```
> restart: unprotect('D'):

  m := 5;

  twist := - 3;

  d := 11;                degre := d + 1:

  ##

  SS := x^(d+1) + 1*x + 1:

  ##

  Jet_xR := expand(

  + (1/Ry^(m-0*2)) * add(AA||j * x1^(m-0*3-j) * (R1/RR)^j *
  Delta_xR^0, j=0..m-0*3)

  + (1/Ry^(m-1*2)) * add(BB||j * x1^(m-1*3-j) * (R1/RR)^j *
  Delta_xR^1, j=0..m-1*3)

  + (1/Ry^(m-2*2)) * add(CC||j * x1^(m-2*3-j) * (R1/RR)^j *
  Delta_xR^2, j=0..m-2*3)

  + (1/Ry^(m-3*2)) * add(DD||j * x1^(m-3*3-j) * (R1/RR)^j *
  Delta_xR^3, j=0..m-3*3)

  + (1/Ry^(m-4*2)) * add(EE||j * x1^(m-4*3-j) * (R1/RR)^j *
  Delta_xR^4, j=0..m-4*3) ):

  ##

  for l from 0 to m - 0*3 do dA[l] := (m-0*2)*d - (m-0*3-l)*2 - l*1
  - 0*4 + twist: od:

  for l from 0 to m - 1*3 do dB[l] := (m-1*2)*d - (m-1*3-l)*2 - l*1
  - 1*4 + twist: od:

  for l from 0 to m - 2*3 do dC[l] := (m-2*2)*d - (m-2*3-l)*2 - l*1
  - 2*4 + twist: od:

  for l from 0 to m - 3*3 do dD[l] := (m-3*2)*d - (m-3*3-l)*2 - l*1
  - 3*4 + twist: od:
```

```
for l from 0 to m - 4*3 do dE[l] := (m-4*2)*d - (m-4*3-l)*2 - l*1
- 4*4 + twist: od:

##

Delta_xR := x1 * (R2/RR - R1*R1/RR^2) - x2 * (R1/RR):

Solx1 := - y1*Ry/Rx + R1/Rx:

Solx2 := - Rxx*y1^2*Ry^2/Rx^3 + 2*Rxx*y1*Ry*R1/Rx^3 - Rxx*
R1^2/Rx^3 + 2*y1^2*Rxy*Ry/Rx^2
      - 2*y1*Rxy*R1/Rx^2 - y1^2*Ryy/Rx - y2*Ry/Rx + R2/Rx:

##

Jet_Ry := sort(mtaylor(

                 expand(subs(R2=-(RR^2*Delta_Ry-RR*R1*y2-
R1^2*y1)/(RR*y1),
                   expand(subs({x1=Solx1,x2=Solx2},
               Jet_xR)))),

      [R1,y1,Delta_Ry], 100), [R1,y1,Delta_Ry]):

##

printlevel := 2:
for k from 0 to m/3  do
for j from 0 to m-3*k do

EEq[m-j-3*k,j,k] := factor(

 Ry^(m-j-3*k)*RR^(m-j-3*k)*Rx^(m-2*k)
*
 coeftayl(Jet_Ry, [R1,y1,Delta_Ry]=[0,0,0], [m-j-3*k,j,k]) ):

od: od:

## EQUATION RR EXPLICITE

RR := y^(d+1) + SS;

Rx := diff(RR,x):
Ry := diff(RR,y):

Rxx := diff(RR,x,x):
Rxy := diff(RR,x,y):
Ryy := diff(RR,y,y):
```

```
##

printlevel := 2:
for k from 0 to m/3   do
for j from 0 to m-3*k do

Eq[m-j-3*k,j,k] := mtaylor(EEq[m-j-3*k,j,k], y, (m-j-3*k)*d):

Var[m-j-3*k,j,k] := indets(Eq[m-j-3*k,j,k]) minus {x,y}:

od: od:

##
```

$$m := 5$$
$$twist := -3$$
$$d := 11$$
$$RR := x^{12} + y^{12} + x^5 + 1 \qquad (1)$$

```
> ## EXPAND ALL UNKNOWNS UP TO y^(1*d)

  for l from 0 to m - 0*3 do
  AA||l := add(add(A||l[i,j]*x^i*y^j, i=0..dA[l]-j), j=0..min(dA
  [l],1*d-1)): od:

  for l from 0 to m - 1*3 do
  BB||l := add(add(B||l[i,j]*x^i*y^j, i=0..dB[l]-j), j=0..min(dB
  [l],1*d-1)): od:

  for l from 0 to m - 2*3 do
  CC||l := add(add(C||l[i,j]*x^i*y^j, i=0..dC[l]-j), j=0..min(dC
  [l],1*d-1)): od:

  for l from 0 to m - 3*3 do
  DD||l := add(add(D||l[i,j]*x^i*y^j, i=0..dD[l]-j), j=0..min(dD
  [l],1*d-1)): od:

  for l from 0 to m - 4*3 do
  EE||l := add(add(E||l[i,j]*x^i*y^j, i=0..dE[l]-j), j=0..min(dE
  [l],1*d-1)): od:

  ## SYSTEM FOR DIVISIBILITY BY y^(1*d)

  Systemey1d := {}:
```

```
for k from 0 to (m-1)/3   do

Coeffs_y1d[1,m-1-3*k,k] := {coeffs(expand(mtaylor(Eq[1,m-1-3*k,
k], y, 1*d)), [x,y])}:

Systemey1d := Systemey1d union Coeffs_y1d[1,m-1-3*k,k]:

od:

Systeme_y1d := Systemey1d:

## VARIABLES FOR DIVISIBILITY BY y^(1*d)

Variables_y1d := indets(Systeme_y1d):

## RESOLUTION y^(1*d)

Solutions_y1d := solve(Systeme_y1d, Variables_y1d):

assign(Solutions_y1d):

##

for l from 0 to m - 0*3 do nops(expand(AA||l)) od;
for l from 0 to m - 1*3 do nops(expand(BB||l)) od;
for l from 0 to m - 2*3 do nops(expand(CC||l)) od;
for l from 0 to m - 3*3 do nops(expand(DD||l)) od;
for l from 0 to m - 4*3 do nops(expand(EE||l)) od;
```

3049
5452
440
451
462
473
257
438
220 **(2)**

```
> ## EXPAND ALL UNKNOWNS UP TO y^(2*d)
```

```
for l from 0 to m - 0*3 do
AA||l := add(add(A||l[i,j]*x^i*y^j, i=0..dA[l]-j), j=0..min(dA
[l],2*d-1)): od:

for l from 0 to m - 1*3 do
BB||l := add(add(B||l[i,j]*x^i*y^j, i=0..dB[l]-j), j=0..min(dB
[l],2*d-1)): od:

for l from 0 to m - 2*3 do
CC||l := add(add(C||l[i,j]*x^i*y^j, i=0..dC[l]-j), j=0..min(dC
[l],2*d-1)): od:

for l from 0 to m - 3*3 do
DD||l := add(add(D||l[i,j]*x^i*y^j, i=0..dD[l]-j), j=0..min(dD
[l],2*d-1)): od:

for l from 0 to m - 4*3 do
EE||l := add(add(E||l[i,j]*x^i*y^j, i=0..dE[l]-j), j=0..min(dE
[l],2*d-1)): od:

## SYSTEM FOR DIVISIBILITY BY y^(2*d)

Systemey2d := {}:

for k from 0 to (m-2)/3   do

Coeffs_y2d[2,m-2-3*k,k] := {coeffs(expand(mtaylor(Eq[2,m-2-3*k,
k], y, 2*d)), [x,y])}:

Systemey2d := Systemey2d union Coeffs_y2d[2,m-2-3*k,k]:

od:

Systeme_y2d := Systemey2d:

## VARIABLES FOR DIVISIBILITY BY y^(2*d)

Variables_y2d := indets(Systeme_y2d):

## RESOLUTION y^(2*d)

Solutions_y2d := solve(Systeme_y2d, Variables_y2d):

assign(Solutions_y2d):

##

for l from 0 to m - 0*3 do nops(expand(AA||l)) od;
```

```
for l from 0 to m - 1*3 do nops(expand(BB||l)) od;
for l from 0 to m - 2*3 do nops(expand(CC||l)) od;
for l from 0 to m - 3*3 do nops(expand(DD||l)) od;
for l from 0 to m - 4*3 do nops(expand(EE||l)) od;
```

```
1984
3139
5775
781
803
825
17
33
42
```

(3)

```
> ## EXPAND ALL UNKNOWNS UP TO y^(3*d)

  for l from 0 to m - 0*3 do
  AA||l := add(add(A||l[i,j]*x^i*y^j, i=0..dA[l]-j), j=0..min(dA
  [l],3*d-1)): od:

  for l from 0 to m - 1*3 do
  BB||l := add(add(B||l[i,j]*x^i*y^j, i=0..dB[l]-j), j=0..min(dB
  [l],3*d-1)): od:

  for l from 0 to m - 2*3 do
  CC||l := add(add(C||l[i,j]*x^i*y^j, i=0..dC[l]-j), j=0..min(dC
  [l],3*d-1)): od:

  for l from 0 to m - 3*3 do
  DD||l := add(add(D||l[i,j]*x^i*y^j, i=0..dD[l]-j), j=0..min(dD
  [l],3*d-1)): od:

  for l from 0 to m - 4*3 do
  EE||l := add(add(E||l[i,j]*x^i*y^j, i=0..dE[l]-j), j=0..min(dE
  [l],3*d-1)): od:

  ## SYSTEM FOR DIVISIBILITY BY y^(3*d)

  Systemey3d := {}:

  for k from 0 to (m-3)/3   do
```

```
Coeffs_y3d[3,m-3-3*k,k] := {coeffs(expand(mtaylor(Eq[3,m-3-3*k,
k], y, 3*d)), [x,y])}:

Systemey3d := Systemey3d union Coeffs_y3d[3,m-3-3*k,k]:

od:

Systeme_y3d := Systemey3d:

## VARIABLES FOR DIVISIBILITY BY y^(3*d)

Variables_y3d := indets(Systeme_y3d):

## RESOLUTION y^(3*d)

Solutions_y3d := solve(Systeme_y3d, Variables_y3d):

assign(Solutions_y3d):

##

for l from 0 to m - 0*3 do nops(expand(AA||l)) od;
for l from 0 to m - 1*3 do nops(expand(BB||l)) od;
for l from 0 to m - 2*3 do nops(expand(CC||l)) od;
for l from 0 to m - 3*3 do nops(expand(DD||l)) od;
for l from 0 to m - 4*3 do nops(expand(EE||l)) od;
```

$$1131$$
$$1524$$
$$2576$$
$$3346$$
$$1023$$
$$1056$$
$$12$$
$$19$$
$$27 \qquad (4)$$

```
> ## EXPAND ALL UNKNOWNS UP TO y^(4*d)

  for l from 0 to m - 0*3 do
  AA||l := add(add(A||l[i,j]*x^i*y^j, i=0..dA[l]-j), j=0..min(dA
  [l],4*d-1)): od:
```

```
for l from 0 to m - 1*3 do
BB||l := add(add(B||l[i,j]*x^i*y^j, i=0..dB[l]-j), j=0..min(dB
[l],4*d-1)): od:

for l from 0 to m - 2*3 do
CC||l := add(add(C||l[i,j]*x^i*y^j, i=0..dC[l]-j), j=0..min(dC
[l],4*d-1)): od:

for l from 0 to m - 3*3 do
DD||l := add(add(D||l[i,j]*x^i*y^j, i=0..dD[l]-j), j=0..min(dD
[l],4*d-1)): od:

for l from 0 to m - 4*3 do
EE||l := add(add(E||l[i,j]*x^i*y^j, i=0..dE[l]-j), j=0..min(dE
[l],4*d-1)): od:

## SYSTEM FOR DIVISIBILITY BY y^(4*d)

Systemey4d := {}:

for k from 0 to (m-4)/3   do

Coeffs_y4d[4,m-4-3*k,k] := {coeffs(expand(mtaylor(Eq[4,m-4-3*k,
k], y, 4*d)), [x,y])}:

Systemey4d := Systemey4d union Coeffs_y4d[4,m-4-3*k,k]:

od:

Systeme_y4d := Systemey4d:

## VARIABLES FOR DIVISIBILITY BY y^(4*d)

Variables_y4d := indets(Systeme_y4d):

## RESOLUTION y^(4*d)

Solutions_y4d := solve(Systeme_y4d, Variables_y4d):

assign(Solutions_y4d):

##

for l from 0 to m - 0*3 do nops(expand(AA||l)) od;
for l from 0 to m - 1*3 do nops(expand(BB||l)) od;
for l from 0 to m - 2*3 do nops(expand(CC||l)) od;
for l from 0 to m - 3*3 do nops(expand(DD||l)) od;
for l from 0 to m - 4*3 do nops(expand(EE||l)) od;
```

```
1
29
52
68
85
1166
12
25
30
```

(5)

```
> ## EXPAND ALL UNKNOWNS UP TO y^(5*d)

  for l from 0 to m - 0*3 do
  AA||l := add(add(A||l[i,j]*x^i*y^j, i=0..dA[l]-j), j=0..min(dA
  [l],5*d-1)): od:

  for l from 0 to m - 1*3 do
  BB||l := add(add(B||l[i,j]*x^i*y^j, i=0..dB[l]-j), j=0..min(dB
  [l],5*d-1)): od:

  for l from 0 to m - 2*3 do
  CC||l := add(add(C||l[i,j]*x^i*y^j, i=0..dC[l]-j), j=0..min(dC
  [l],5*d-1)): od:

  for l from 0 to m - 3*3 do
  DD||l := add(add(D||l[i,j]*x^i*y^j, i=0..dD[l]-j), j=0..min(dD
  [l],5*d-1)): od:

  for l from 0 to m - 4*3 do
  EE||l := add(add(E||l[i,j]*x^i*y^j, i=0..dE[l]-j), j=0..min(dE
  [l],5*d-1)): od:

  ## SYSTEM FOR DIVISIBILITY BY y^(5*d)

  Systemey5d := {}:

  for k from 0 to (m-5)/3   do

  Coeffs_y5d[5,m-5-3*k,k] := {coeffs(expand(mtaylor(Eq[5,m-5-3*k,
  k], y, 5*d)), [x,y])}:

  Systemey5d := Systemey5d union Coeffs_y5d[5,m-5-3*k,k]:
```

```
od:

Systeme_y5d := Systemey5d:

## VARIABLES FOR DIVISIBILITY BY y^(5*d)

Variables_y5d := indets(Systeme_y5d):

## RESOLUTION y^(5*d)

Solutions_y5d := solve(Systeme_y5d, Variables_y5d):

assign(Solutions_y5d):

##

for l from 0 to m - 0*3 do nops(expand(AA||l)) od;
for l from 0 to m - 1*3 do nops(expand(BB||l)) od;
for l from 0 to m - 2*3 do nops(expand(CC||l)) od;
for l from 0 to m - 3*3 do nops(expand(DD||l)) od;
for l from 0 to m - 4*3 do nops(expand(EE||l)) od;
```

```
1
1
1
1
1
1
1
1
1
```

(6)

```
> ## EXPAND ALL UNKNOWNS UP TO y^(6*d)

for l from 0 to m - 0*3 do
AA||l := add(add(A||l[i,j]*x^i*y^j, i=0..dA[l]-j), j=0..min(dA
[l],6*d-1)): od:

for l from 0 to m - 1*3 do
BB||l := add(add(B||l[i,j]*x^i*y^j, i=0..dB[l]-j), j=0..min(dB
[l],6*d-1)): od:
```

```
for l from 0 to m - 2*3 do
CC||l := add(add(C||l[i,j]*x^i*y^j, i=0..dC[l]-j), j=0..min(dC
[l],6*d-1)): od:

for l from 0 to m - 3*3 do
DD||l := add(add(D||l[i,j]*x^i*y^j, i=0..dD[l]-j), j=0..min(dD
[l],6*d-1)): od:

for l from 0 to m - 4*3 do
EE||l := add(add(E||l[i,j]*x^i*y^j, i=0..dE[l]-j), j=0..min(dE
[l],6*d-1)): od:

## SYSTEM FOR DIVISIBILITY BY y^(6*d)

Systemey6d := {}:

for k from 0 to (m-6)/3   do

Coeffs_y6d[6,m-6-3*k,k] := {coeffs(expand(mtaylor(Eq[6,m-6-3*k,
k], y, 6*d)), [x,y])}:

Systemey6d := Systemey6d union Coeffs_y6d[6,m-6-3*k,k]:

od:

Systeme_y6d := Systemey6d:

## VARIABLES FOR DIVISIBILITY BY y^(6*d)

Variables_y6d := indets(Systeme_y6d):

## RESOLUTION y^(6*d)

Solutions_y6d := solve(Systeme_y6d, Variables_y6d):

assign(Solutions_y6d):

##

for l from 0 to m - 0*3 do nops(expand(AA||l)) od;
for l from 0 to m - 1*3 do nops(expand(BB||l)) od;
for l from 0 to m - 2*3 do nops(expand(CC||l)) od;
for l from 0 to m - 3*3 do nops(expand(DD||l)) od;
for l from 0 to m - 4*3 do nops(expand(EE||l)) od;
```

1

1

1

1
1
1
1
1
1 (7)

```
> ## EXPAND ALL UNKNOWNS UP TO y^(7*d)

  for l from 0 to m - 0*3 do
  AA||l := add(add(A||l[i,j]*x^i*y^j, i=0..dA[l]-j), j=0..min(dA
  [l],7*d-1)): od:

  for l from 0 to m - 1*3 do
  BB||l := add(add(B||l[i,j]*x^i*y^j, i=0..dB[l]-j), j=0..min(dB
  [l],7*d-1)): od:

  for l from 0 to m - 2*3 do
  CC||l := add(add(C||l[i,j]*x^i*y^j, i=0..dC[l]-j), j=0..min(dC
  [l],7*d-1)): od:

  for l from 0 to m - 3*3 do
  DD||l := add(add(D||l[i,j]*x^i*y^j, i=0..dD[l]-j), j=0..min(dD
  [l],7*d-1)): od:

  for l from 0 to m - 4*3 do
  EE||l := add(add(E||l[i,j]*x^i*y^j, i=0..dE[l]-j), j=0..min(dE
  [l],7*d-1)): od:

  ## SYSTEM FOR DIVISIBILITY BY y^(7*d)

  Systemey7d := {}:

  for k from 0 to (m-7)/3   do

  Coeffs_y7d[7,m-7-3*k,k] := {coeffs(expand(mtaylor(Eq[7,m-7-3*k,
  k], y, 7*d)), [x,y])}:

  Systemey7d := Systemey7d union Coeffs_y7d[7,m-7-3*k,k]:

  od:

  Systeme_y7d := Systemey7d:
```

```
## VARIABLES FOR DIVISIBILITY BY y^(7*d)

Variables_y7d := indets(Systeme_y7d):

## RESOLUTION y^(7*d)

Solutions_y7d := solve(Systeme_y7d, Variables_y7d):

assign(Solutions_y7d):

##

for l from 0 to m - 0*3 do nops(expand(AA||l)) od;
for l from 0 to m - 1*3 do nops(expand(BB||l)) od;
for l from 0 to m - 2*3 do nops(expand(CC||l)) od;
for l from 0 to m - 3*3 do nops(expand(DD||l)) od;
for l from 0 to m - 4*3 do nops(expand(EE||l)) od;
```

```
                                1
                                1
                                1
                                1
                                1
                                1
                                1
                                1
                                1
```

(8)

```
>
## EXPAND ALL UNKNOWNS UP TO y^(8*d)

for l from 0 to m - 0*3 do
AA||l := add(add(A||l[i,j]*x^i*y^j, i=0..dA[l]-j), j=0..min(dA
[l],8*d-1)): od:

for l from 0 to m - 1*3 do
BB||l := add(add(B||l[i,j]*x^i*y^j, i=0..dB[l]-j), j=0..min(dB
[l],8*d-1)): od:

for l from 0 to m - 2*3 do
CC||l := add(add(C||l[i,j]*x^i*y^j, i=0..dC[l]-j), j=0..min(dC
[l],8*d-1)): od:
```

```
for l from 0 to m - 3*3 do
DD|||l := add(add(D|||[i,j]*x^i*y^j, i=0..dD[l]-j), j=0..min(dD
[l],8*d-1)): od:

for l from 0 to m - 4*3 do
EE|||l := add(add(E|||[i,j]*x^i*y^j, i=0..dE[l]-j), j=0..min(dE
[l],8*d-1)): od:

## SYSTEM FOR DIVISIBILITY BY y^(8*d)

Systemey8d := {}:

for k from 0 to (m-8)/3   do

Coeffs_y8d[8,m-8-3*k,k] := {coeffs(expand(mtaylor(Eq[8,m-8-3*k,
k], y, 8*d)), [x,y])}:

Systemey8d := Systemey8d union Coeffs_y8d[8,m-8-3*k,k]:

od:

Systeme_y8d := Systemey8d:

## VARIABLES FOR DIVISIBILITY BY y^(8*d)

Variables_y8d := indets(Systeme_y8d):

## RESOLUTION y^(8*d)

Solutions_y8d := solve(Systeme_y8d, Variables_y8d):

assign(Solutions_y8d):

##

for l from 0 to m - 0*3 do nops(expand(AA|||l)) od;
for l from 0 to m - 1*3 do nops(expand(BB|||l)) od;
for l from 0 to m - 2*3 do nops(expand(CC|||l)) od;
for l from 0 to m - 3*3 do nops(expand(DD|||l)) od;
for l from 0 to m - 4*3 do nops(expand(EE|||l)) od;
```

1

1

1

1

1

1

1

1

1 **(9)**

```
> ## EXPAND ALL UNKNOWNS UP TO y^(9*d)

  for l from 0 to m - 0*3 do
  AA|||l := add(add(A|||l[i,j]*x^i*y^j, i=0..dA[l]-j), j=0..min(dA
  [l],9*d-1)): od:

  for l from 0 to m - 1*3 do
  BB|||l := add(add(B|||l[i,j]*x^i*y^j, i=0..dB[l]-j), j=0..min(dB
  [l],9*d-1)): od:

  for l from 0 to m - 2*3 do
  CC|||l := add(add(C|||l[i,j]*x^i*y^j, i=0..dC[l]-j), j=0..min(dC
  [l],9*d-1)): od:

  for l from 0 to m - 3*3 do
  DD|||l := add(add(D|||l[i,j]*x^i*y^j, i=0..dD[l]-j), j=0..min(dD
  [l],9*d-1)): od:

  for l from 0 to m - 4*3 do
  EE|||l := add(add(E|||l[i,j]*x^i*y^j, i=0..dE[l]-j), j=0..min(dE
  [l],9*d-1)): od:

  ## SYSTEM FOR DIVISIBILITY BY y^(9*d)

  Systemey9d := {}:

  for k from 0 to (m-9)/3   do

  Coeffs_y9d[9,m-9-3*k,k] := {coeffs(expand(mtaylor(Eq[9,m-9-3*k,
  k], y, 9*d)), [x,y])}:

  Systemey9d := Systemey9d union Coeffs_y9d[9,m-9-3*k,k]:

  od:

  Systeme_y9d := Systemey9d:

  ## VARIABLES FOR DIVISIBILITY BY y^(9*d)

  Variables_y9d := indets(Systeme_y9d):
```

```
## RESOLUTION y^(9*d)

Solutions_y9d := solve(Systeme_y9d, Variables_y9d):

assign(Solutions_y9d):

##

for l from 0 to m - 0*3 do nops(expand(AA|||l)) od;
for l from 0 to m - 1*3 do nops(expand(BB|||l)) od;
for l from 0 to m - 2*3 do nops(expand(CC|||l)) od;
for l from 0 to m - 3*3 do nops(expand(DD|||l)) od;
for l from 0 to m - 4*3 do nops(expand(EE|||l)) od;
```

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1 **(10)**

```
>
## EXPAND ALL UNKNOWNS UP TO y^(10*d)

for l from 0 to m - 0*3 do
AA|||l := add(add(A|||l[i,j]*x^i*y^j, i=0..dA[l]-j), j=0..min(dA
[l],10*d-1)): od:

for l from 0 to m - 1*3 do
BB|||l := add(add(B|||l[i,j]*x^i*y^j, i=0..dB[l]-j), j=0..min(dB
[l],10*d-1)): od:

for l from 0 to m - 2*3 do
CC|||l := add(add(C|||l[i,j]*x^i*y^j, i=0..dC[l]-j), j=0..min(dC
[l],10*d-1)): od:

for l from 0 to m - 3*3 do
DD|||l := add(add(D|||l[i,j]*x^i*y^j, i=0..dD[l]-j), j=0..min(dD
[l],10*d-1)): od:
```

```
for l from 0 to m - 4*3 do
EE|||l := add(add(E|||l[i,j]*x^i*y^j, i=0..dE[l]-j), j=0..min(dE
[l],10*d-1)): od:

## SYSTEM FOR DIVISIBILITY BY y^(10*d)

Systemey10d := {}:

for k from 0 to (m-10)/3   do

Coeffs_y10d[10,m-10-3*k,k] := {coeffs(expand(mtaylor(Eq[10,m-10
-3*k,k], y, 10*d)), [x,y])}:

Systemey10d := Systemey10d union Coeffs_y10d[10,m-10-3*k,k]:

od:

Systeme_y10d := Systemey10d:

## VARIABLES FOR DIVISIBILITY BY y^(10*d)

Variables_y10d := indets(Systeme_y10d):

## RESOLUTION y^(10*d)

Solutions_y10d := solve(Systeme_y10d, Variables_y10d):

assign(Solutions_y10d):

##

for l from 0 to m - 0*3 do nops(expand(AA|||l)) od;
for l from 0 to m - 1*3 do nops(expand(BB|||l)) od;
for l from 0 to m - 2*3 do nops(expand(CC|||l)) od;
for l from 0 to m - 3*3 do nops(expand(DD|||l)) od;
for l from 0 to m - 4*3 do nops(expand(EE|||l)) od;
```

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1

```
>
  ## EXPAND ALL UNKNOWNS UP TO y^(11*d)

  for l from 0 to m - 0*3 do
  AA||l := add(add(A||l[i,j]*x^i*y^j, i=0..dA[l]-j), j=0..min(dA
  [l],11*d-1)): od:

  for l from 0 to m - 1*3 do
  BB||l := add(add(B||l[i,j]*x^i*y^j, i=0..dB[l]-j), j=0..min(dB
  [l],11*d-1)): od:

  for l from 0 to m - 2*3 do
  CC||l := add(add(C||l[i,j]*x^i*y^j, i=0..dC[l]-j), j=0..min(dC
  [l],11*d-1)): od:

  for l from 0 to m - 3*3 do
  DD||l := add(add(D||l[i,j]*x^i*y^j, i=0..dD[l]-j), j=0..min(dD
  [l],11*d-1)): od:

  for l from 0 to m - 4*3 do
  EE||l := add(add(E||l[i,j]*x^i*y^j, i=0..dE[l]-j), j=0..min(dE
  [l],11*d-1)): od:

  ## SYSTEM FOR DIVISIBILITY BY y^(11*d)

  Systemey11d := {}:

  for k from 0 to (m-11)/3   do

  Coeffs_y11d[11,m-11-3*k,k] := {coeffs(expand(mtaylor(Eq[11,m-11
  -3*k,k], y, 11*d)), [x,y])}:

  Systemey11d := Systemey11d union Coeffs_y11d[11,m-11-3*k,k]:

  od:

  Systeme_y11d := Systemey11d:

  ## VARIABLES FOR DIVISIBILITY BY y^(11*d)

  Variables_y11d := indets(Systeme_y11d):

  ## RESOLUTION y^(11*d)

  Solutions_y11d := solve(Systeme_y11d, Variables_y11d):
```

```
assign(Solutions_y11d):

##

for l from 0 to m - 0*3 do nops(expand(AA||l)) od;
for l from 0 to m - 1*3 do nops(expand(BB||l)) od;
for l from 0 to m - 2*3 do nops(expand(CC||l)) od;
for l from 0 to m - 3*3 do nops(expand(DD||l)) od;
for l from 0 to m - 4*3 do nops(expand(EE||l)) od;
```

$$1$$
$$1$$
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$$1$$
$$1$$
$$1 \qquad (12)$$

```
> ## EXPAND ALL UNKNOWNS UP TO y^(12*d)

  for l from 0 to m - 0*3 do
  AA||l := add(add(A||l[i,j]*x^i*y^j, i=0..dA[l]-j), j=0..min(dA
  [l],12*d-1)): od:

  for l from 0 to m - 1*3 do
  BB||l := add(add(B||l[i,j]*x^i*y^j, i=0..dB[l]-j), j=0..min(dB
  [l],12*d-1)): od:

  for l from 0 to m - 2*3 do
  CC||l := add(add(C||l[i,j]*x^i*y^j, i=0..dC[l]-j), j=0..min(dC
  [l],12*d-1)): od:

  for l from 0 to m - 3*3 do
  DD||l := add(add(D||l[i,j]*x^i*y^j, i=0..dD[l]-j), j=0..min(dD
  [l],12*d-1)): od:

  for l from 0 to m - 4*3 do
  EE||l := add(add(E||l[i,j]*x^i*y^j, i=0..dE[l]-j), j=0..min(dE
  [l],12*d-1)): od:

  ## SYSTEM FOR DIVISIBILITY BY y^(12*d)
```

```
Systemey12d := {}:

for k from 0 to (m-12)/3   do

Coeffs_y12d[12,m-12-3*k,k] := {coeffs(expand(mtaylor(Eq[12,m-12
-3*k,k], y, 12*d)), [x,y])}:

Systemey12d := Systemey12d union Coeffs_y12d[12,m-12-3*k,k]:

od:

Systeme_y12d := Systemey12d:

## VARIABLES FOR DIVISIBILITY BY y^(12*d)

Variables_y12d := indets(Systeme_y12d):

## RESOLUTION y^(12*d)

Solutions_y12d := solve(Systeme_y12d, Variables_y12d):

assign(Solutions_y12d):

##

for l from 0 to m - 0*3 do nops(expand(AA||l)) od;
for l from 0 to m - 1*3 do nops(expand(BB||l)) od;
for l from 0 to m - 2*3 do nops(expand(CC||l)) od;
for l from 0 to m - 3*3 do nops(expand(DD||l)) od;
for l from 0 to m - 4*3 do nops(expand(EE||l)) od;
```

$$1, 1, 1, 1, 1, 1, 1, 1, 1 \qquad (13)$$

```
> ## EXPAND ALL UNKNOWNS UP TO y^(13*d)
```

```
for l from 0 to m - 0*3 do
AA||l := add(add(A||l[i,j]*x^i*y^j, i=0..dA[l]-j), j=0..min(dA
[l],13*d-1)): od:

for l from 0 to m - 1*3 do
BB||l := add(add(B||l[i,j]*x^i*y^j, i=0..dB[l]-j), j=0..min(dB
[l],13*d-1)): od:

for l from 0 to m - 2*3 do
CC||l := add(add(C||l[i,j]*x^i*y^j, i=0..dC[l]-j), j=0..min(dC
[l],13*d-1)): od:

for l from 0 to m - 3*3 do
DD||l := add(add(D||l[i,j]*x^i*y^j, i=0..dD[l]-j), j=0..min(dD
[l],13*d-1)): od:

for l from 0 to m - 4*3 do
EE||l := add(add(E||l[i,j]*x^i*y^j, i=0..dE[l]-j), j=0..min(dE
[l],13*d-1)): od:

## SYSTEM FOR DIVISIBILITY BY y^(13*d)

Systemey13d := {}:

for k from 0 to (m-13)/3   do

Coeffs_y13d[13,m-13-3*k,k] := {coeffs(expand(mtaylor(Eq[13,m-13
-3*k,k], y, 13*d)), [x,y])}:

Systemey13d := Systemey13d union Coeffs_y13d[13,m-13-3*k,k]:

od:

Systeme_y13d := Systemey13d:

## VARIABLES FOR DIVISIBILITY BY y^(13*d)

Variables_y13d := indets(Systeme_y13d):

## RESOLUTION y^(13*d)

Solutions_y13d := solve(Systeme_y13d, Variables_y13d):

assign(Solutions_y13d):

##

for l from 0 to m - 0*3 do nops(expand(AA||l)) od;
```

```
for l from 0 to m - 1*3 do nops(expand(BB||l)) od;
for l from 0 to m - 2*3 do nops(expand(CC||l)) od;
for l from 0 to m - 3*3 do nops(expand(DD||l)) od;
for l from 0 to m - 4*3 do nops(expand(EE||l)) od;
```

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1 **(14)**

```
> ## EXPAND ALL UNKNOWNS UP TO y^(14*d)

  for l from 0 to m - 0*3 do
  AA||l := add(add(A||l[i,j]*x^i*y^j, i=0..dA[l]-j), j=0..min(dA
  [l],14*d-1)): od:

  for l from 0 to m - 1*3 do
  BB||l := add(add(B||l[i,j]*x^i*y^j, i=0..dB[l]-j), j=0..min(dB
  [l],14*d-1)): od:

  for l from 0 to m - 2*3 do
  CC||l := add(add(C||l[i,j]*x^i*y^j, i=0..dC[l]-j), j=0..min(dC
  [l],14*d-1)): od:

  for l from 0 to m - 3*3 do
  DD||l := add(add(D||l[i,j]*x^i*y^j, i=0..dD[l]-j), j=0..min(dD
  [l],14*d-1)): od:

  for l from 0 to m - 4*3 do
  EE||l := add(add(E||l[i,j]*x^i*y^j, i=0..dE[l]-j), j=0..min(dE
  [l],14*d-1)): od:

  ## SYSTEM FOR DIVISIBILITY BY y^(14*d)

  Systemey14d := {}:

  for k from 0 to (m-14)/3   do
```

```
Coeffs_y14d[14,m-14-3*k,k] := {coeffs(expand(mtaylor(Eq[14,m-14
-3*k,k], y, 14*d)), [x,y])}:

Systemey14d := Systemey14d union Coeffs_y14d[14,m-14-3*k,k]:

od:

Systeme_y14d := Systemey14d:

## VARIABLES FOR DIVISIBILITY BY y^(14*d)

Variables_y14d := indets(Systeme_y14d):

## RESOLUTION y^(14*d)

Solutions_y14d := solve(Systeme_y14d, Variables_y14d):

assign(Solutions_y14d):

##

for l from 0 to m - 0*3 do nops(expand(AA||l)) od;
for l from 0 to m - 1*3 do nops(expand(BB||l)) od;
for l from 0 to m - 2*3 do nops(expand(CC||l)) od;
for l from 0 to m - 3*3 do nops(expand(DD||l)) od;
for l from 0 to m - 4*3 do nops(expand(EE||l)) od;
```

$$1, 1, 1, 1, 1, 1, 1, 1 \qquad (15)$$