - \frac{3}{5} Dt^2 t^2 + \frac{83}{15} Dt^4 t + \frac{148}{3} Dt^4 \\ & + \frac{2}{15} t^6 Dt^4 - \frac{1632}{5} t^2 Dt^3 + \frac{8}{5} t^3 Dt - \frac{3008}{15} t^3 Dt^4 - \frac{4}{15} Dt^7 t^6 + \frac{9}{5} Dt^5 t^2 - \frac{2}{15} t^3 Dt^3 + \frac{27}{5} t^4 Dt^2 \\ & + \frac{817}{15} Dt^8 t^4 - \frac{808}{15} Dt^5 t^4 + \frac{2}{15} Dt^6 t^3 + \frac{1148}{3} Dt^5 t + \frac{8282}{15} Dt^6 t^2 + \frac{9}{5} Dt^3 t^5 + \frac{2}{15} Dt^{10} t^6 - \frac{32}{5} Dt^6 t^5 \end{aligned}$$

$$+ \frac{4058}{15} Dt^7 t^3$$

VI :=

$$[Dt^3, -Dt^2, 0, 1 + Dt t, -Dt t^2 - 3 t]$$

$$\left[\begin{aligned} & 2 Dt t + \frac{2}{5} Dt^{10} t^9 - \frac{13151}{15} Dt^9 t^5 + \frac{2}{3} t^3 - \frac{982}{15} Dt^{11} t^7 - \frac{39}{5} Dt^6 t^8 - \frac{2}{5} Dt^7 t^9 - 2 Dt^2 t^2 - \frac{854}{15} t^7 Dt^5 \\ & + \frac{1792}{15} Dt^8 t^7 - 2 Dt^4 t - \frac{605}{3} t^6 Dt^4 - \frac{182}{15} t^3 Dt + \frac{2032}{15} t^3 Dt^4 + \frac{8534}{15} Dt^7 t^6 + 2 Dt^5 t^2 + \frac{79}{15} t^3 Dt^3 \\ & + \frac{8}{15} t^4 Dt + \frac{113}{15} t^4 Dt^4 - \frac{2698}{15} t^4 Dt^2 - \frac{2222}{3} Dt^8 t^4 + \frac{13808}{15} Dt^5 t^4 - \frac{89}{15} Dt^6 t^3 + \frac{57}{5} Dt^9 t^8 \\ & - 5 Dt^{12} t^8 + \frac{2}{3} Dt t^6 - \frac{7}{15} Dt^2 t^5 - \frac{4889}{15} Dt^3 t^5 - \frac{5519}{15} Dt^{10} t^6 + \frac{38}{15} Dt^5 t^5 - \frac{2}{15} Dt^3 t^6 + \frac{3608}{3} Dt^6 t^5 \\ & - \frac{370}{3} Dt^7 t^3 - \frac{121}{15} Dt^7 t^4 + \frac{7}{5} Dt^3 t^8 + \frac{44}{15} t^7 Dt^2 + \frac{4}{15} Dt^6 t^6 - \frac{31}{15} Dt^8 t^5 - \frac{2}{15} Dt^9 t^6 - \frac{2}{15} Dt^{13} t^9 \\ & + \frac{2}{15} Dt^4 t^9, 1, 0, -Dt t - \frac{2}{3} t^3 + \frac{4}{15} Dt^6 t^8 + Dt^2 t^2 + \frac{68}{15} t^7 Dt^5 - \frac{11}{3} Dt^8 t^7 + \frac{134}{5} t^6 Dt^4 + \frac{91}{15} t^3 Dt \\ & - \frac{74}{3} t^3 Dt^4 - \frac{487}{15} Dt^7 t^6 - \frac{26}{15} t^3 Dt^3 + \frac{1}{15} t^4 Dt - \frac{19}{15} t^4 Dt^4 + \frac{869}{15} t^4 Dt^2 - \frac{358}{3} Dt^5 t^4 - \frac{2}{15} Dt^9 t^8 \\ & - \frac{1}{3} Dt t^6 + \frac{2}{15} Dt^2 t^5 + 67 Dt^3 t^5 - \frac{2}{15} Dt^5 t^5 - \frac{541}{5} Dt^6 t^5 - \frac{2}{15} Dt^3 t^8 - \frac{13}{15} t^7 Dt^2, 0 \end{aligned} \right]$$

$$[-Dt^2, Dt, 1, -t, t^2]$$

$$[-1 + Dt^3 - Dt t + Dt^4 t, 0, 0, 1, 0]$$

$$\left[\begin{aligned} & -1 - \frac{11}{5} Dt t + \frac{123}{5} Dt + \frac{2752}{5} t Dt^2 - \frac{2987}{15} Dt^9 t^5 - \frac{133}{15} Dt^3 - \frac{2}{5} Dt^{11} t^7 + \frac{6}{5} Dt^2 t^2 - \frac{2}{15} t^7 Dt^5 \\ & + \frac{2}{5} Dt^8 t^7 - \frac{419}{15} Dt^4 t - \frac{4069}{15} Dt^4 - \frac{37}{15} t^6 Dt^4 + \frac{7424}{5} t^2 Dt^3 - \frac{16}{5} t^3 Dt + \frac{19984}{15} t^3 Dt^4 + 11 Dt^7 t^6 \\ & - \frac{263}{15} Dt^5 t^2 + \frac{17}{15} t^3 Dt^3 + \frac{2}{15} t^4 Dt^4 - \frac{89}{5} t^4 Dt^2 + \frac{148}{15} Dt^6 - \frac{19267}{15} Dt^8 t^4 + \frac{8123}{15} Dt^5 t^4 - \frac{58}{15} Dt^6 t^3 \\ & - \frac{43436}{15} Dt^5 t - \frac{28662}{5} Dt^6 t^2 - \frac{63}{5} Dt^3 t^5 - \frac{73}{5} Dt^{10} t^6 + \frac{740}{3} Dt^7 + \frac{1669}{15} Dt^6 t^5 - \frac{60682}{15} Dt^7 t^3 \\ & - \frac{4}{15} Dt^7 t^4 + \frac{452}{15} Dt^7 t + \frac{49}{3} Dt^8 t^2 + \frac{1507}{15} Dt^{12} t^5 + \frac{91}{15} Dt^{13} t^6 + \frac{7036}{3} Dt^8 t + \frac{41}{15} Dt^9 t^3 \\ & + \frac{11411}{15} Dt^{11} t^4 + \frac{2}{15} Dt^{10} t^4 + \frac{21238}{5} Dt^9 t^2 + \frac{13582}{5} Dt^{10} t^3 + \frac{2}{15} Dt^{14} t^7, 0, 0, 1 + \frac{3}{5} Dt t - \frac{64}{5} Dt \end{aligned} \right]$$

$$\begin{aligned}
& -\frac{896}{5}tDt^2 + \frac{23}{5}Dt^9t^5 + \frac{37}{15}Dt^3 - \frac{3}{5}Dt^2t^2 + \frac{83}{15}Dt^4t + \frac{148}{3}Dt^4 + \frac{2}{15}t^6Dt^4 - \frac{1632}{5}t^2Dt^3 + \frac{8}{5}t^3Dt \\
& -\frac{3008}{15}t^3Dt^4 - \frac{4}{15}Dt^7t^6 + \frac{9}{5}Dt^5t^2 - \frac{2}{15}t^3Dt^3 + \frac{27}{5}t^4Dt^2 + \frac{817}{15}Dt^8t^4 - \frac{808}{15}Dt^5t^4 + \frac{2}{15}Dt^6t^3 \\
& + \frac{1148}{3}Dt^5t + \frac{8282}{15}Dt^6t^2 + \frac{9}{5}Dt^3t^5 + \frac{2}{15}Dt^{10}t^6 - \frac{32}{5}Dt^6t^5 + \frac{4058}{15}Dt^7t^3, 1 \Big]
\end{aligned}$$

$r := []$

$M_{3,4} := 1$

`{--> enter eliminate_units, args = [3, 4]`

"M =",

$[1, 0, 0, 0, 0]$

$[0, 0, 1, 0, 0]$

$[0, Dt^3 - Dt^4t - Dt^2t^2 + Dt^5t^2 + Dt t, 0, 1, 9Dt^2t^2 - 3Dt t + 8t^3Dt^3 - t^4Dt - 2t^3 + t^4Dt^4 + 3]$

$pos := [3, 4]$

$b := false$

$i := 3$

$j := 4$

$pos_list := [3, 1, 4]$

$$v := \begin{bmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{bmatrix}$$

$$vi := \begin{bmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{bmatrix}$$

$$r := Dt^3 - Dt^4t - Dt^2t^2 + Dt^5t^2 + Dt t$$

$$v_{4,2} := -Dt^3 + Dt^4t + Dt^2t^2 - Dt^5t^2 - Dt t$$

$$vi_{4,2} := Dt^3 - Dt^4t - Dt^2t^2 + Dt^5t^2 + Dt t$$

$$r := 9Dt^2t^2 - 3Dt t + 8t^3Dt^3 - t^4Dt - 2t^3 + t^4Dt^4 + 3$$

$$v_{4,5} := -3 - 9Dt^2t^2 + 3Dt t - 8t^3Dt^3 + t^4Dt + 2t^3 - t^4Dt^4$$

$$vi_{4,5} := 9 Dt^2 t^2 - 3 Dt t + 8 t^3 Dt^3 - t^4 Dt - 2 t^3 + t^4 Dt^4 + 3$$

VI :=

$$[Dt^3, -Dt^2, 0, 1 + Dt t, -Dt t^2 - 3 t]$$

$$\left[2 Dt t + \frac{2}{5} Dt^{10} t^9 - \frac{13151}{15} Dt^9 t^5 + \frac{2}{3} t^3 - \frac{982}{15} Dt^{11} t^7 - \frac{39}{5} Dt^6 t^8 - \frac{2}{5} Dt^7 t^9 - 2 Dt^2 t^2 - \frac{854}{15} t^7 Dt^5 \right. \\ + \frac{1792}{15} Dt^8 t^7 - 2 Dt^4 t - \frac{605}{3} t^6 Dt^4 - \frac{182}{15} t^3 Dt + \frac{2032}{15} t^3 Dt^4 + \frac{8534}{15} Dt^7 t^6 + 2 Dt^5 t^2 + \frac{79}{15} t^3 Dt^3 \\ + \frac{8}{15} t^4 Dt + \frac{113}{15} t^4 Dt^4 - \frac{2698}{15} t^4 Dt^2 - \frac{2222}{3} Dt^8 t^4 + \frac{13808}{15} Dt^5 t^4 - \frac{89}{15} Dt^6 t^3 + \frac{57}{5} Dt^9 t^8 \\ - 5 Dt^{12} t^8 + \frac{2}{3} Dt t^6 - \frac{7}{15} Dt^2 t^5 - \frac{4889}{15} Dt^3 t^5 - \frac{5519}{15} Dt^{10} t^6 + \frac{38}{15} Dt^5 t^5 - \frac{2}{15} Dt^3 t^6 + \frac{3608}{3} Dt^6 t^5 \\ - \frac{370}{3} Dt^7 t^3 - \frac{121}{15} Dt^7 t^4 + \frac{7}{5} Dt^3 t^8 + \frac{44}{15} t^7 Dt^2 + \frac{4}{15} Dt^6 t^6 - \frac{31}{15} Dt^8 t^5 - \frac{2}{15} Dt^9 t^6 - \frac{2}{15} Dt^{13} t^9 \\ + \frac{2}{15} Dt^4 t^9, 1, 0, -Dt t - \frac{2}{3} t^3 + \frac{4}{15} Dt^6 t^8 + Dt^2 t^2 + \frac{68}{15} t^7 Dt^5 - \frac{11}{3} Dt^8 t^7 + \frac{134}{5} t^6 Dt^4 + \frac{91}{15} t^3 Dt \\ - \frac{74}{3} t^3 Dt^4 - \frac{487}{15} Dt^7 t^6 - \frac{26}{15} t^3 Dt^3 + \frac{1}{15} t^4 Dt - \frac{19}{15} t^4 Dt^4 + \frac{869}{15} t^4 Dt^2 - \frac{358}{3} Dt^5 t^4 - \frac{2}{15} Dt^9 t^8 \\ \left. - \frac{1}{3} Dt t^6 + \frac{2}{15} Dt^2 t^5 + 67 Dt^3 t^5 - \frac{2}{15} Dt^5 t^5 - \frac{541}{5} Dt^6 t^5 - \frac{2}{15} Dt^3 t^8 - \frac{13}{15} t^7 Dt^2, 0 \right]$$

$$[-Dt^2, Dt, 1, -t, t^2]$$

$$[Dt - t Dt^2 - Dt^4 + t^2 Dt^3 + Dt^5 t - Dt^6 t^2, Dt^3 - Dt^4 t - Dt^2 t^2 + Dt^5 t^2 + Dt t, 0,$$

$$-2 Dt + t^3 Dt - t^3 Dt^4 + 2 t Dt^2 - 3 t^2 Dt^3, 9 Dt^2 t^2 - 3 Dt t + 8 t^3 Dt^3 - t^4 Dt - 2 t^3 + t^4 Dt^4 + 3]$$

$$\left[-1 - \frac{11}{5} Dt t + \frac{123}{5} Dt + \frac{2752}{5} t Dt^2 - \frac{2987}{15} Dt^9 t^5 - \frac{133}{15} Dt^3 - \frac{2}{5} Dt^{11} t^7 + \frac{6}{5} Dt^2 t^2 - \frac{2}{15} t^7 Dt^5 \right. \\ + \frac{2}{5} Dt^8 t^7 - \frac{419}{15} Dt^4 t - \frac{4069}{15} Dt^4 - \frac{37}{15} t^6 Dt^4 + \frac{7424}{5} t^2 Dt^3 - \frac{16}{5} t^3 Dt + \frac{19984}{15} t^3 Dt^4 + 11 Dt^7 t^6 \\ - \frac{263}{15} Dt^5 t^2 + \frac{17}{15} t^3 Dt^3 + \frac{2}{15} t^4 Dt^4 - \frac{89}{5} t^4 Dt^2 + \frac{148}{15} Dt^6 - \frac{19267}{15} Dt^8 t^4 + \frac{8123}{15} Dt^5 t^4 - \frac{58}{15} Dt^6 t^3 \\ - \frac{43436}{15} Dt^5 t - \frac{28662}{5} Dt^6 t^2 - \frac{63}{5} Dt^3 t^5 - \frac{73}{5} Dt^{10} t^6 + \frac{740}{3} Dt^7 + \frac{1669}{15} Dt^6 t^5 - \frac{60682}{15} Dt^7 t^3 \\ - \frac{4}{15} Dt^7 t^4 + \frac{452}{15} Dt^7 t + \frac{49}{3} Dt^8 t^2 + \frac{1507}{15} Dt^{12} t^5 + \frac{91}{15} Dt^{13} t^6 + \frac{7036}{3} Dt^8 t + \frac{41}{15} Dt^9 t^3 \\ \left. + \frac{11411}{15} Dt^{11} t^4 + \frac{2}{15} Dt^{10} t^4 + \frac{21238}{5} Dt^9 t^2 + \frac{13582}{5} Dt^{10} t^3 + \frac{2}{15} Dt^{14} t^7, 0, 0, 1 + \frac{3}{5} Dt t - \frac{64}{5} Dt \right]$$

$$\begin{aligned}
& -\frac{896}{5}tDt^2 + \frac{23}{5}Dt^9t^5 + \frac{37}{15}Dt^3 - \frac{3}{5}Dt^2t^2 + \frac{83}{15}Dt^4t + \frac{148}{3}Dt^4 + \frac{2}{15}t^6Dt^4 - \frac{1632}{5}t^2Dt^3 + \frac{8}{5}t^3Dt \\
& -\frac{3008}{15}t^3Dt^4 - \frac{4}{15}Dt^7t^6 + \frac{9}{5}Dt^5t^2 - \frac{2}{15}t^3Dt^3 + \frac{27}{5}t^4Dt^2 + \frac{817}{15}Dt^8t^4 - \frac{808}{15}Dt^5t^4 + \frac{2}{15}Dt^6t^3 \\
& + \frac{1148}{3}Dt^5t + \frac{8282}{15}Dt^6t^2 + \frac{9}{5}Dt^3t^5 + \frac{2}{15}Dt^{10}t^6 - \frac{32}{5}Dt^6t^5 + \frac{4058}{15}Dt^7t^3, 1
\end{aligned}$$

$$M := \begin{bmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \end{bmatrix}$$

$k := 1$

$M_{1,4} := 0$

$k := 2$

$M_{2,4} := 0$

$pos :=$

$clean_rows := [2, 1, 3]$

<-- exit eliminate_units (now in eliminate_all_but_one_gcd_1_rows) =
"eliminate_units: the NEW list of obsolete generators:", [3, 1, 4]}

"eliminate_units: the NEW list of obsolete generators:", [3, 1, 4]

{--> enter get_all_but_one_gcd_1_row_position, args =
<-- exit get_all_but_one_gcd_1_row_position (now in
eliminate_all_but_one_gcd_1_rows) = }

$pos :=$

<-- exit eliminate_all_but_one_gcd_1_rows (now in homalg/BetterGenerators) =
"eliminate_all_but_one_gcd_1_rows: the NEW list of obsolete generators:", [3, 1,
4]}

{--> enter eliminate_units, args =

$$"M =", \begin{bmatrix} 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 1 & 0 & 0 & 0 & 0 \end{bmatrix}$$

$pos :=$

<-- exit eliminate_units (now in homalg/BetterGenerators) = "eliminate_units: NO
new obsolete generators:", [3, 1, 4]}

{--> enter eliminate_all_but_one_gcd_1_columns, args =

<-- exit eliminate_all_but_one_gcd_1_columns (now in homalg/BetterGenerators) =
"eliminate_all_but_one_gcd_1_columns: nothing to do for", 0, "un-clean rows, which
is less than 3"

{--> enter eliminate_all_but_one_gcd_1_rows, args =

<-- exit eliminate_all_but_one_gcd_1_rows (now in homalg/BetterGenerators) =
"eliminate_all_but_one_gcd_1_rowss: nothing to do for", 2, "un-clean columns,
which is less than 3"

$$N3 := \left[\left[[1, 0] = \left[2Dt t + \frac{2}{5}Dt^{10}t^9 - \frac{13151}{15}Dt^9t^5 + \frac{2}{3}t^3 - \frac{982}{15}Dt^{11}t^7 - \frac{39}{5}Dt^6t^8 - \frac{2}{5}Dt^7t^9 \right. \right. \right.$$

$$\left. \left. \left. - 2Dt^2t^2 - \frac{854}{15}t^7Dt^5 + \frac{1792}{15}Dt^8t^7 - 2Dt^4t - \frac{605}{3}t^6Dt^4 - \frac{182}{15}t^3Dt + \frac{2032}{15}t^3Dt^4 + \frac{8534}{15}Dt^7t^6 \right] \right] \right]$$

$$\begin{aligned}
& + 2 Dt^5 t^2 + \frac{79}{15} t^3 Dt^3 + \frac{8}{15} t^4 Dt + \frac{113}{15} t^4 Dt^4 - \frac{2698}{15} t^4 Dt^2 - \frac{2222}{3} Dt^8 t^4 + \frac{13808}{15} Dt^5 t^4 \\
& - \frac{89}{15} Dt^6 t^3 + \frac{57}{5} Dt^9 t^8 - 5 Dt^{12} t^8 + \frac{2}{3} Dt t^6 - \frac{7}{15} Dt^2 t^5 - \frac{4889}{15} Dt^3 t^5 - \frac{5519}{15} Dt^{10} t^6 + \frac{38}{15} Dt^5 t^5 \\
& - \frac{2}{15} Dt^3 t^6 + \frac{3608}{3} Dt^6 t^5 - \frac{370}{3} Dt^7 t^3 - \frac{121}{15} Dt^7 t^4 + \frac{7}{5} Dt^3 t^8 + \frac{44}{15} t^7 Dt^2 + \frac{4}{15} Dt^6 t^6 - \frac{31}{15} Dt^8 t^5 \\
& - \frac{2}{15} Dt^9 t^6 - \frac{2}{15} Dt^{13} t^9 + \frac{2}{15} Dt^4 t^9, 1, 0, -Dt t - \frac{2}{3} t^3 + \frac{4}{15} Dt^6 t^8 + Dt^2 t^2 + \frac{68}{15} t^7 Dt^5 - \frac{11}{3} Dt^8 t^7 \\
& + \frac{134}{5} t^6 Dt^4 + \frac{91}{15} t^3 Dt - \frac{74}{3} t^3 Dt^4 - \frac{487}{15} Dt^7 t^6 - \frac{26}{15} t^3 Dt^3 + \frac{1}{15} t^4 Dt - \frac{19}{15} t^4 Dt^4 + \frac{869}{15} t^4 Dt^2 \\
& - \frac{358}{3} Dt^5 t^4 - \frac{2}{15} Dt^9 t^8 - \frac{1}{3} Dt t^6 + \frac{2}{15} Dt^2 t^5 + 67 Dt^3 t^5 - \frac{2}{15} Dt^5 t^5 - \frac{541}{5} Dt^6 t^5 - \frac{2}{15} Dt^3 t^8 \\
& - \frac{13}{15} t^7 Dt^2, 0 \Big], [0, 1] = \left[-1 - \frac{11}{5} Dt t + \frac{123}{5} Dt + \frac{2752}{5} t Dt^2 - \frac{2987}{15} Dt^9 t^5 - \frac{133}{15} Dt^3 - \frac{2}{5} Dt^{11} t^7 \right. \\
& + \frac{6}{5} Dt^2 t^2 - \frac{2}{15} t^7 Dt^5 + \frac{2}{5} Dt^8 t^7 - \frac{419}{15} Dt^4 t - \frac{4069}{15} Dt^4 - \frac{37}{15} t^6 Dt^4 + \frac{7424}{5} t^2 Dt^3 - \frac{16}{5} t^3 Dt \\
& + \frac{19984}{15} t^3 Dt^4 + 11 Dt^7 t^6 - \frac{263}{15} Dt^5 t^2 + \frac{17}{15} t^3 Dt^3 + \frac{2}{15} t^4 Dt^4 - \frac{89}{5} t^4 Dt^2 + \frac{148}{15} Dt^6 \\
& - \frac{19267}{15} Dt^8 t^4 + \frac{8123}{15} Dt^5 t^4 - \frac{58}{15} Dt^6 t^3 - \frac{43436}{15} Dt^5 t - \frac{28662}{5} Dt^6 t^2 - \frac{63}{5} Dt^3 t^5 - \frac{73}{5} Dt^{10} t^6 \\
& + \frac{740}{3} Dt^7 + \frac{1669}{15} Dt^6 t^5 - \frac{60682}{15} Dt^7 t^3 - \frac{4}{15} Dt^7 t^4 + \frac{452}{15} Dt^7 t + \frac{49}{3} Dt^8 t^2 + \frac{1507}{15} Dt^{12} t^5 \\
& + \frac{91}{15} Dt^{13} t^6 + \frac{7036}{3} Dt^8 t + \frac{41}{15} Dt^9 t^3 + \frac{11411}{15} Dt^{11} t^4 + \frac{2}{15} Dt^{10} t^4 + \frac{21238}{5} Dt^9 t^2 + \frac{13582}{5} Dt^{10} t^3 \\
& + \frac{2}{15} Dt^{14} t^7, 0, 0, 1 + \frac{3}{5} Dt t - \frac{64}{5} Dt - \frac{896}{5} t Dt^2 + \frac{23}{5} Dt^9 t^5 + \frac{37}{15} Dt^3 - \frac{3}{5} Dt^2 t^2 + \frac{83}{15} Dt^4 t \\
& + \frac{148}{3} Dt^4 + \frac{2}{15} t^6 Dt^4 - \frac{1632}{5} t^2 Dt^3 + \frac{8}{5} t^3 Dt - \frac{3008}{15} t^3 Dt^4 - \frac{4}{15} Dt^7 t^6 + \frac{9}{5} Dt^5 t^2 - \frac{2}{15} t^3 Dt^3 \\
& + \frac{27}{5} t^4 Dt^2 + \frac{817}{15} Dt^8 t^4 - \frac{808}{15} Dt^5 t^4 + \frac{2}{15} Dt^6 t^3 + \frac{1148}{3} Dt^5 t + \frac{8282}{15} Dt^6 t^2 + \frac{9}{5} Dt^3 t^5 + \frac{2}{15} Dt^{10} t^6 \\
& \left. - \frac{32}{5} Dt^6 t^5 + \frac{4058}{15} Dt^7 t^3, 1 \right] \Big], [[0, 0], \text{"Presentation"}, \frac{2}{(-1+s)^2}]
\end{aligned}$$

> P3 := CokernelEpi(R3, Alg, RPM);

P3 :=

$$\left[Dt^3 + Dt^2 - \frac{4}{5} Dt t^2 - \frac{2}{3} Dt^5 t^3 - \frac{5}{3} Dt^6 t^3 - \frac{556}{15} Dt^5 t^5 - t Dt^3 - \frac{2}{15} Dt^4 t^5 + \frac{4}{5} t^3 Dt^2 + t^2 Dt^4 - Dt^4 t \right]$$

$$\begin{aligned}
& + \frac{43}{15} t^7 Dt^{10} + \frac{2}{15} Dt^{11} t^8 + \frac{5}{3} t^7 Dt^4 - \frac{331}{15} Dt^6 t^6 + 2 Dt^5 t^2 - \frac{68}{15} t^7 Dt^7 + \frac{44}{3} Dt^7 t^4 + \frac{274}{15} Dt^9 t^6 \\
& + \frac{556}{15} Dt^8 t^5 - \frac{37}{3} t^4 Dt^4 + \frac{2}{15} Dt^7 t^5 + \frac{3}{5} Dt^6 t^4 + \frac{19}{5} Dt^3 t^6 + \frac{2}{15} Dt^5 t^8 - \frac{2}{5} Dt t^4 + \frac{2}{5} t^5 Dt^2 \\
& - \frac{4}{15} Dt^8 t^8 - \frac{3}{5} t^4 Dt^3, 3 - 3 Dt t + \frac{17}{3} t^9 Dt^9 - \frac{128}{15} t^9 Dt^6 + 4 Dt t^2 - \frac{4}{5} t^4 + \frac{9841}{5} Dt^5 t^5 - \frac{17}{5} Dt t^5 \\
& + \frac{53}{5} Dt^4 t^5 + 24 t^2 Dt^2 - 4 t^3 Dt^2 - 23 t^3 Dt^3 + \frac{88}{5} t^8 Dt^2 + \frac{172}{5} Dt t^7 - \frac{1324}{3} t^7 Dt^4 + \frac{25822}{15} Dt^6 t^6 \\
& + \frac{8654}{15} t^7 Dt^7 + 497 t^4 Dt^4 - \frac{2}{15} t^7 Dt^3 - \frac{23}{15} Dt^2 t^6 + \frac{7}{3} t^6 Dt^5 + \frac{2}{15} Dt^6 t^7 + 16 t^6 - \frac{2681}{3} Dt^3 t^6 \\
& - \frac{4}{15} Dt^7 t^{10} + \frac{2}{15} Dt^{10} t^{10} + \frac{2}{15} Dt^4 t^{10} + \frac{43}{15} Dt^3 t^9 - \frac{1409}{15} Dt^5 t^8 - 111 Dt t^4 - 678 t^5 Dt^2 \\
& + \frac{1289}{15} Dt^8 t^8 + \frac{47}{5} t^4 Dt^3 \Big] \\
\Big[& 1 - Dt t - \frac{1}{3} Dt t^6 - \frac{74}{15} Dt^6 t^3 + \frac{182}{15} Dt^5 t^5 + \frac{6080}{3} Dt^5 t^4 + t^2 Dt^2 - \frac{10649}{15} Dt^{11} t^7 - \frac{1162}{15} Dt^6 t^8 \\
& + \frac{2552}{15} Dt^9 t^8 + 3080 Dt^7 t^6 + \frac{5167}{5} Dt^8 t^7 - \frac{1619}{5} t^7 Dt^5 - \frac{1822}{3} t^6 Dt^4 + \frac{10}{3} t^8 Dt^3 + \frac{1}{3} Dt^2 t^7 \\
& + \frac{592}{3} t^3 Dt^4 - 9 Dt^7 t^9 + \frac{67}{5} Dt^{10} t^9 - 96 Dt^{12} t^8 - \frac{89}{15} Dt^{13} t^9 + \frac{23}{15} t^9 Dt^4 + \frac{91}{15} t^3 Dt + \frac{38}{15} t^3 Dt^3 \\
& - \frac{5713}{15} Dt^3 t^5 - \frac{2}{15} t^7 Dt^{10} - \frac{2}{5} Dt^8 t^{10} + \frac{2}{5} Dt^{11} t^{10} - \frac{2}{15} Dt^{14} t^{10} + \frac{2}{15} t^{10} Dt^5 - \frac{2}{15} t^7 Dt^4 + \frac{44}{15} Dt^6 t^6 \\
& - \frac{7435}{3} Dt^{10} t^6 - 2082 Dt^8 t^4 - \frac{11411}{3} Dt^9 t^5 + \frac{4}{15} t^7 Dt^7 - \frac{286}{15} Dt^7 t^4 - \frac{37}{15} Dt^9 t^6 - \frac{191}{15} Dt^8 t^5 \\
& + \frac{277}{15} t^4 Dt^4 - \frac{7}{15} Dt^3 t^6 + \frac{12430}{3} Dt^6 t^5 - 222 Dt^7 t^3 - \frac{3}{5} Dt t^4 - \frac{91}{15} Dt^2 t^4 + \frac{3}{5} t^5 Dt^2, -\frac{36882}{5} Dt t^6 \\
& - \frac{2}{15} t^9 Dt^9 + \frac{4}{15} t^9 Dt^6 + 14 t^8 - 864 Dt^5 t^5 - 102822 Dt^5 t^4 + \frac{440929}{15} Dt^6 t^8 - \frac{433604}{15} Dt^9 t^8 \\
& - 265011 Dt^7 t^6 - \frac{605877}{5} Dt^8 t^7 + \frac{472464}{5} t^7 Dt^5 + \frac{789246}{5} t^6 Dt^4 - \frac{81821}{15} t^8 Dt^3 - \frac{49059}{5} Dt^2 t^7 \\
& - 7770 t^3 Dt^4 + \frac{64}{5} t^3 + \frac{25018}{5} Dt^7 t^9 - \frac{18832}{5} Dt^{10} t^9 - \frac{7492}{5} t^9 Dt^4 + 1776 t^3 Dt - \frac{592}{5} t^3 Dt^3 \\
& + \frac{607864}{5} Dt^3 t^5 - \frac{7}{5} t^8 Dt^2 - \frac{44}{15} Dt t^7 + \frac{6967}{15} Dt^8 t^{10} - \frac{4001}{15} Dt^{11} t^{10} - \frac{3209}{15} t^{10} Dt^5 + \frac{808}{15} t^7 Dt^4 \\
& - \frac{5482}{15} Dt^6 t^6 - \frac{196}{3} t^7 Dt^7 + \frac{41}{15} t^{11} Dt^3 - \frac{3608}{5} t^4 Dt^4 + \frac{81}{5} Dt^2 t^{10} + \frac{154}{5} Dt t^9 + \frac{109}{5} Dt^9 t^{11}
\end{aligned}$$

$$\begin{aligned}
& -\frac{2}{5}Dt^7 t^{12} - 15Dt^6 t^{11} + \frac{2}{5}Dt^{10} t^{12} - \frac{143}{15}Dt^{12} t^{11} - \frac{2}{15}Dt^{13} t^{12} + \frac{2}{15}t^{12}Dt^4 - \frac{2}{3}t^6 - \frac{7678}{5}t^5 \\
& + \frac{3008}{15}Dt^3 t^6 - 271083Dt^6 t^5 - \frac{2}{15}Dt^3 t^9 + \frac{32}{5}Dt^5 t^8 + \frac{896}{5}Dt t^4 + 33744Dt^2 t^4 + \frac{1632}{5}t^5 Dt^2 \\
& - 5Dt^8 t^8 \Big]
\end{aligned}$$

$$\begin{aligned}
& \left[-\frac{8}{5}Dt - \frac{8}{5}Dt t^2 - \frac{8}{5}t^2 Dt^3 - \frac{593}{3}Dt^5 t^3 - Dt^5 t + \frac{26}{15}Dt^6 t^2 + \frac{8}{5}t Dt^2 + \frac{232}{15}Dt^4 t^5 - \frac{2}{15}Dt^5 t^4 \right. \\
& - \frac{19}{15}t^3 Dt^4 + \frac{8}{5}t^3 Dt^2 - \frac{148}{3}t^2 Dt^4 + \frac{59}{15}Dt^{11} t^6 + \frac{2}{15}Dt^8 t^4 + \frac{41}{15}t^6 Dt^5 - \frac{269}{5}Dt^7 t^5 - \frac{20}{3}Dt^8 t^6 \\
& + \frac{2}{15}Dt^6 t^7 - \frac{4}{15}Dt^9 t^7 - \frac{2542}{15}Dt^6 t^4 + \frac{19}{15}Dt^7 t^3 + \frac{2}{15}Dt^{12} t^7 + 3Dt^5 - 3Dt^6 t + \frac{115}{3}Dt^{10} t^5 \\
& + 200Dt^8 t^3 + Dt^4 + \frac{116}{5}t^4 Dt^3 + \frac{440}{3}Dt^9 t^4 + 57Dt^7 t^2, 8Dt + 45Dt^2 - 444Dt t^2 + \frac{168}{5}t^2 Dt^3 \\
& + 10338Dt^5 t^3 - \frac{16}{5}t^2 + 96t^4 - 8t Dt^2 - 45t Dt^3 + \frac{1284}{5}Dt t^5 - 3983Dt^4 t^5 + \frac{123}{5}Dt^5 t^4 \\
& + \frac{2}{15}Dt^7 t^6 - \frac{2}{15}t^6 Dt^4 + \frac{312}{5}t^3 Dt^4 - 3501t^3 Dt^2 + 1965t^2 Dt^4 - \frac{89}{5}t^3 Dt - \frac{37}{15}Dt^3 t^5 - \frac{4}{15}t^9 Dt^8 \\
& + \frac{2}{15}t^9 Dt^{11} + \frac{2}{15}t^9 Dt^5 + \frac{21}{5}t^8 Dt^4 + \frac{217}{5}t^7 Dt^3 + \frac{876}{5}Dt^2 t^6 - \frac{5964}{5}t^6 Dt^5 + 5760Dt^7 t^5 \\
& + \frac{6322}{5}Dt^8 t^6 - \frac{2561}{15}Dt^6 t^7 + \frac{2054}{15}Dt^9 t^7 + 12297Dt^6 t^4 + \frac{49}{15}Dt^6 t^5 - \frac{63}{5}Dt^2 t^4 - 6040t^4 Dt^3 \\
& \left. + 7Dt^{10} t^8 - \frac{56}{5}Dt^7 t^8 \right]
\end{aligned}$$

$$\begin{aligned}
& \left[\frac{91}{5}Dt t - \frac{22169}{15}Dt^{12} t^6 - \frac{747}{5}Dt^{13} t^7 - \frac{2}{5}t^9 Dt^9 + \frac{2}{5}t^9 Dt^{12} + \frac{2}{15}t^9 Dt^6 + Dt^2 - \frac{12}{5}Dt t^2 \right. \\
& + \frac{1187}{15}Dt^5 t^3 + \frac{68230}{3}Dt^6 t^3 - \frac{43109}{15}Dt^5 t^5 + \frac{43}{5}t Dt^3 - \frac{7}{5}Dt^4 t^5 - \frac{91}{5}t^2 Dt^2 - \frac{63301}{3}Dt^9 t^3 \\
& - \frac{56021}{3}Dt^{10} t^4 + \frac{12}{5}t^3 Dt^2 + \frac{382}{5}t^2 Dt^4 - \frac{9552}{5}t^3 Dt^3 + 592Dt^4 t - \frac{2}{15}Dt^{11} t^6 - \frac{2}{15}Dt^{15} t^9 \\
& - \frac{111718}{15}Dt^{11} t^5 + \frac{4361}{15}t^7 Dt^{10} + \frac{87}{5}Dt^{11} t^8 + \frac{257}{15}t^7 Dt^4 - \frac{14153}{15}Dt^6 t^6 + 8304Dt^5 t^2 \\
& - \frac{2377}{15}t^7 Dt^7 + \frac{67870}{3}Dt^7 t^4 - 8550Dt^8 t^2 - 666Dt^7 t - \frac{109}{15}Dt^{14} t^8 + \frac{35917}{15}Dt^9 t^6 \\
& \left. + \frac{51569}{5}Dt^8 t^5 - \frac{60373}{15}t^4 Dt^4 - \frac{2}{15}t^6 Dt^5 + \frac{24}{5}Dt^7 t^5 + \frac{4}{15}Dt^8 t^6 + \frac{446}{15}Dt^6 t^4 + 27Dt^3 t^6 \right]
\end{aligned}$$

$$\begin{aligned}
& + \frac{43}{15} Dt^5 t^8 - 2 Dt t^4 - \frac{74}{5} Dt^6 t - \frac{17}{5} Dt^{10} t^5 - \frac{1241}{15} Dt^8 t^3 + 2 t^5 Dt^2 - 13 Dt^8 t^8 - \frac{11}{5} t^4 Dt^3 \\
& - \frac{413}{15} Dt^9 t^4 - \frac{406}{5} Dt^7 t^2, 5328 Dt t + \frac{192}{5} t + \frac{10564}{15} t^9 Dt^9 - \frac{1858}{5} t^9 Dt^{12} - \frac{5684}{15} t^9 Dt^6 \\
& - \frac{167}{15} t^{10} Dt^{13} + \frac{2}{5} t^{11} Dt^{11} - \frac{2}{15} t^{11} Dt^{14} + \frac{2}{15} t^{11} Dt^5 - \frac{2}{5} t^{11} Dt^8 + \frac{3648}{5} Dt t^2 - \frac{25208}{5} Dt^5 t^3 \\
& - 1458237 Dt^6 t^3 - 4 t^4 + \frac{4096494}{5} Dt^5 t^5 - \frac{1776}{5} t Dt^3 - \frac{106}{5} Dt t^5 + \frac{2888}{5} Dt^4 t^5 + 136752 t^2 Dt^2 \\
& + \frac{9056}{5} t^3 Dt^2 - 7678 t^3 - \frac{15024}{5} t^2 Dt^4 + 641608 t^3 Dt^3 - 23310 Dt^4 t + \frac{964}{5} t^8 Dt^2 + \frac{1456}{5} Dt t^7 \\
& - \frac{942068}{15} t^7 Dt^{10} - \frac{96506}{15} Dt^{11} t^8 - \frac{56821}{3} t^7 Dt^4 + \frac{4944824}{15} Dt^6 t^6 - 419058 Dt^5 t^2 \\
& + \frac{223283}{3} t^7 Dt^7 - \frac{2}{15} t^8 Dt^4 - 1861149 Dt^7 t^4 - \frac{5286463}{15} Dt^9 t^6 - \frac{5566194}{5} Dt^8 t^5 \\
& + 1068668 t^4 Dt^4 - \frac{13}{5} t^7 Dt^3 - \frac{212}{15} Dt^2 t^6 + \frac{1576}{15} t^6 Dt^5 - \frac{4114}{5} Dt^7 t^5 - \frac{316}{3} Dt^8 t^6 + \frac{44}{5} Dt^6 t^7 \\
& - \frac{31}{5} Dt^9 t^7 - \frac{15284}{5} Dt^6 t^4 + 112 t^6 - \frac{160349}{3} Dt^3 t^6 - \frac{99}{5} Dt^7 t^{10} + \frac{133}{5} Dt^{10} t^{10} + \frac{13}{3} Dt^4 t^{10} \\
& + \frac{694}{15} Dt^3 t^9 - \frac{54566}{15} Dt^5 t^8 - 45794 Dt t^4 - 76059 t^5 Dt^2 + \frac{144724}{15} Dt^8 t^8 + \frac{7648}{5} t^4 Dt^3 \\
& - \frac{2}{15} Dt^{10} t^8 + \frac{4}{15} Dt^7 t^8 \Big] \\
\Big[& - \frac{16}{5} Dt - \frac{8}{5} Dt^3 + \frac{472}{5} t^2 Dt^3 - \frac{2}{15} Dt^6 t^3 - \frac{1927}{3} Dt^5 t - \frac{13133}{15} Dt^6 t^2 + \frac{16}{5} t Dt^2 + \frac{478}{15} Dt^5 t^4 \\
& + \frac{2}{15} Dt^9 t^3 + 657 Dt^8 t + \frac{2360}{3} Dt^9 t^2 + \frac{1015}{3} Dt^{10} t^3 + \frac{2}{15} Dt^{13} t^6 + \frac{929}{15} Dt^{11} t^4 + \frac{73}{15} Dt^{12} t^5 \\
& + \frac{2}{15} Dt^7 t^6 + \frac{1508}{15} t^3 Dt^4 - \frac{27}{5} Dt^4 t - \frac{4}{15} Dt^{10} t^6 - \frac{469}{5} Dt^8 t^4 - \frac{128}{15} Dt^9 t^5 - \frac{9}{5} Dt^5 t^2 + \frac{9}{5} Dt^8 t^2 \\
& + \frac{83}{15} Dt^7 t + 111 Dt^7 + \frac{11}{3} Dt^6 t^5 - \frac{6577}{15} Dt^7 t^3 - \frac{296}{3} Dt^4 + \frac{37}{15} Dt^6, -\frac{283}{5} Dt t - 888 Dt + \frac{296}{5} Dt^3 \\
& - 27661 t^2 Dt^3 + \frac{614}{15} Dt^6 t^3 + 32979 Dt^5 t + 59526 Dt^6 t^2 + 384 t^2 - \frac{2}{15} Dt^5 t^5 - 10947 t Dt^2 \\
& - \frac{55699}{5} Dt^5 t^4 - \frac{341}{5} t^2 Dt^2 + \frac{41}{5} Dt^{11} t^7 + \frac{2}{15} Dt^6 t^8 - \frac{4}{15} Dt^9 t^8 - \frac{781}{3} Dt^7 t^6 - \frac{68}{5} Dt^8 t^7 \\
& + \frac{27}{5} t^7 Dt^5 + 77 t^6 Dt^4 - 25955 t^3 Dt^4 + \frac{2}{15} Dt^{12} t^8 + 1380 t^3 Dt - \frac{374}{15} t^3 Dt^3 + \frac{1104}{5} Dt^4 t
\end{aligned}$$

$$\begin{aligned}
& \left[-1 + Dt\,t - \frac{1029}{5} Dt - \frac{7040}{3} Dt^{10} - \frac{25765}{3} Dt^{11} t - \frac{25595}{3} Dt^{12} t^2 - \frac{20725}{6} Dt^{13} t^3 + \frac{1019}{15} Dt^3 \right. \\
& - \frac{62536}{5} t^2 Dt^3 + \frac{659}{12} Dt^6 t^3 + \frac{242437}{15} Dt^5 t + \frac{222183}{5} Dt^6 t^2 - \frac{1}{5} Dt^5 t^5 - \frac{18872}{5} t Dt^2 \\
& - \frac{1277}{20} t^5 Dt^{15} - \frac{19957}{30} t^4 Dt^{14} - \frac{35}{12} t^6 Dt^{16} - \frac{1}{20} t^4 Dt^{13} - \frac{1}{20} t^7 Dt^{17} - \frac{108826}{15} Dt^5 t^4 - \frac{1}{5} t^8 Dt^{15} \\
& - 2 t^2 Dt^2 - \frac{281}{6} Dt^9 t^3 - \frac{161}{30} Dt^{10} t^4 - \frac{56996}{15} Dt^8 t - \frac{350966}{15} Dt^9 t^2 - \frac{377086}{15} Dt^{10} t^3 + \frac{541}{20} Dt^{11} t^7 \\
& - \frac{3359}{15} Dt^{13} t^6 - \frac{131}{12} Dt^{14} t^7 - 10748 Dt^{11} t^4 - \frac{65779}{30} Dt^{12} t^5 + \frac{1}{5} Dt^6 t^8 - \frac{3}{5} Dt^9 t^8 - \frac{8581}{30} Dt^7 t^6 \\
& - \frac{423}{20} Dt^8 t^7 + \frac{76}{15} t^7 Dt^5 + \frac{611}{15} t^6 Dt^4 - \frac{212006}{15} t^3 Dt^4 + \frac{3}{5} Dt^{12} t^8 + \frac{128}{5} t^3 Dt - \frac{103}{15} t^3 Dt^3 \\
& + \frac{1042}{5} Dt^4 t + \frac{609}{5} Dt^3 t^5 - \frac{1}{5} Dt^{11} t^5 + \frac{9443}{20} Dt^{10} t^6 + \frac{185469}{10} Dt^8 t^4 + \frac{245233}{60} Dt^9 t^5 + \frac{2528}{15} Dt^5 t^2 \\
& + \frac{473}{60} Dt^7 t^4 - \frac{789}{5} Dt^8 t^2 - \frac{569}{3} Dt^7 t + \frac{2}{5} Dt^8 t^5 - \frac{154}{15} Dt^9 - \frac{37}{15} t^4 Dt^4 + \frac{4660}{3} Dt^7 - \frac{29288}{15} Dt^6 t^5 \\
& + \frac{1281041}{30} Dt^7 t^3 - \frac{131}{15} Dt^{11} t^2 - \frac{73}{60} Dt^{12} t^3 - \frac{296}{15} Dt^{10} t + \frac{607}{5} Dt^2 t^4 + \frac{14987}{15} Dt^4 - \frac{170}{3} Dt^6, 0, 0, \\
& 1 - Dt\,t + \frac{512}{5} Dt - \frac{251}{15} Dt^3 + \frac{14104}{5} t^2 Dt^3 - \frac{229}{60} Dt^6 t^3 - \frac{61147}{30} Dt^5 t - \frac{25621}{6} Dt^6 t^2 + 1224 t Dt^2 \\
& + \frac{8127}{10} Dt^5 t^4 + t^2 Dt^2 - \frac{1}{20} Dt^9 t^3 - \frac{2765}{3} Dt^8 t - 761 Dt^9 t^2 - \frac{1469}{6} Dt^{10} t^3 - \frac{1}{5} Dt^{11} t^7 - \frac{1}{20} Dt^{13} t^6 \\
& - \frac{1051}{30} Dt^{11} t^4 - \frac{133}{60} Dt^{12} t^5 + \frac{749}{60} Dt^7 t^6 + \frac{2}{5} Dt^8 t^7 - \frac{1}{5} t^7 Dt^5 - \frac{58}{15} t^6 Dt^4 + \frac{33862}{15} t^3 Dt^4 - \frac{64}{5} t^3 Dt \\
& + \frac{22}{15} t^3 Dt^3 - \frac{578}{15} Dt^4 t - \frac{107}{5} Dt^3 t^5 - \frac{257}{30} Dt^{10} t^6 - \frac{55819}{60} Dt^8 t^4 - \frac{7957}{60} Dt^9 t^5 - \frac{64}{3} Dt^5 t^2 \\
& - \frac{1}{5} Dt^7 t^4 - \frac{43}{60} Dt^8 t^2 - \frac{137}{60} Dt^7 t + \frac{1}{5} t^4 Dt^4 - \frac{880}{3} Dt^7 + \frac{4363}{30} Dt^6 t^5 - \frac{182423}{60} Dt^7 t^3 - \frac{181}{5} Dt^2 t^4 \\
& \left. - \frac{476}{3} Dt^4 - \frac{22}{15} Dt^6, 1 \right], [[0, 0]], \text{"Presentation"}, \frac{2}{(1-s)^2}, [0, 2] \Big]
\end{aligned}$$

With Stafford:

> M3 := Cokernel(R3, Alg);

$$\begin{aligned}
M3 := & \left[\left[[1, 0] = \left[0, 1, -\frac{184}{3} t^3 - \frac{166}{3} - 39 t^2 - 2 t^5 - 95 t, -\frac{430}{3} Dt\,t - 48 t - 18 Dt - \frac{1}{6} Dt\,t^6 \right. \right. \right. \\
& \left. \left. + \frac{83}{6} Dt^3 + \frac{11}{2} Dt^2 - \frac{309}{2} Dt\,t^2 - \frac{107}{6} t^2 Dt^3 + \frac{8}{3} Dt^5 t^3 + \frac{1}{3} Dt^6 t^3 + \frac{3}{2} Dt^5 t + \frac{1}{6} Dt^6 t^2 - 20 t^2 - \frac{83}{3} \right. \right. \\
& \left. \left. \left. \right] \right] \right]
\end{aligned}$$

$$\begin{aligned}
& -\frac{1}{3}Dt^5 t^5 - 36 t Dt^2 + \frac{37}{2} t Dt^3 - \frac{13}{3} Dt^4 t^5 - \frac{1}{6} Dt^5 t^4 - \frac{451}{3} t^2 Dt^2 - 3 t^3 Dt^4 - \frac{251}{2} t^3 Dt^2 - \frac{92}{3} t^3 \\
& + \frac{25}{2} t^2 Dt^4 - 18 t^3 Dt - \frac{107}{2} t^3 Dt^3 + \frac{44}{3} Dt^4 t - \frac{1}{3} Dt^3 t^5 + \frac{25}{6} Dt^5 t^2 - \frac{22}{3} t^4 Dt^4 - \frac{1}{6} t^6 Dt^5 + \frac{1}{6} Dt^6 t^4 \\
& - t^5 - \frac{1}{3} Dt^3 t^6 - \frac{73}{3} Dt t^4 - \frac{9}{2} Dt^2 t^4 - \frac{16}{3} t^5 Dt^2 + 3 Dt^4 - \frac{223}{6} t^4 Dt^3, -\frac{4618}{3} Dt t - 577 t - 151 Dt \\
& - \frac{397}{6} Dt t^6 + \frac{1168}{3} Dt^3 + \frac{179}{6} Dt^2 - \frac{15509}{6} Dt t^2 - \frac{6709}{3} t^2 Dt^3 + \frac{387}{2} Dt^5 t^3 + \frac{482}{3} Dt^6 t^3 \\
& + \frac{1048}{3} Dt^5 t + \frac{281}{2} Dt^6 t^2 - \frac{8897}{6} t^2 - 165 t^4 - \frac{874}{3} Dt^5 t^5 - 1373 t Dt^2 + \frac{919}{6} t Dt^3 - \frac{265}{3} Dt t^5 \\
& - \frac{2167}{3} Dt^4 t^5 - 292 Dt^5 t^4 - \frac{26069}{6} t^2 Dt^2 - Dt^7 t^6 - \frac{3}{2} t^7 Dt^5 - 39 t^6 Dt^4 - \frac{1}{2} t^8 Dt^3 - \frac{61}{6} Dt^2 t^7 \\
& - 1251 t^3 Dt^4 - \frac{11633}{3} t^3 Dt^2 - \frac{3986}{3} t^3 + \frac{911}{3} t^2 Dt^4 - \frac{14401}{6} t^3 Dt - 4102 t^3 Dt^3 + \frac{5215}{6} Dt^4 t \\
& - \frac{320}{3} - \frac{2125}{6} Dt^3 t^5 - \frac{1}{6} Dt t^7 - \frac{46}{3} t^7 Dt^4 - \frac{70}{3} Dt^6 t^6 + Dt^8 t^4 + \frac{3557}{6} Dt^5 t^2 - \frac{2}{3} t^7 Dt^7 + \frac{107}{6} Dt^7 t^4 \\
& + \frac{1}{6} Dt^8 t^2 + \frac{3}{2} Dt^7 t - \frac{5}{3} t^7 + \frac{2}{3} Dt^8 t^5 - \frac{1}{6} Dt t^8 - \frac{9719}{6} t^4 Dt^4 - t^7 Dt^3 - \frac{50}{3} Dt^2 t^6 - \frac{619}{6} t^6 Dt^5 \\
& + \frac{29}{6} Dt^7 t^5 + \frac{1}{6} Dt^8 t^6 - \frac{41}{6} Dt^6 t^7 + \frac{287}{6} Dt^6 t^4 - \frac{7}{6} t^6 - \frac{460}{3} t^5 - \frac{499}{3} Dt^3 t^6 - 29 Dt^6 t^5 + 21 Dt^7 t^3 \\
& - \frac{1}{2} Dt^5 t^8 - \frac{3357}{2} Dt t^4 + \frac{317}{6} Dt^5 + \frac{259}{6} Dt^6 t + \frac{2}{3} Dt^8 t^3 - 1397 Dt^2 t^4 - \frac{2381}{3} t^5 Dt^2 + \frac{797}{3} Dt^4 \\
& - \frac{7348}{3} t^4 Dt^3 - \frac{1}{6} Dt^7 t^8 + 3 Dt^6 + 10 Dt^7 t^2 \Big], [0, 1] = \left[1, 0, -\frac{118}{3} t^3 - 46 t^4 + 2 - 48 t^2 - \frac{5}{3} t^6 - 48 t, \right. \\
& 1 - 18 Dt t - 24 t - 129 Dt t^2 + 12 t^2 Dt^3 + 4 Dt^5 t^3 + \frac{1}{6} Dt^6 t^3 - 24 t^2 - 23 t^4 - \frac{1}{6} Dt^5 t^5 + 12 t Dt^3 \\
& - 21 Dt t^5 - \frac{43}{6} Dt^4 t^5 + \frac{5}{2} Dt^5 t^4 - 36 t^2 Dt^2 - \frac{1}{6} t^7 Dt^5 - \frac{25}{6} t^6 Dt^4 + \frac{21}{2} t^3 Dt^4 - 140 t^3 Dt^2 - \frac{59}{3} t^3 \\
& + \frac{27}{2} t^2 Dt^4 - 111 t^3 Dt - 18 t^3 Dt^3 + 3 Dt^4 t - \frac{203}{6} Dt^3 t^5 - \frac{1}{6} Dt t^7 + \frac{3}{2} Dt^5 t^2 - 3 t^4 Dt^4 - \frac{1}{3} t^7 Dt^3 \\
& - 5 Dt^2 t^6 - \frac{1}{3} t^6 Dt^5 + \frac{1}{3} Dt^6 t^4 - \frac{5}{6} t^6 - \frac{1}{3} Dt^3 t^6 + \frac{1}{6} Dt^6 t^5 - \frac{52}{3} Dt t^4 - 105 Dt^2 t^4 - \frac{13}{3} t^5 Dt^2 \\
& - \frac{307}{6} t^4 Dt^3, 4 - 157 Dt t - 112 t + 5 Dt - \frac{491}{6} Dt t^6 + Dt^2 - 1371 Dt t^2 - 51 t^2 Dt^3 + \frac{1057}{2} Dt^5 t^3 \\
& \left. + \frac{401}{3} Dt^6 t^3 + 51 Dt^5 t + 42 Dt^6 t^2 - 463 t^2 - 1017 t^4 - \frac{3}{2} t^8 - \frac{847}{3} Dt^5 t^5 - 58 t Dt^2 + 294 t Dt^3 \right]
\end{aligned}$$

$$\begin{aligned}
& -\frac{4228}{3}Dt t^5 - 1504Dt^4 t^5 + \frac{464}{3}Dt^5 t^4 - 1301t^2 Dt^2 - \frac{20}{3}Dt^6 t^8 + \frac{14}{3}Dt^7 t^6 + \frac{1}{6}Dt^8 t^7 \\
& -\frac{293}{3}t^7 Dt^5 - \frac{1975}{3}t^6 Dt^4 - t^8 Dt^3 - \frac{95}{6}Dt^2 t^7 + \frac{967}{6}t^3 Dt^4 - \frac{11450}{3}t^3 Dt^2 - \frac{3941}{3}t^3 - \frac{1}{6}Dt^7 t^9 \\
& + \frac{1449}{2}t^2 Dt^4 - \frac{6121}{3}t^3 Dt - 2108t^3 Dt^3 + 240Dt^4 t - 2129Dt^3 t^5 - \frac{29}{3}t^8 Dt^2 - 60Dt t^7 \\
& -\frac{227}{6}t^7 Dt^4 - \frac{57}{2}Dt^6 t^6 + \frac{2}{3}Dt^8 t^4 + 324Dt^5 t^2 - t^7 Dt^7 - \frac{1}{2}t^9 Dt^5 - \frac{89}{6}t^8 Dt^4 + \frac{41}{2}Dt^7 t^4 - t^7 \\
& + Dt^8 t^5 - \frac{1}{6}Dt t^8 - 1192t^4 Dt^4 - \frac{1}{6}Dt t^9 - 155t^7 Dt^3 - \frac{4241}{6}Dt^2 t^6 - \frac{1669}{6}t^6 Dt^5 + \frac{52}{3}Dt^7 t^5 \\
& + \frac{2}{3}Dt^8 t^6 - \frac{137}{6}Dt^6 t^7 + \frac{301}{2}Dt^6 t^4 - \frac{391}{3}t^6 - \frac{451}{3}t^5 - \frac{1003}{3}Dt^3 t^6 + \frac{87}{2}Dt^6 t^5 + \frac{59}{6}Dt^7 t^3 \\
& -\frac{1}{2}Dt^3 t^9 - \frac{3}{2}Dt^5 t^8 - 2171Dt t^4 + 3Dt^6 t + \frac{1}{6}Dt^8 t^3 - \frac{19153}{6}Dt^2 t^4 - \frac{7729}{6}t^5 Dt^2 - \frac{7391}{2}t^4 Dt^3 \\
& -\frac{2}{3}Dt^7 t^8 + \frac{3}{2}Dt^7 t^2 \Big] , [[0, 0]] , \text{"Presentation"} , \frac{2}{(-1+s)^2} \Big]
\end{aligned}$$

> E3 := CokernelEpi(R3, Alg);

E3 :=

$$\begin{aligned}
& \left[-3Dt + \frac{43}{2}Dt t^6 + \frac{1}{6}t^9 Dt^6 - 3Dt^2 + 2Dt t^2 + 10t^2 Dt^3 - 2Dt^5 t^3 - \frac{107}{6}Dt^5 t^5 + 3t Dt^2 + 3t Dt^3 \right. \\
& + 7Dt t^5 + \frac{22}{3}Dt^4 t^5 - \frac{33}{2}Dt^5 t^4 + 8t^2 Dt^2 + \frac{1}{3}Dt^6 t^8 - \frac{1}{3}Dt^7 t^6 + 6t^7 Dt^5 + 32t^6 Dt^4 + 5t^8 Dt^3 \\
& + \frac{41}{2}Dt^2 t^7 - 11t^3 Dt^4 - 2t^3 Dt^2 + \frac{1}{3}t^9 Dt^4 + t^2 Dt^4 - 8t^3 Dt^3 + 54Dt^3 t^5 + 28t^7 Dt^4 - \frac{19}{6}Dt^6 t^6 \\
& - \frac{1}{6}t^7 Dt^7 + \frac{1}{3}t^8 Dt^4 + \frac{7}{6}Dt t^8 - 32t^4 Dt^4 + \frac{23}{6}t^7 Dt^3 + \frac{67}{6}Dt^2 t^6 + \frac{13}{6}t^6 Dt^5 - \frac{1}{6}Dt^7 t^5 + \frac{1}{6}Dt^6 t^7 \\
& \left. - \frac{3}{2}Dt^6 t^4 + \frac{1}{6}t^9 Dt^2 + 75Dt^3 t^6 - \frac{14}{3}Dt^6 t^5 + \frac{23}{6}Dt^5 t^8 + 9Dt t^4 + 17Dt^2 t^4 + 63t^5 Dt^2 + 5t^4 Dt^3 , \right. \\
& 1 - Dt t + Dt^3 + 3Dt^2 - 2Dt t^2 - 4t^2 Dt^3 + 3Dt^5 t^3 + \frac{1}{3}Dt^6 t^3 - \frac{7}{6}Dt^5 t^5 - 3t Dt^3 - 9Dt t^5 \\
& - \frac{40}{3}Dt^4 t^5 + 7Dt^5 t^4 - t^2 Dt^2 - \frac{1}{6}Dt^6 t^8 + \frac{1}{6}Dt^7 t^6 - 3t^7 Dt^5 - 16t^6 Dt^4 + 4t^3 Dt^4 + 2t^3 Dt^2 \\
& - 2t^2 Dt^4 + \frac{4}{3}t^3 Dt^3 - Dt^4 t - 27Dt^3 t^5 - \frac{1}{6}t^8 Dt^2 - Dt t^7 - \frac{1}{3}t^7 Dt^4 - \frac{1}{6}Dt^6 t^6 - \frac{1}{3}t^8 Dt^4 + \frac{1}{6}Dt^7 t^4 \\
& \left. - \frac{4}{3}t^4 Dt^4 - 4t^7 Dt^3 - \frac{25}{2}Dt^2 t^6 - \frac{25}{6}t^6 Dt^5 + \frac{1}{3}Dt^7 t^5 - \frac{1}{3}Dt^6 t^7 + \frac{5}{2}Dt^6 t^4 - \frac{8}{3}Dt^3 t^6 + \frac{13}{6}Dt^6 t^5 \right]
\end{aligned}$$

$$\begin{aligned}
& -2 Dt t^4 - 9 Dt^2 t^4 - 5 t^5 Dt^2 - 8 t^4 Dt^3 \Big] \\
& \left[1 - Dt t + 72 Dt - 465 Dt t^6 - \frac{93}{2} Dt^3 - \frac{2}{3} t^9 Dt^9 - 19 t^9 Dt^6 + 144 Dt^2 - 925 Dt t^2 - \frac{12267}{2} t^2 Dt^3 \right. \\
& - \frac{4597}{3} Dt^5 t^3 + \frac{17261}{6} Dt^6 t^3 + \frac{719}{2} Dt^5 t + 1708 Dt^6 t^2 - \frac{81841}{6} Dt^5 t^5 - 72 t Dt^2 - 144 t Dt^3 \\
& - 631 Dt t^5 - \frac{85055}{6} Dt^4 t^5 - 10967 Dt^5 t^4 - 3422 t^2 Dt^2 + \frac{10}{3} Dt^9 t^3 + \frac{1}{6} Dt^{10} t^4 - \frac{155}{3} Dt^6 t^8 \\
& - Dt^9 t^8 - \frac{3325}{6} Dt^7 t^6 - 39 Dt^8 t^7 - \frac{3833}{6} t^7 Dt^5 - \frac{7083}{2} t^6 Dt^4 - \frac{241}{2} t^8 Dt^3 - 417 Dt^2 t^7 \\
& - \frac{28751}{2} t^3 Dt^4 - \frac{21997}{3} t^3 Dt^2 - \frac{3}{2} Dt^7 t^9 - \frac{27}{2} t^9 Dt^4 - \frac{4125}{2} t^2 Dt^4 - 2747 t^3 Dt - 17037 t^3 Dt^3 \\
& + \frac{93}{2} Dt^4 t - \frac{17915}{2} Dt^3 t^5 - \frac{5}{2} t^8 Dt^2 - 8 Dt t^7 + \frac{2}{3} t^7 Dt^{10} - \frac{1}{2} t^{10} Dt^5 - \frac{4877}{3} t^7 Dt^4 - \frac{10936}{3} Dt^6 t^6 \\
& + Dt^{10} t^6 + \frac{585}{2} Dt^8 t^4 + \frac{59}{2} Dt^9 t^5 - \frac{49}{6} t^9 Dt^8 + \frac{4035}{2} Dt^5 t^2 - \frac{1433}{3} t^7 Dt^7 - t^9 Dt^5 - \frac{74}{3} t^8 Dt^4 \\
& + \frac{4070}{3} Dt^7 t^4 + 18 Dt^8 t^2 + 21 Dt^7 t + \frac{68}{3} Dt^9 t^6 + \frac{1609}{6} Dt^8 t^5 - \frac{28}{3} Dt t^8 - 23925 t^4 Dt^4 \\
& - 201 t^7 Dt^3 - 633 Dt^2 t^6 - \frac{18344}{3} t^6 Dt^5 + \frac{1721}{6} Dt^7 t^5 + \frac{407}{6} Dt^8 t^6 - \frac{4024}{3} Dt^6 t^7 + \frac{35}{6} Dt^9 t^7 \\
& - \frac{1}{6} Dt^3 t^{10} + \frac{725}{6} Dt^6 t^4 - \frac{8}{3} t^9 Dt^2 - \frac{28301}{6} Dt^3 t^6 - \frac{10796}{3} Dt^6 t^5 + 1170 Dt^7 t^3 - \frac{1}{2} Dt^7 t^{10} \\
& - \frac{1}{6} Dt^3 t^9 - 261 Dt^5 t^8 - 2294 Dt t^4 - 188 Dt^5 + 188 Dt^6 t + \frac{2}{3} Dt^{10} t^5 + 128 Dt^8 t^3 - \frac{18515}{2} Dt^2 t^4 \\
& - 5839 t^5 Dt^2 - \frac{88}{3} Dt^8 t^8 - \frac{719}{2} Dt^4 - \frac{94537}{6} t^4 Dt^3 + \frac{33}{2} Dt^9 t^4 + \frac{1}{6} Dt^{10} t^8 - \frac{905}{6} Dt^7 t^8 - 21 Dt^6 \\
& + \frac{695}{2} Dt^7 t^2 - \frac{1}{6} t^{10} Dt^9, -18 Dt + \frac{35}{6} Dt t^6 - \frac{349}{6} Dt^3 + \frac{1}{6} t^9 Dt^9 - 72 Dt^2 + \frac{747}{2} Dt t^2 + \frac{3337}{2} t^2 Dt^3 \\
& + \frac{5815}{2} Dt^5 t^3 + \frac{947}{6} Dt^6 t^3 - \frac{43}{2} Dt^5 t - \frac{2431}{6} Dt^6 t^2 + \frac{14929}{6} Dt^5 t^5 + 18 t Dt^2 + 72 t Dt^3 \\
& + 220 Dt t^5 + \frac{10867}{6} Dt^4 t^5 + \frac{13783}{3} Dt^5 t^4 + 924 t^2 Dt^2 - 10 Dt^9 t^3 - \frac{2}{3} Dt^{10} t^4 - 3 Dt^8 t - \frac{5}{3} Dt^9 t^2 \\
& - \frac{1}{6} Dt^{10} t^3 + 16 Dt^6 t^8 + \frac{2}{3} Dt^9 t^8 + \frac{611}{2} Dt^7 t^6 + \frac{143}{6} Dt^8 t^7 + 181 t^7 Dt^5 + \frac{1803}{2} t^6 Dt^4 + \frac{1}{6} t^8 Dt^3 \\
& + \frac{13}{6} Dt^2 t^7 + \frac{29911}{6} t^3 Dt^4 + \frac{4747}{2} t^3 Dt^2 + \frac{1}{2} Dt^7 t^9 + 1896 t^2 Dt^4 + 480 t^3 Dt + 3154 t^3 Dt^3
\end{aligned}$$

$$\begin{aligned}
& + \frac{349}{6} Dt^4 t + \frac{4021}{2} Dt^3 t^5 + \frac{7}{3} t^8 Dt^2 + 7 Dt t^7 - \frac{1}{6} t^7 Dt^{10} + \frac{41}{2} t^7 Dt^4 + \frac{2168}{3} Dt^6 t^6 - \frac{2}{3} Dt^{10} t^6 \\
& - 133 Dt^8 t^4 - \frac{33}{2} Dt^9 t^5 + \frac{2485}{6} Dt^5 t^2 + 103 t^7 Dt^7 + \frac{1}{2} t^9 Dt^5 + \frac{23}{2} t^8 Dt^4 - \frac{127}{2} Dt^7 t^4 - \frac{124}{3} Dt^8 t^2 \\
& - \frac{209}{6} Dt^7 t - \frac{13}{3} Dt^9 t^6 - \frac{101}{3} Dt^8 t^5 + \frac{8283}{2} t^4 Dt^4 + 86 t^7 Dt^3 + 245 Dt^2 t^6 + \frac{2519}{6} t^6 Dt^5 \\
& + \frac{653}{2} Dt^7 t^5 + \frac{61}{2} Dt^8 t^6 + \frac{127}{3} Dt^6 t^7 + Dt^9 t^7 + \frac{4507}{3} Dt^6 t^4 + 3 Dt^7 + \frac{275}{2} Dt^3 t^6 + \frac{10519}{6} Dt^6 t^5 \\
& - \frac{1226}{3} Dt^7 t^3 + \frac{1}{6} Dt^3 t^9 + Dt^5 t^8 + 278 Dt t^4 + \frac{177}{2} Dt^5 - \frac{177}{2} Dt^6 t - Dt^{10} t^5 - \frac{745}{6} Dt^8 t^3 \\
& + 1814 Dt^2 t^4 + 353 t^5 Dt^2 + \frac{41}{6} Dt^8 t^8 + \frac{43}{2} Dt^4 + 3396 t^4 Dt^3 - 20 Dt^9 t^4 + \frac{3}{2} Dt^7 t^8 + \frac{209}{6} Dt^6 \\
& - 260 Dt^7 t^2 \Big]
\end{aligned}$$

$$\begin{aligned}
& \left[4 Dt + \frac{28}{3} Dt t^6 + 23 Dt^3 + 16 Dt^2 + 36 Dt t^2 + 18 t^2 Dt^3 - \frac{727}{6} Dt^5 t^3 - \frac{239}{6} Dt^6 t^3 - 5 Dt^5 t \right. \\
& - 8 Dt^6 t^2 + 74 Dt^5 t^5 - 4 t Dt^2 - 16 t Dt^3 + 271 Dt^4 t^5 + \frac{61}{3} Dt^5 t^4 + 68 t^2 Dt^2 + \frac{1}{6} Dt^7 t^6 + \frac{1}{3} t^7 Dt^5 \\
& + \frac{13}{2} t^6 Dt^4 + \frac{1}{6} t^8 Dt^3 + \frac{8}{3} Dt^2 t^7 + \frac{125}{3} t^3 Dt^4 + 324 t^3 Dt^2 - 136 t^2 Dt^4 + 35 t^3 Dt + 287 t^3 Dt^3 \\
& - 23 Dt^4 t + 38 Dt^3 t^5 + 8 t^7 Dt^4 + \frac{26}{3} Dt^6 t^6 - \frac{1}{6} Dt^8 t^4 - 77 Dt^5 t^2 + \frac{1}{3} t^7 Dt^7 - \frac{20}{3} Dt^7 t^4 - \frac{1}{3} Dt^8 t^5 \\
& + 246 t^4 Dt^4 + \frac{176}{3} t^6 Dt^5 - \frac{13}{3} Dt^7 t^5 - \frac{1}{6} Dt^8 t^6 + \frac{16}{3} Dt^6 t^7 - \frac{221}{6} Dt^6 t^4 + \frac{121}{2} Dt^3 t^6 + \frac{10}{3} Dt^6 t^5 \\
& - \frac{7}{3} Dt^7 t^3 + \frac{1}{3} Dt^5 t^8 + 129 Dt t^4 + 74 Dt^2 t^4 + 165 t^5 Dt^2 + 5 Dt^4 + 513 t^4 Dt^3 + \frac{1}{6} Dt^7 t^8, -4 Dt \\
& - 8 Dt^3 - 3 Dt^2 - 8 Dt t^2 - 30 t^2 Dt^3 - \frac{43}{6} Dt^5 t^3 + \frac{107}{6} Dt^6 t^3 + 7 Dt^5 t + 13 Dt^6 t^2 - 37 Dt^5 t^5 \\
& + 4 t Dt^2 + 3 t Dt^3 - 7 Dt t^5 - 5 Dt^4 t^5 - \frac{115}{3} Dt^5 t^4 - 36 t^2 Dt^2 - \frac{1}{3} Dt^7 t^6 - \frac{1}{3} t^7 Dt^5 - \frac{20}{3} t^6 Dt^4 \\
& - \frac{224}{3} t^3 Dt^4 - 27 t^3 Dt^2 - 4 t^2 Dt^4 - 45 t^3 Dt - 144 t^3 Dt^3 + 8 Dt^4 t - \frac{81}{2} Dt^3 t^5 - \frac{13}{3} Dt^6 t^6 \\
& + \frac{1}{3} Dt^8 t^4 + 32 Dt^5 t^2 - \frac{1}{6} t^7 Dt^7 + \frac{19}{6} Dt^7 t^4 + \frac{1}{6} Dt^8 t^5 - 123 t^4 Dt^4 - \frac{1}{6} t^7 Dt^3 - \frac{7}{3} Dt^2 t^6 - \frac{1}{3} t^6 Dt^5 \\
& \left. - \frac{1}{6} Dt^7 t^5 - \frac{13}{6} Dt^6 t^4 - \frac{13}{2} Dt^6 t^5 + \frac{25}{6} Dt^7 t^3 - Dt^5 + Dt^6 t + \frac{1}{6} Dt^8 t^3 - 84 Dt^2 t^4 - 7 Dt^4 \right]
\end{aligned}$$

$$\begin{aligned}
& \left. -21 t^4 Dt^3 + Dt^7 t^2 \right] \\
& \left[-8241 Dt t - 1850 Dt - \frac{224}{3} Dt t^6 - 12339 Dt^3 - \frac{1}{2} t^9 Dt^6 - 6845 Dt^2 - 9176 Dt t^2 - 70357 t^2 Dt^3 \right. \\
& - \frac{552755}{6} Dt^5 t^3 - \frac{86881}{3} Dt^6 t^3 - \frac{13319}{2} Dt^5 t - 1049 Dt^6 t^2 - \frac{24040}{3} Dt^5 t^5 - 22922 t Dt^2 \\
& - 54533 t Dt^3 - 56 Dt t^5 - \frac{32193}{2} Dt^4 t^5 - \frac{305183}{6} Dt^5 t^4 - 39777 t^2 Dt^2 + 440 Dt^9 t^3 + \frac{71}{2} Dt^{10} t^4 \\
& + \frac{1463}{2} Dt^8 t + 194 Dt^9 t^2 + \frac{119}{6} Dt^{10} t^3 + \frac{1}{6} Dt^{11} t^7 + \frac{2}{3} Dt^{11} t^4 - Dt^6 t^8 - \frac{59}{6} Dt^9 t^8 - 2548 Dt^7 t^6 \\
& - \frac{673}{3} Dt^8 t^7 - \frac{101}{3} t^7 Dt^5 - \frac{1195}{3} t^6 Dt^4 - \frac{13}{3} t^8 Dt^3 - \frac{100}{3} Dt^2 t^7 - \frac{259906}{3} t^3 Dt^4 - 31489 t^3 Dt^2 \\
& - \frac{1}{6} Dt^{10} t^9 - \frac{1}{6} t^9 Dt^4 - 112737 t^2 Dt^4 - 3155 t^3 Dt - 54045 t^3 Dt^3 - 49260 Dt^4 t - 2040 Dt^3 t^5 \\
& + \frac{2}{3} Dt^{11} t^6 + Dt^{11} t^5 - t^7 Dt^{10} - 242 t^7 Dt^4 - \frac{6313}{6} Dt^6 t^6 + \frac{43}{6} Dt^{10} t^6 + \frac{4163}{6} Dt^8 t^4 + \frac{326}{3} Dt^9 t^5 \\
& - \frac{1}{2} t^9 Dt^8 - \frac{116487}{2} Dt^5 t^2 - \frac{391}{6} t^7 Dt^7 - \frac{1}{6} t^8 Dt^4 + 28 Dt^9 t - \frac{20771}{3} Dt^7 t^4 + 2340 Dt^8 t^2 \\
& + 5218 Dt^7 t - 47 Dt^9 t^6 - \frac{4963}{6} Dt^8 t^5 + \frac{1}{6} Dt^{11} t^3 + 4 Dt^{10} t^2 - \frac{60413}{2} t^4 Dt^4 - 4 t^7 Dt^3 - 28 Dt^2 t^6 \\
& - \frac{11141}{3} t^6 Dt^5 - 6989 Dt^7 t^5 - \frac{2137}{3} Dt^8 t^6 - 432 Dt^6 t^7 - \frac{106}{3} Dt^9 t^7 - \frac{213073}{6} Dt^6 t^4 + 883 Dt^7 \\
& + 57 Dt^8 - 1381 Dt^3 t^6 - 15504 Dt^6 t^5 + 1555 Dt^7 t^3 - \frac{37}{2} Dt^5 t^8 - 2790 Dt t^4 + \frac{8163}{2} Dt^5 \\
& + 10648 Dt^6 t + \frac{82}{3} Dt^{10} t^5 + \frac{5395}{2} Dt^8 t^3 - 4429 Dt^2 t^4 - 3384 t^5 Dt^2 - \frac{3}{2} Dt^8 t^8 - 4269 Dt^4 \\
& - 34140 t^4 Dt^3 + \frac{2425}{6} Dt^9 t^4 - \frac{2}{3} Dt^{10} t^8 - 24 Dt^7 t^8 + \frac{7551}{2} Dt^6 + \frac{16607}{2} Dt^7 t^2, 1440 Dt t \\
& + 747 Dt + 3355 Dt^3 + 1848 Dt^2 + 1112 Dt t^2 + \frac{31915}{2} t^2 Dt^3 + \frac{49747}{3} Dt^5 t^3 + \frac{80161}{6} Dt^6 t^3 \\
& + \frac{21237}{2} Dt^5 t + \frac{53501}{6} Dt^6 t^2 + \frac{4337}{2} Dt^5 t^5 + 7494 t Dt^2 + 10386 t Dt^3 + 49 Dt t^5 + 281 Dt^4 t^5 \\
& + \frac{25981}{6} Dt^5 t^4 + 7736 t^2 Dt^2 - \frac{431}{2} Dt^9 t^3 - \frac{41}{2} Dt^{10} t^4 - \frac{1265}{2} Dt^8 t - \frac{1225}{6} Dt^9 t^2 - 25 Dt^{10} t^3 \\
& - Dt^{11} t^4 + \frac{1}{2} Dt^6 t^8 + \frac{163}{3} Dt^7 t^6 + \frac{3}{2} Dt^8 t^7 + 16 t^7 Dt^5 + 178 t^6 Dt^4 + \frac{74711}{6} t^3 Dt^4 + 2043 t^3 Dt^2
\end{aligned}$$

$$\begin{aligned}
& + 19720 t^2 Dt^4 + 1100 t^3 Dt + \frac{23733}{2} t^3 Dt^3 + 16624 Dt^4 t + 847 Dt^3 t^5 - \frac{1}{6} Dt^{11} t^6 - \frac{2}{3} Dt^{11} t^5 \\
& + \frac{2}{3} t^7 Dt^{10} + \frac{1}{6} t^7 Dt^4 + 309 Dt^6 t^6 + Dt^{10} t^6 + \frac{1019}{2} Dt^8 t^4 + \frac{75}{2} Dt^9 t^5 + \frac{46725}{2} Dt^5 t^2 + \frac{41}{2} t^7 Dt^7 \\
& + \frac{1}{6} t^8 Dt^4 - \frac{214}{3} Dt^9 t + \frac{21517}{6} Dt^7 t^4 - \frac{2822}{3} Dt^8 t^2 - \frac{9787}{6} Dt^7 t + \frac{175}{6} Dt^9 t^6 + \frac{1417}{3} Dt^8 t^5 \\
& - \frac{2}{3} Dt^{11} t^3 - \frac{38}{3} Dt^{10} t^2 - \frac{19}{3} Dt^9 + \frac{14839}{2} t^4 Dt^4 + \frac{23}{6} t^7 Dt^3 + \frac{77}{3} Dt^2 t^6 + \frac{57}{2} t^6 Dt^5 + \frac{4331}{3} Dt^7 t^5 \\
& + \frac{473}{3} Dt^8 t^6 + Dt^6 t^7 + \frac{25}{3} Dt^9 t^7 + \frac{40945}{6} Dt^6 t^4 - \frac{1217}{2} Dt^7 - \frac{235}{2} Dt^8 + \frac{7}{2} Dt^3 t^6 + \frac{4297}{6} Dt^6 t^5 \\
& + \frac{18809}{6} Dt^7 t^3 - \frac{1}{6} Dt^{11} t^2 - \frac{13}{6} Dt^{10} t + 35 Dt t^4 + \frac{1773}{2} Dt^5 + \frac{2663}{3} Dt^6 t - \frac{11}{2} Dt^{10} t^5 \\
& - \frac{1391}{6} Dt^8 t^3 + 1690 Dt^2 t^4 + 21 t^5 Dt^2 + \frac{1}{2} Dt^8 t^8 + 3864 Dt^4 + 1178 t^4 Dt^3 - \frac{179}{3} Dt^9 t^4 \\
& + \frac{1}{6} Dt^{10} t^8 - \frac{4991}{6} Dt^6 - \frac{577}{6} Dt^7 t^2 \Big] \\
\Big[& 105 Dt t + 72 Dt + 32 Dt^3 + 136 Dt^2 + 516 Dt t^2 + 2376 t^2 Dt^3 + 616 Dt^5 t^3 + 37 Dt^6 t^3 - \frac{999}{2} Dt^5 t \\
& - \frac{537}{2} Dt^6 t^2 + \frac{53}{6} Dt^5 t^5 + 1008 t Dt^2 + 929 t Dt^3 + \frac{233}{2} Dt^4 t^5 + 623 Dt^5 t^4 + 331 t^2 Dt^2 - \frac{1}{6} Dt^9 t^3 \\
& + \frac{20}{3} Dt^7 t^6 + \frac{1}{6} Dt^8 t^7 + 1868 t^3 Dt^4 + 954 t^3 Dt^2 + 1271 t^2 Dt^4 + 264 t^3 Dt^3 + 143 Dt^4 t + \frac{1}{6} t^7 Dt^4 \\
& + \frac{1}{3} Dt^6 t^6 - \frac{16}{3} Dt^8 t^4 - \frac{1}{6} Dt^9 t^5 + 123 Dt^5 t^2 + \frac{13}{3} Dt^7 t^4 - 3 Dt^8 t^2 - 15 Dt^7 t + \frac{1}{6} Dt^8 t^5 + 77 t^4 Dt^4 \\
& + \frac{32}{3} t^6 Dt^5 + 11 Dt^7 t^5 + \frac{1}{3} Dt^8 t^6 + \frac{1}{3} Dt^6 t^7 + 126 Dt^6 t^4 + 4 Dt^3 t^6 + 96 Dt^6 t^5 - \frac{117}{2} Dt^7 t^3 \\
& + 56 Dt t^4 - 177 Dt^5 - \frac{393}{2} Dt^6 t - \frac{25}{3} Dt^8 t^3 + 28 t^5 Dt^2 - 288 Dt^4 + 528 t^4 Dt^3 - \frac{1}{3} Dt^9 t^4 - 21 Dt^6 \\
& - \frac{133}{2} Dt^7 t^2, -135 Dt t - 16 Dt - 56 Dt^3 - 72 Dt^2 - 111 t^2 Dt^3 - 308 Dt^5 t^3 - \frac{425}{6} Dt^6 t^3 \\
& - \frac{51}{2} Dt^5 t - \frac{95}{6} Dt^6 t^2 - 9 Dt^5 t^5 - 89 t Dt^2 - 468 t Dt^3 - 7 Dt^5 t^4 - 381 t^2 Dt^2 + \frac{1}{3} Dt^9 t^3 + \frac{3}{2} Dt^8 t \\
& + \frac{1}{6} Dt^9 t^2 - \frac{1}{6} t^6 Dt^4 - 46 t^3 Dt^4 - 636 t^2 Dt^4 - 35 t^3 Dt - \frac{573}{2} t^3 Dt^3 - 254 Dt^4 t - \frac{7}{2} Dt^3 t^5 \\
& - \frac{1}{3} Dt^6 t^6 - \frac{1}{6} Dt^8 t^4 - 228 Dt^5 t^2 - \frac{17}{2} Dt^7 t^4 + \frac{11}{2} Dt^8 t^2 + \frac{51}{2} Dt^7 t - \frac{1}{3} Dt^8 t^5 - \frac{161}{2} t^4 Dt^4
\end{aligned}$$

$$\left[\begin{array}{l} -\frac{11}{2} Dt^7 t^5 - \frac{1}{6} Dt^8 t^6 - 63 Dt^6 t^4 + 3 Dt^7 - \frac{1}{3} Dt^6 t^5 - 3 Dt^7 t^3 + 72 Dt^5 + \frac{171}{2} Dt^6 t + 4 Dt^8 t^3 \\ -21 Dt^2 t^4 - 5 Dt^4 + \frac{1}{6} Dt^9 t^4 + 33 Dt^6 + \frac{61}{2} Dt^7 t^2 \end{array} \right]$$

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[ > IsHom(R3, E3, M3, Alg), IsBijective(R3, E3, M3, Alg);
      true, true
[ >
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