```
> restart:

  ordre := 9;

  ## 9 CONSEQUENCES TRANSITIVITE

  F[6,0,4,0,0] := 9*ReF40300:
  F[7,0,3,0,0] := (164/7)*ReF40300:
  F[6,0,3,0,1] := 1300*I:
  F[9,0,0,1,0] := (1/525)*ReF40300^2:
  F[8,0,0,1,1] := (3/7*I)*ReF40300:
  F[8,0,1,1,0] := (3/175)*ReF40300^2:
  F[7,0,1,1,1] := (10/7*I)*ReF40300:
  F[7,0,2,1,0] := -(72/175)*ReF40300^2:
  F[6,0,2,1,1]  := (46*I)*ReF40300:
  F[6,0,3,1,0] := -(4/5)*ReF40300^2:
  F[5,0,3,1,1] := (42*I)*ReF40300:

  F[5,0,4,1,0] := -(24/25)*ReF40300^2:
  F[4,1,4,0,1] := -(30*I)*ReF40300:
  F[6,1,3,0,0] := -(8/25)*ReF40300^2:
  F[5,1,4,0,0] := -(18/25)*ReF40300^2:
  F[5,1,3,0,1] := -(8*I)*ReF40300:
  F[8,0,0,2,0] := 95/4:
  F[7, 0, 0, 2, 1] := 0:
  F[7,0,1,2,0] := -435:
  F[6, 0, 1, 2, 1] := 0:
  F[6,0,2,2,0] := -325:
  F[5,0,3,2,0] := 570:
  F[4, 0, 3, 2, 1] := 0:
  F[5, 2, 3, 0, 0] := -150:
  F[4,2,4,0,0] := 975/2:
  F[5,0,2,2,1] := 0:
  F[4,2,3,0,1] := 0:
  F[7,0,0,3,0] := (4/7)*ReF40300:
  F[6,0,0,3,1] := -30*I:
  F[6,0,1,3,0] := 2*ReF40300:
  F[5,0,1,3,1] := -90*I:
  F[5,0,2,3,0] := (12/5)*ReF40300:
  F[4,0,2,3,1] := -75*I:
  F[4,3,3,0,0] := 0:
  F[4,0,3,3,0] := -conjugate(F[4, 3, 3, 0, 0])+ReF40300:

  F[3, 3, 3, 0, 1] := 0:
  F[6, 0, 0, 4, 0] := 0:
  F[5, 0, 0, 4, 1] := 0:
  F[5, 0, 1, 4, 0] := 0:
  F[4, 0, 2, 4, 0] := 0:
  F[4, 0, 1, 4, 1] := 0:
  F[3, 4, 3, 0, 0] := 0:
  F[4, 0, 2, 4, 0] := 0:
  F[3, 0, 2, 4, 1] := 0:
  F[4, 0, 1, 5, 0] := 0:
```

```
F[5, 0, 0, 5, 0] := 0:
F[4, 0, 1, 5, 0] := 0:
F[3, 0, 2, 5, 0] := 0:
F[4, 0, 0, 5, 1] := 0:
F[4, 0, 0, 6, 0] := 0:
F[3, 0, 1, 6, 0] := 0:
F[3, 0, 1, 5, 1] := 0:
F[3, 0, 0, 7, 0] := 0:
F[3, 0, 0, 6, 1] := 0:
F[6,0,0,1,2] := -ReF40300:
F[5,0,1,1,2] := -6*ReF40300:
F[4,0,2,1,2] := 15*ReF40300:
F[3,1,3,0,2] := 40*ReF40300:
F[5, 0, 0, 2, 2] := 0:
F[4, 0, 1, 2, 2] := 0:
F[3, 0, 2, 2, 2] := 0:
F[4, 0, 0, 3, 2] := 0:
F[3, 0, 1, 3, 2] := 0:
F[3, 0, 0, 4, 2] := 0:
F[3, 0, 0, 2, 3] := 0:

## RETARD ORDRE 8 CONSEQUENCES TRANSITIVITE

ImF40301 := 0:

F[5,0,4,0,0] := (1/2)*ImF40301-(6/25)*ReF40300^2:
F[5,0,3,0,1] := (16*I)*ReF40300:
F[6,0,3,0,0] := (1/9)*ImF40301-(2/3)*F[5, 0, 4, 0, 0]-(8/25)*
ReF40300^2:
F[4, 0, 4, 0, 1] := 0:

## 9 SPORADIQUES RESTANTES

A[1,0,3] := I*ImF40301*b-100*c-(50*I)*d+ImF40301*a+(20*I)*
ReF40300*e:
B[0,0,3] := -(1/3*I)*ImF40301*b-(100/3)*c+(50/3*I)*d+(1/3)*
ImF40301*a:

## 9 EQUATIONS 0 = Eq[h,i,2,0,l]

B[0,1,3] := A[1, 0, 3]+conjugate(A[1, 0, 3]):
B[0,3,2] := 0:
B[1,2,2] := 0:
B[2,1,2] := -900*c-15*conjugate(B[0, 0, 3])+9*ImF40301*a-(9*I)*
ImF40301*b+(450*I)*d:
B[3,0,2] := -(3*I)*ImF40301*d-48*conjugate(A[0, 0, 4])-6*
conjugate(B[1, 0, 3])+3*ImF40301*c+60*a*ReF40300-(750*I)*e:
B[0,5,1] := 0:
B[1,4,1] := 0:
B[2,3,1] := 0:
B[3,2,1] := -1000*a+(200*I)*b:
B[4,1,1] := -(24/5)*a*ReF40300^2-(60*I)*ReF40300*e-10*ImF40301*
a+(10*I)*ImF40301*b+100*c+(100*I)*d:
B[5,0,1] := (6*I)*F[5, 0, 3, 0, 1]*a+6*F[5, 0, 3, 0, 1]*b+456*a*
ReF40300+(5100*I)*e+(48*I)*ReF40300*b-(32/5)*ImF40301*c+(32/5*I)
*ImF40301*d:
```

```
B[0,7,0] := -6*conjugate(F[3, 0, 0, 7, 0])*a+(6*I)*conjugate(F
[3, 0, 0, 7, 0])*b:
B[1,6,0] := (6*I)*conjugate(F[3, 0, 1, 6, 0])*b-6*conjugate(F[3,
0, 1, 6, 0])*a:
B[2,5,0] := -6*conjugate(F[3, 0, 2, 5, 0])*a+(6*I)*conjugate(F
[3, 0, 2, 5, 0])*b:
B[3,4,0] := -6*F[3, 4, 3, 0, 0]*a+(6*I)*F[3, 4, 3, 0, 0]*b:
B[4,3,0] := (6*I)*F[4, 3, 3, 0, 0]*b-6*F[4, 3, 3, 0, 0]*a:
B[5,2,0] := (24/5*I)*ReF40300*d-(24/5)*ReF40300*c-6*F[5, 2, 3,
0, 0]*a+(6*I)*F[5, 2, 3, 0, 0]*b:
B[6,1,0] := -6*F[6, 1, 3, 0, 0]*a+(6*I)*F[6, 1, 3, 0, 0]*b+1460*
c-(1460*I)*d+(8/25)*a*ReF40300^2+(4*I)*ReF40300*e:
B[7,0,0] := -(7/15)*ImF40301*c+(7/15*I)*ImF40301*d+(72/7*I)*
ReF40300*b-(192/7)*a*ReF40300-6*F[7, 0, 3, 0, 0]*a+(6*I)*F[7, 0,
3, 0, 0]*b-2*F[7, 0, 2, 1, 0]*c+(2*I)*F[7, 0, 2, 1, 0]*d-(2/525*
I)*ReF40300*e*ImF40301:

## 9 EQUATIONS 0 = Eq[h,i,1,0,l]

A[0,2,3] := 0:
A[1,1,3] := conjugate(B[0, 0, 3]):
A[2,0,3] := 8*conjugate(A[0, 0, 4])+(1/2)*conjugate(B[1, 0, 3]):
A[0,4,2] := 0:
A[1,3,2] := 0:
A[2,2,2] := 0:
A[3,1,2] := 0:
A[4,0,2] := 0:
A[0,6,1] := 0:
A[1,5,1] := 0:
A[2,4,1] := 0:
A[3,3,1] := 0:
A[4,2,1] := 0:
A[5,1,1] := -(30*I)*d+30*c:
A[6,0,1] := (1/3)*ImF40301*c-(1/3*I)*ImF40301*d-(2*I)*ReF40300*
b+10*a*ReF40300-(50*I)*e:
A[0,8,0] := 0:
A[1,7,0] := 0:
A[2,6,0] := 0:
A[3,5,0] := 0:
A[4,4,0] := 0:
A[5,3,0] := 0:
A[6,2,0] := 0:
A[7,1,0] := -50*c+(50*I)*d:
A[8,0,0] := -F[8, 0, 1, 1, 0]*c+(4/7*I)*ReF40300*b-(31/7)*a*
ReF40300+I*F[8, 0, 1, 1, 0]*d-(125/2*I)*e:

## 9 EQUATIONS 0 = Eq[h,i,0,0,l]

C[0,1,4] := 0:
C[1,0,4] := 2*conjugate(A[0, 0, 4]):
C[0,3,3] := 0:
C[1,2,3] := 0:
C[2,1,3] := 0:
C[3,0,3] := 0:
C[0,5,2] := 0:
C[1,4,2] := 0:
```

```
C[2,3,2] := 0:
C[3,2,2] := 0:
C[4,1,2] := 0:
C[5,0,2] := 4*a*ReF40300-(1/5*I)*ImF40301*d-(50*I)*e+(1/5)*
ImF40301*c:
C[0,7,1] := 0:
C[1,6,1] := 0:
C[2,5,1] := 0:
C[3,4,1] := 0:
C[4,3,1] := 0:
C[5,2,1] := 0:
C[6,1,1] := 0:
C[7,0,1] := (4/7*I)*ReF40300*b+(4/7)*a*ReF40300:
C[0,9,0] := 0:
C[1,8,0] := 0:
C[2,7,0] := 0:
C[3,6,0] := 0:
C[4,5,0] := 0:
C[5,4,0] := 0:
C[6,3,0] := 0:
C[7,2,0] := 0:
C[8,1,0] := 0:
C[9,0,0] := -(2*I)*F[9, 0, 0, 1, 0]*d+2*F[9, 0, 0, 1, 0]*c:
```

8 CONSEQUENCES TRANSITIVITE

```
F[8,0,0,1,0] := 25/4:
F[7,0,0,1,1] := 0:
F[7,0,1,1,0] := 5:
F[6,0,1,1,1] := -(2/15*I)*ImF40301:
F[6,0,2,1,0] := -455:
F[5,0,2,1,1] := (16/5*I)*ImF40301:
F[5,0,3,1,0] := -335/3:
F[4,0,3,1,1] := I*ImF40301:
F[5,1,3,0,0] := -190:
F[4,1,4,0,0] := -(5/4)*F[5, 1, 3, 0, 0]:
F[4,1,3,0,1] := (5/3*I)*ImF40301:
F[7,0,0,2,0] := -(6/35)*ReF40300:
F[6,0,0,2,1] := -20*I:
F[6,0,1,2,0] := 2*ReF40300:
F[5,0,1,2,1] := -90*I:
F[5,0,2,2,0] := (18/5)*ReF40300:
F[4,0,2,2,1] := -150*I:
F[4,2,3,0,0] := ReF40300:
F[4,0,3,2,0] := 3*ReF40300:
F[3,2,3,0,1] := 100*I:
F[6, 0, 0, 3, 0] := 0:
F[5, 0, 1, 3, 0] := 0:
F[3, 3, 3, 0, 0] := 0:
F[4, 0, 2, 3, 0] := 0:
F[5, 0, 0, 3, 1] := 0:
F[5, 0, 0, 4, 0] := -1:
F[4, 0, 1, 3, 1] := 0:
F[3, 0, 2, 3, 1] := 0:
F[4, 0, 1, 4, 0] := 0:
F[3, 0, 2, 4, 0] := 0:
```

```
F[4, 0, 0, 4, 1] := 0:
F[4, 0, 0, 5, 0] := 0:
F[3, 0, 1, 5, 0] := 0:
F[3, 0, 1, 4, 1] := 0:
F[3, 0, 0, 6, 0] := 0:
F[3, 0, 0, 5, 1] := 0:

F[5,0,0,1,2] := -(1/10)*ImF40301:

F40400 := -325/6:

F[3,0,2,1,2] := (3/2)*ImF40301:
F[5,0,3,0,0] := -520/3-(4/5)*F40400:
F[4, 0, 0, 2, 2] := 0:
F[3, 0, 1, 2, 2] := 0:
F[3, 0, 0, 3, 2] := 0:

## RETARD ORDRE 7 CONSEQUENCES TRANSITIVITE

F[6,0,0,1,1] := 50/3*I+(1/8*I)*F[5, 0, 3, 0, 0]+(1/10*I)*F40400:

#assume(ImF40301,real):
F[4,0,3,0,1] := I*ImF40301:

ImF70010 := 0:
ImF50011 := 0:

## 8 SPORADIQUES RESTANTES

A[0,0,3] := -(5*I)*F[6, 0, 0, 1, 1]*a+5*b*F[6, 0, 0, 1, 1]-
(50/3)*a+(100/3*I)*b-(5/3*I)*d*ImF50011+5*b*conjugate(F[6, 0, 0,
1, 1])+(5*I)*conjugate(F[6, 0, 0, 1, 1])*a:
B[1,0,2] := -6*A[0, 0, 3]:

## 8 A TERMINER

B[2,0,2] := -2*F[4, 0, 3, 0, 1]*b+2*conjugate(F[4, 0, 3, 0, 1])*
b-4*A[1, 0, 3]+2*ReF40300*e*F[6, 0, 0, 1, 1]+(2*I)*F[4, 0, 3, 0,
1]*a-(10/3*I)*b*ImF50011^2+(140*I)*ImF50011*a*ImF70010+(300*I)*
d-(4/3*I)*b*ImF50011*ReF40300+5*ImF50011*e*F[6, 0, 0, 1, 1]+10*
d*F[6, 0, 0, 1, 1]-5*ImF50011*e*conjugate(F[6, 0, 0, 1, 1])-10*
d*conjugate(F[6, 0, 0, 1, 1])+(2*I)*conjugate(F[4, 0, 3, 0, 1])*
a-(20*I)*F[6, 0, 0, 1, 1]*c-(20*I)*c*conjugate(F[6, 0, 0, 1, 1])
+(56*I)*ReF40300*a*ImF70010-2*conjugate(A[1, 0, 3])-2*ReF40300*
e*conjugate(F[6, 0, 0, 1, 1]):

## 8 EQUATIONS 0 = Eq[h,i,2,0,l]

B[0,2,2] := -2*a*ReF40300+(20/3)*ImF50011*a+5*e*conjugate(F[6,
0, 0, 1, 1])-(70*I)*a*ImF70010+(20/3*I)*b*ImF50011:
B[1,1,2] := -2*conjugate(B[1, 0, 2])-18*conjugate(A[0, 0, 3]):
B[0,4,1] := 0:
B[1,3,1] := 0:
B[2,2,1] := 40*ImF50011*a-(40*I)*b*ImF50011-60*e*F[6, 0, 0, 1,
1]+24*a*ReF40300-(840*I)*a*ImF70010:
B[3,1,1] := -900*a-(30*I)*d*ImF50011-(900*I)*b+30*ImF50011*c-
```

```
(60*I)*conjugate(F[6, 0, 0, 1, 1])*a-(180*I)*F[6, 0, 0, 1, 1]*
a-60*conjugate(F[6, 0, 0, 1, 1])*b-180*F[6, 0, 0, 1, 1]*b:
B[4,0,1] := 12*conjugate(B[0, 0, 3])+(6*I)*F[4, 0, 3, 0, 1]*a+6*
F[4, 0, 3, 0, 1]*b+6*ReF40300*e*F[6, 0, 0, 1, 1]+2*ReF40300*
ImF50011*a-(12/5)*a*ReF40300^2-(2*I)*b*ImF50011*ReF40300+(84*I)*
a*ReF40300*ImF70010-(30*I)*c*conjugate(F[6, 0, 0, 1, 1])-30*
conjugate(F[6, 0, 0, 1, 1])*d:
B[0,6,0] := -6*conjugate(F[3, 0, 0, 6, 0])*a+(6*I)*conjugate(F
[3, 0, 0, 6, 0])*b:
B[1,5,0] := (6*I)*conjugate(F[3, 0, 1, 5, 0])*b-6*conjugate(F[3,
0, 1, 5, 0])*a:
B[2,4,0] := (6*I)*conjugate(F[3, 0, 2, 4, 0])*b-6*conjugate(F[3,
0, 2, 4, 0])*a:
B[3,3,0] := -6*F[3, 3, 3, 0, 0]*a+(6*I)*F[3, 3, 3, 0, 0]*b:
B[4,2,0] := -6*F[4, 2, 3, 0, 0]*a+(6*I)*F[4, 2, 3, 0, 0]*b:
B[5,1,0] := 126*d*ImF70010+(22*I)*d*ImF50011-22*ImF50011*c+(126*
I)*c*ImF70010+(48/5*I)*ReF40300*d-(220*I)*b-220*a-(48/5)*c*
ReF40300+(6*I)*F[5, 1, 3, 0, 0]*b-6*F[5, 1, 3, 0, 0]*a:
B[6,0,0] := (6*I)*F[6, 0, 3, 0, 0]*b-(112/5*I)*a*ReF40300*
ImF70010+(4/15*I)*b*ImF50011*ReF40300-160*c-392*a*ImF70010^2-12*
d*F[6, 0, 0, 1, 1]+(8/25)*a*ReF40300^2-(4/5)*ReF40300*e*F[6, 0,
0, 1, 1]+(12/5)*ReF40300*ImF50011*a+(28/3)*b*ImF50011*ImF70010-
(20/3)*ImF50011*e*F[6, 0, 0, 1, 1]-(20/9)*ImF50011^2*a+(80*I)*d+
(20/9*I)*b*ImF50011^2+(2*I)*F[6, 0, 2, 1, 0]*d-2*F[6, 0, 2, 1,
0]*c-6*F[6, 0, 3, 0, 0]*a-(12*I)*F[6, 0, 0, 1, 1]*c+(28*I)*e*F
[6, 0, 0, 1, 1]*ImF70010-(84*I)*ImF50011*a*ImF70010:

## 8 EQUATIONS 0 = Eq[h,i,1,0,I]

C[0,0,4] := (1/4)*A[1, 0, 3]-(1/4)*conjugate(A[1, 0, 3]):

A[0,1,3] := conjugate(A[0, 0, 3]):
A[0,3,2] := 0:
A[1,2,2] := 0:
A[2,1,2] := 0:
A[3,0,2] := -3*conjugate(B[0, 0, 3]):
A[0,5,1] := 0:
A[1,4,1] := 0:
A[2,3,1] := 0:
A[3,2,1] := 0:
A[4,1,1] := 50*a+(50*I)*b-5*ImF50011*c+(5*I)*d*ImF50011:
A[5,0,1] := -(20*I)*d+40*c+2*ImF50011*e*F[6, 0, 0, 1, 1]+(2/3)*
ImF50011^2*a-(4/5)*ReF40300*ImF50011*a-(2/3*I)*b*ImF50011^2+(28*
I)*ImF50011*a*ImF70010+(6*I)*F[6, 0, 0, 1, 1]*c+6*d*F[6, 0, 0,
1, 1]:
A[0,7,0] := 0:
A[1,6,0] := 0:
A[2,5,0] := 0:
A[3,4,0] := 0:
A[4,3,0] := 0:
A[5,2,0] := 0:
A[6,1,0] := -(7*I)*c*ImF70010-(1/5*I)*ReF40300*d+(1/5)*c*
ReF40300-7*d*ImF70010:
A[7,0,0] := -28*a*ImF70010^2-d*F[6, 0, 0, 1, 1]-I*F[6, 0, 0, 1,
1]*c-F[7, 0, 1, 1, 0]*c+I*F[7, 0, 1, 1, 0]*d-(2/35)*ReF40300*e*F
[6, 0, 0, 1, 1]+(2*I)*e*F[6, 0, 0, 1, 1]*ImF70010-(2/105)*
```

```
ReF40300*ImF50011*a+(2/3*I)*ImF50011*a*ImF70010+(4/175)*a*
ReF40300^2-(8/5*I)*ReF40300*a*ImF70010+(2/105*I)*b*ImF50011*
ReF40300+(2/3)*b*ImF50011*ImF70010:

## 8 EQUATIONS 0 = Eq[h,i,0,0,l]

C[0,2,3] := 0:
C[1,1,3] := 0:
C[2,0,3] := -conjugate(B[0, 0, 3]):
C[0,4,2] := 0:
C[1,3,2] := 0:
C[2,2,2] := 0:
C[3,1,2] := 0:
C[4,0,2] := 0:
C[0,6,1] := 0:
C[1,5,1] := 0:
C[2,4,1] := 0:
C[3,3,1] := 0:
C[4,2,1] := 0:
C[5,1,1] := 0:
C[6,0,1] := -2*d*F[6, 0, 0, 1, 1]-(2*I)*F[6, 0, 0, 1, 1]*c:
C[0,8,0] := 0:
C[1,7,0] := 0:
C[2,6,0] := 0:
C[3,5,0] := 0:
C[4,4,0] := 0:
C[5,3,0] := 0:
C[6,2,0] := 0:
C[7,1,0] := 0:
C[8,0,0] := -(2*I)*F[8, 0, 0, 1, 0]*d+2*F[8, 0, 0, 1, 0]*c:

## ORDRE 7

ReF70010 := -(1/35)*ReF40300:

#assume(ReF70010,real):
#assume(ImF70010,real):
F[7,0,0,1,0] := ReF70010 + I*ImF70010:

#assume(ImF50011,real):
F[5,0,0,1,1] := I*ImF50011:

F[4,1,3,0,0] := -(5/3*I)*conjugate(F[5, 0, 0, 1, 1])-(140/3)*F
[7, 0, 0, 1, 0]-(25/3*I)*F[5, 0, 0, 1, 1]+(1/3)*ReF40300-(35/3)*
conjugate(F[7, 0, 0, 1, 0]):
F[5,0,2,1,0] := (20*I)*F[5, 0, 0, 1, 1]+I*conjugate(F[5, 0, 0,
1, 1])+147*F[7, 0, 0, 1, 0]+3*F[4, 1, 3, 0, 0]+(6/5)*
ReF40300+21*conjugate(F[7, 0, 0, 1, 0]):
F[6,0,1,1,0] := I*F[5, 0, 0, 1, 1]+(3*I)*conjugate(F[5, 0, 0, 1,
1])-21*conjugate(F[7, 0, 0, 1, 0])-(2/5)*conjugate(F[4, 1, 3, 0,
0]):
F[4,0,2,1,1] := -15*conjugate(F[6, 0, 0, 1, 1]):
F[5,0,1,1,1] := 6*F[6, 0, 0, 1, 1]:
F[6,0,1,1,0] : I*F[5, 0, 0, 1, 1]+(3*I)*conjugate(F[5, 0, 0, 1,
1])-21*conjugate(F[7, 0, 0, 1, 0])-(2/5)*conjugate(F[4, 1, 3, 0,
0]):
```

```
F[5,0,1,1,0] := 0:

F[4,0,3,1,0] := -(25/2*I)*conjugate(F[5, 0, 0, 1, 1])-(15/2)*
conjugate(F[6, 0, 1, 1, 0])-(35/2)*F[7, 0, 0, 1, 0]+ReF40300-
(5/2*I)*F[5, 0, 0, 1, 1]:
F[3,1,3,0,1] := -30*F[6, 0, 0, 1, 1]-(5/3)*F[5, 0, 1, 1, 0]*F[5,
0, 0, 1, 1]-10*conjugate(F[6, 0, 0, 1, 1])-(5/9)*conjugate(F[5,
0, 1, 1, 0])*conjugate(F[5, 0, 0, 1, 1])-(5/9)*F[5, 0, 1, 1, 0]*
conjugate(F[5, 0, 0, 1, 1])-(5/3)*F[5, 0, 0, 1, 1]*conjugate(F
[5, 0, 1, 1, 0]):
F[6,0,0,2,0] := (1/12)*conjugate(F[5, 0, 1, 1, 0])+(7/12)*F[5,
0, 1, 1, 0]:
F[5,0,0,2,1] := (1/2)*conjugate(F[5, 0, 0, 1, 1])+F[5, 0, 0, 1,
1]:
F[5,0,1,2,0] := -(10/3)*conjugate(F[5, 0, 1, 1, 0])+(8/3)*F[5,
0, 1, 1, 0]:

F[4,0,1,2,1] := -(5/2)*F[5, 0, 0, 1, 1]-5*conjugate(F[5, 0, 0,
1, 1]):
F[3, 2, 3, 0, 0] := 0:
F[4,0,2,2,0] := -(5/4)*F[5, 0, 1, 1, 0]-(15/4)*conjugate(F[5, 0,
1, 1, 0])-(3/4)*conjugate(F[3, 2, 3, 0, 0]):
F[3,0,2,2,1] := -10*conjugate(F[5, 0, 0, 1, 1]):
F[5,0,0,3,0] := -3/2:
F[4, 0, 0, 3, 1] := 0:
F[4, 0, 1, 3, 0] := - 5:
F[3, 0, 2, 3, 0] := 0:
F[3, 0, 1, 3, 1] := 0:
F[4, 0, 0, 4, 0] := 0:
F[3, 0, 1, 4, 0] := 0:
F[3, 0, 0, 5, 0] := 0:
F[3, 0, 0, 4, 1] := 0:
F[3, 0, 0, 2, 2] := 0:

rr := (2/9*I)*c*F[6, 0, 0, 2, 0]*conjugate(F[5, 0, 1, 1, 0])+
(2/9*I)*e*conjugate(F[6, 0, 0, 1, 1])*conjugate(F[5, 0, 1, 1, 0]
)-(2/9*I)*e*F[5, 0, 1, 1, 0]*F[6, 0, 0, 1, 1]+(1/90*I)*e*
ReF40300*conjugate(F[5, 0, 0, 1, 1])-10*b+(14/9)*F[5, 0, 1, 1,
0]*b*F[7, 0, 0, 1, 0]-(1/30)*F[4, 1, 3, 0, 0]*d-(4/9)*F[5, 0, 1,
1, 0]*d*F[6, 0, 0, 2, 0]+(2/9)*d*conjugate(F[6, 0, 0, 2, 0])*F
[5, 0, 1, 1, 0]+(1/9)*F[5, 0, 1, 1, 0]*a*conjugate(F[5, 0, 0, 1,
1])-(2/9)*F[5, 0, 1, 1, 0]*a*F[5, 0, 0, 1, 1]+(1/9)*a*F[5, 0, 0,
1, 1]*conjugate(F[5, 0, 1, 1, 0])-(2/9)*a*conjugate(F[5, 0, 0,
1, 1])*conjugate(F[5, 0, 1, 1, 0])-(1/90)*ReF40300*b*F[5, 0, 1,
1, 0]-(7/9)*b*conjugate(F[7, 0, 0, 1, 0])*F[5, 0, 1, 1, 0]-(7/9)
*b*F[7, 0, 0, 1, 0]*conjugate(F[5, 0, 1, 1, 0])+(14/9)*b*
conjugate(F[7, 0, 0, 1, 0])*conjugate(F[5, 0, 1, 1, 0])-(1/90)*
ReF40300*b*conjugate(F[5, 0, 1, 1, 0])-(4/9)*d*conjugate(F[6, 0,
0, 2, 0])*conjugate(F[5, 0, 1, 1, 0])+(2/9)*d*F[6, 0, 0, 2, 0]*
conjugate(F[5, 0, 1, 1, 0])+(1/30)*conjugate(F[4, 0, 3, 1, 0])*
d-(1/30)*conjugate(F[4, 1, 3, 0, 0])*d+(1/30)*F[4, 0, 3, 1, 0]*
d+(1/2)*F[5, 0, 0, 1, 1]*c-(1/6)*conjugate(F[5, 0, 3, 0, 0])*b+
(1/2)*c*conjugate(F[5, 0, 0, 1, 1])-(1/15)*ReF40300*d-(1/6)*F[5,
0, 3, 0, 0]*b+(1/9*I)*b*F[5, 0, 1, 1, 0]*conjugate(F[5, 0, 0, 1,
1])+(7/9*I)*a*F[7, 0, 0, 1, 0]*conjugate(F[5, 0, 1, 1, 0])-
(14/9*I)*a*F[5, 0, 1, 1, 0]*F[7, 0, 0, 1, 0]+(1/9*I)*a*F[6, 0,
```

```
1, 1, 0]*conjugate(F[5, 0, 1, 1, 0])+(2/9*I)*a*conjugate(F[6, 0,
1, 1, 0])*conjugate(F[5, 0, 1, 1, 0])-(2/9*I)*b*conjugate(F[5,
0, 0, 1, 1])*conjugate(F[5, 0, 1, 1, 0])+(2/9*I)*b*F[5, 0, 1, 1,
0]*F[5, 0, 0, 1, 1]-(1/9*I)*b*F[5, 0, 0, 1, 1]*conjugate(F[5, 0,
1, 1, 0])+(14/9*I)*a*conjugate(F[7, 0, 0, 1, 0])*conjugate(F[5,
0, 1, 1, 0])+(1/90*I)*a*ReF40300*conjugate(F[5, 0, 1, 1, 0])-
(2/9*I)*a*F[5, 0, 1, 1, 0]*F[6, 0, 1, 1, 0]+(1/9*I)*e*F[6, 0, 0,
1, 1]*conjugate(F[5, 0, 1, 1, 0])-(1/90*I)*e*ReF40300*F[5, 0, 0,
1, 1]-(7/9*I)*a*conjugate(F[7, 0, 0, 1, 0])*F[5, 0, 1, 1, 0]+
(4/15)*b*F40400-(2/9*I)*c*conjugate(F[5, 0, 1, 1, 0])^2+(2/9*I)*
c*F[5, 0, 1, 1, 0]^2-(1/30*I)*c*conjugate(F[4, 0, 3, 1, 0])+
(1/6*I)*d*F[5, 0, 0, 1, 1]-(1/6*I)*d*conjugate(F[5, 0, 0, 1, 1])
-(2/9)*b*F[5, 0, 1, 1, 0]*F[6, 0, 1, 1, 0]+(1/9)*b*F[5, 0, 1, 1,
0]*conjugate(F[6, 0, 1, 1, 0])+(1/9)*b*F[6, 0, 1, 1, 0]*
conjugate(F[5, 0, 1, 1, 0])-(2/9)*b*conjugate(F[6, 0, 1, 1, 0])*
conjugate(F[5, 0, 1, 1, 0])-(2/9)*d*F[5, 0, 1, 1, 0]*conjugate(F
[5, 0, 1, 1, 0])+(2/9)*d*F[5, 0, 1, 1, 0]^2+(2/9)*d*conjugate(F
[5, 0, 1, 1, 0])^2+(1/6*I)*a*F[5, 0, 3, 0, 0]-(1/30*I)*c*
conjugate(F[4, 1, 3, 0, 0])-(1/9*I)*a*F[5, 0, 1, 1, 0]*conjugate
(F[6, 0, 1, 1, 0])-(1/90*I)*a*ReF40300*F[5, 0, 1, 1, 0]-(4/9*I)*
c*F[5, 0, 1, 1, 0]*F[6, 0, 0, 2, 0]+(4/9*I)*c*conjugate(F[6, 0,
0, 2, 0])*conjugate(F[5, 0, 1, 1, 0])-(2/9*I)*c*conjugate(F[6,
0, 0, 2, 0])*F[5, 0, 1, 1, 0]+(1/30*I)*c*F[4, 0, 3, 1, 0]-(1/6*
I)*a*conjugate(F[5, 0, 3, 0, 0])-(1/30*I)*e*conjugate(F[4, 0, 3,
0, 1])-(4/15*I)*A[0, 0, 3]+(1/15*I)*conjugate(B[1, 0, 2])+(4/15*
I)*conjugate(A[0, 0, 3])-(1/15*I)*B[1, 0, 2]-(1/9*I)*e*F[5, 0,
1, 1, 0]*conjugate(F[6, 0, 0, 1, 1])+(1/30*I)*c*F[4, 1, 3, 0, 0]
+(1/30*I)*e*F[4, 0, 3, 0, 1]:

#assume(F40400,real):
F[4,0,4,0,0] := F40400:

qq := -(1/2)*d*conjugate(F[5, 0, 1, 1, 0])+d*conjugate(F[6, 0,
0, 2, 0])-(1/2)*d*F[5, 0, 1, 1, 0]+d*F[6, 0, 0, 2, 0]-(1/2*I)*a*
conjugate(F[6, 0, 1, 1, 0])+(1/2*I)*e*F[6, 0, 0, 1, 1]+I*c*F[6,
0, 0, 2, 0]+(1/2)*F[5, 0, 0, 1, 1]*a+(1/2)*conjugate(F[5, 0, 0,
1, 1])*a-(1/2*I)*b*F[5, 0, 0, 1, 1]-I*c*conjugate(F[6, 0, 0, 2,
0])+(7/2*I)*a*F[7, 0, 0, 1, 0]-(7/2)*b*conjugate(F[7, 0, 0, 1,
0])+(1/2)*b*conjugate(F[6, 0, 1, 1, 0])+(1/2)*b*F[6, 0, 1, 1, 0]
-(7/2)*b*F[7, 0, 0, 1, 0]-(7/2*I)*a*conjugate(F[7, 0, 0, 1, 0])+
(1/2*I)*b*conjugate(F[5, 0, 0, 1, 1])+(1/2*I)*c*conjugate(F[5,
0, 1, 1, 0])-(1/2*I)*e*conjugate(F[6, 0, 0, 1, 1])-(1/2*I)*c*F
[5, 0, 1, 1, 0]+(1/2*I)*a*F[6, 0, 1, 1, 0]:

pp := -(1/2*I)*b*F[6, 0, 1, 1, 0]+(1/2*I)*d*F[5, 0, 1, 1, 0]+
(1/2*I)*a*conjugate(F[5, 0, 0, 1, 1])-(7/2*I)*b*conjugate(F[7,
0, 0, 1, 0])+(7/2)*a*conjugate(F[7, 0, 0, 1, 0])+(1/2)*a*
conjugate(F[6, 0, 1, 1, 0])-(1/2*I)*a*F[5, 0, 0, 1, 1]+I*d*
conjugate(F[6, 0, 0, 2, 0])+(1/2)*a*F[6, 0, 1, 1, 0]+(7/2)*a*F
[7, 0, 0, 1, 0]+(7/2*I)*b*F[7, 0, 0, 1, 0]-(1/2)*b*F[5, 0, 0, 1,
1]+(1/2*I)*b*conjugate(F[6, 0, 1, 1, 0])-(1/2)*b*conjugate(F[5,
0, 0, 1, 1])-(1/2*I)*d*conjugate(F[5, 0, 1, 1, 0])-I*d*F[6, 0,
0, 2, 0]+c*conjugate(F[6, 0, 0, 2, 0])-(1/2)*c*conjugate(F[5, 0,
1, 1, 0])+c*F[6, 0, 0, 2, 0]-(1/2)*F[5, 0, 1, 1, 0]*c+(1/2)*e*
conjugate(F[6, 0, 0, 1, 1])+(1/2)*e*F[6, 0, 0, 1, 1]:
```

7 SPORADIQUES RESTANTES

```
A[1,0,2] := -20*b*F[5, 0, 0, 1, 1]+(15*I)*qq-25*b*conjugate(F[5,
0, 0, 1, 1])+12*a*ReF40300-5*c*conjugate(F[5, 0, 1, 1, 0])-(15*
I)*conjugate(F[5, 0, 0, 1, 1])*a-5*F[5, 0, 1, 1, 0]*c+45*pp:
B[0,0,2] := -(5*I)*conjugate(F[5, 0, 0, 1, 1])*a-5*conjugate(F
[5, 0, 0, 1, 1])*b-5*pp+(5*I)*qq:
```

7 EQUATIONS 0 = Eq[h,i,2,0,l]

```
B[0,1,2] := -conjugate(A[1, 0, 2])+A[1, 0, 2]:
B[0,3,1] := 0:
B[1,2,1] := 0:
B[2,1,1] := 10*conjugate(B[0, 0, 2])-60*b*F[5, 0, 0, 1, 1]-(60*
I)*a*F[5, 0, 0, 1, 1]+(90*I)*qq-(30*I)*a*conjugate(F[5, 0, 0, 1,
1])-30*b*conjugate(F[5, 0, 0, 1, 1])-90*pp:
B[3,0,1] := -10*d*F[5, 0, 0, 1, 1]-(10*I)*F[5, 0, 0, 1, 1]*
c-300*a-(300*I)*b+4*conjugate(B[1, 0, 2])-20*d*conjugate(F[5, 0,
0, 1, 1])-(20*I)*c*conjugate(F[5, 0, 0, 1, 1])+24*conjugate(A[0,
0, 3]):
B[0,5,0] := (6*I)*conjugate(F[3, 0, 0, 5, 0])*b-6*conjugate(F[3,
0, 0, 5, 0])*a:
B[1,4,0] := (6*I)*conjugate(F[3, 0, 1, 4, 0])*b-6*conjugate(F[3,
0, 1, 4, 0])*a:
B[2,3,0] := -6*conjugate(F[3, 0, 2, 3, 0])*a+(6*I)*conjugate(F
[3, 0, 2, 3, 0])*b:
B[3,2,0] := -6*F[3, 2, 3, 0, 0]*a+(6*I)*F[3, 2, 3, 0, 0]*b+40*c-
(40*I)*d:
B[4,1,0] := (6*I)*F[4, 1, 3, 0, 0]*b-6*F[4, 1, 3, 0, 0]*a+10*c*
conjugate(F[5, 0, 1, 1, 0])-(10*I)*d*conjugate(F[5, 0, 1, 1, 0])
-(20*I)*qq+20*pp:
B[5,0,0] := -(2*I)*rr-(4*I)*F[5, 0, 1, 1, 0]*qq+120*a+4*pp*F[5,
0, 1, 1, 0]-(60*I)*b+(2*I)*F[5, 0, 2, 1, 0]*d-2*F[5, 0, 2, 1, 0]
*c-6*F[5, 0, 3, 0, 0]*a+(6*I)*F[5, 0, 3, 0, 0]*b:
```

7 EQUATIONS 0 = Eq[h,i,1,0,l]

```
A[0,2,2] := 0:
A[1,1,2] := -conjugate(B[0, 0, 2]):
A[2,0,2] := -6*conjugate(A[0, 0, 3])-(1/2)*conjugate(B[1, 0, 2])
:
A[0,4,1] := 0:
A[1,3,1] := 0:
A[2,2,1] := 0:
A[3,1,1] := 0:
A[4,0,1] := 0:
A[0,6,0] := 0:
A[1,5,0] := 0:
A[2,4,0] := 0:
A[3,3,0] := 0:
A[4,2,0] := 0:
A[5,1,0] := 0:
A[6,0,0] := -20*a-I*F[5, 0, 0, 1, 1]*c-(20*I)*b-d*F[5, 0, 0, 1,
1]+I*F[6, 0, 1, 1, 0]*d-F[6, 0, 1, 1, 0]*c:
```

7 EQUATIONS 0 = Eq[h,i,0,0,l]

```
C[0,1,3] := 0:
C[1,0,3] := -2*conjugate(A[0, 0, 3]):

C[0,3,2] := 0:
C[1,2,2] := 0:
C[2,1,2] := 0:
C[3,0,2] := 0:
C[0,5,1] := 0:
C[1,4,1] := 0:
C[2,3,1] := 0:
C[3,2,1] := 0:
C[4,1,1] := 0:
C[5,0,1] := -20*a-(2*I)*F[5, 0, 0, 1, 1]*c-(20*I)*b-2*F[5, 0, 0,
1, 1]*d:
C[0,7,0] := 0:
C[1,6,0] := 0:
C[2,5,0] := 0:
C[3,4,0] := 0:
C[4,3,0] := 0:
C[5,2,0] := 0:
C[6,1,0] := 0:
C[7,0,0] := -(2*I)*F[7, 0, 0, 1, 0]*d+2*F[7, 0, 0, 1, 0]*c:

## ORDRE 6

F[3,0,2,1,0] := -15:

F[4,0,2,1,0] := -(1/9)*conjugate(F[3, 0, 2, 1, 0])*F[5, 0, 1, 1,
0]+(2/9)*F[3, 0, 2, 1, 0]*conjugate(F[5, 0, 1, 1, 0]):
F[3,1,3,0,0] := -(5/3)*F[5, 0, 1, 1, 0]+(1/9)*conjugate(F[3, 0,
2, 1, 0])*conjugate(F[5, 0, 1, 1, 0])+(4/3)*conjugate(F[4, 0, 2,
1, 0])+(2/3)*F[4, 0, 2, 1, 0]-(2/9)*conjugate(F[3, 0, 2, 1, 0])*
F[5, 0, 1, 1, 0]:
F[3,0,2,1,1] := (1/3)*F[3, 0, 2, 1, 0]*F[5, 0, 0, 1, 1]+(2/3)*F
[3, 0, 2, 1, 0]*conjugate(F[5, 0, 0, 1, 1]):
F[5,0,0,2,0] := -(1/10)*conjugate(F[3, 0, 2, 1, 0]):
F[3,0,2,2,0] := -10:
F[4,0,1,2,0] := (1/2)*F[3, 0, 2, 1, 0]-5-(1/2)*F[3, 0, 2, 2, 0]:
F[4, 0, 0, 3, 0] := 0:
F[4, 0, 0, 2, 1] := 0:
F[3, 0, 1, 3, 0] := 0:
F[3, 0, 1, 2, 1] := 0:
F[3, 0, 0, 4, 0] := 0:
F[3, 0, 0, 3, 1] := 0:

mm := (1/3)*d*conjugate(F[5, 0, 0, 2, 0])+(1/3)*d*F[5, 0, 0, 2,
0]-(1/6*I)*a*conjugate(F[5, 0, 1, 1, 0])+(1/6*I)*a*F[5, 0, 1, 1,
0]+(1/6)*conjugate(F[5, 0, 1, 1, 0])*b+(1/6)*b*F[5, 0, 1, 1, 0]-
(1/3*I)*c*conjugate(F[5, 0, 0, 2, 0])+(1/3*I)*c*F[5, 0, 0, 2, 0]
-(1/6*I)*e*conjugate(F[5, 0, 0, 1, 1])+(1/6*I)*e*F[5, 0, 0, 1,
1]:

ll := (1/3*I)*d*F[5, 0, 0, 2, 0]-(1/3*I)*d*conjugate(F[5, 0, 0,
2, 0])-(1/6)*conjugate(F[5, 0, 1, 1, 0])*a-(1/6)*a*F[5, 0, 1, 1,
0]+(1/6*I)*b*F[5, 0, 1, 1, 0]-(1/6*I)*b*conjugate(F[5, 0, 1, 1,
0])-(1/3)*c*conjugate(F[5, 0, 0, 2, 0])-(1/3)*c*F[5, 0, 0, 2, 0]
```

```
-(1/6)*e*conjugate(F[5, 0, 0, 1, 1])-(1/6)*e*F[5, 0, 0, 1, 1]:

## 6 SPORADIQUES RESTANTES

A[0,0,2] := c*conjugate(F[3, 0, 2, 1, 0])+I*d*conjugate(F[3, 0,
2, 1, 0])+(5/2*I)*d-(5/2)*c+(5/2*I)*conjugate(F[5, 0, 1, 1, 0])*
b-I*conjugate(F[4, 0, 1, 2, 0])*d-conjugate(F[4, 0, 1, 2, 0])*c-
(5/2)*conjugate(F[5, 0, 1, 1, 0])*a-conjugate(F[4, 0, 2, 1, 0])*
a-I*conjugate(F[4, 0, 2, 1, 0])*b:

B[1,0,1] := -4*A[0, 0, 2]:

## 6 FIN RESOLUTION PREVUE AVEC LA SPORADIQUE Eq6[3,0,3,0,0]

B[2,0,1] := 2*conjugate(F[3, 0, 2, 1, 0])*pp+(4/3)*conjugate(A
[1, 0, 2])-8*a*ReF40300-(8/3)*A[1, 0, 2]-conjugate(F[3, 1, 3, 0,
0])*c-F[3, 1, 3, 0, 0]*c-I*F[3, 1, 3, 0, 0]*d+2*F[3, 0, 2, 1, 0]
*pp+(2*I)*conjugate(F[3, 0, 2, 1, 0])*qq+I*conjugate(F[3, 1, 3,
0, 0])*d-(2*I)*F[3, 0, 2, 1, 0]*qq:

## 6 EQUATIONS 0 = Eq[h,i,2,0,l]

B[0,2,1] := (10*I)*b+10*a:
B[1,1,1] := 2*conjugate(B[1, 0, 1])+12*conjugate(A[0, 0, 2]):
B[0,4,0] := -6*conjugate(F[3, 0, 0, 4, 0])*a+(6*I)*conjugate(F
[3, 0, 0, 4, 0])*b:
B[1,3,0] := (6*I)*conjugate(F[3, 0, 1, 3, 0])*b-6*conjugate(F[3,
0, 1, 3, 0])*a:
B[2,2,0] := (6*I)*conjugate(F[3, 0, 2, 2, 0])*b-6*conjugate(F[3,
0, 2, 2, 0])*a:
B[3,1,0] := (6*I)*F[3, 1, 3, 0, 0]*b+(6*I)*conjugate(F[3, 0, 2,
1, 0])*d-6*c*conjugate(F[3, 0, 2, 1, 0])-6*F[3, 1, 3, 0, 0]*a:
B[4,0,0] := (2*I)*F[4, 0, 2, 1, 0]*d-4*conjugate(B[0, 0, 2])-2*F
[4, 0, 2, 1, 0]*c-6*a*ReF40300+(6*I)*ReF40300*b:

## 6 EQUATIONS 0 = Eq[h,i,1,0,l]

C[0,0,3] := (1/3)*conjugate(A[1,0,2])+(1/3)*A[1,0,2]:

A[0,1,2] := -conjugate(A[0, 0, 2]):
A[0,3,1] := 0:
A[1,2,1] := 0:
A[2,1,1] := 0:
A[3,0,1] := 2*conjugate(B[0, 0, 2]):
A[0,5,0] := 0:
A[1,4,0] := 0:
A[2,3,0] := 0:
A[3,2,0] := 0:
A[4,1,0] := -5*c+(5*I)*d:
A[5,0,0] := 2*pp-F[5, 0, 1, 1, 0]*c-(2*I)*qq+I*F[5, 0, 1, 1, 0]*
d:

## 6 EQUATIONS 0 = Eq[h,i,0,0,l]

C[0,2,2] := 0:
C[1,1,2] := 0:
```

```
C[2,0,2] := conjugate(B[0,0,2]):
C[0,4,1] := 0:
C[1,3,1] := 0:
C[2,2,1] := 0:
C[3,1,1] := 0:
C[4,0,1] := 0:
C[0,6,0] := 0:
C[1,5,0] := 0:
C[2,4,0] := 0:
C[3,3,0] := 0:
C[4,2,0] := 0:
C[5,1,0] := 0:
C[6,0,0] := 0:

## NORMALISATIONS SUPPLEMENTAIRES

ImF40300 := 0:
assume(ReF40300,real):
#assume(ImF40300,real):
F[4,0,3,0,0] := ReF40300 + I*ImF40300:

F[6,0,0,1,0] := 0:

## 5 CONSEQUENCE POUR LA TRANSITIVITE

F[4,0,0,2,0] := 0:
F[3,0,1,2,0] := 0:
F[3,0,0,2,1] := 0:
F[3,0,0,3,0] := 0:

## HYPOTHESE DE BRANCHE

F[5,0,0,1,0] := 1:

F[3,0,0,2,0] := 0:

## PRENORMALISATIONS JUSQU'A L'ORDRE 5 AVANT BRANCHEMENT PAR F
[3,0,0,2,0]

## ORDRE 5

B[2,0,0] := -2*F[3, 0, 0, 2, 0]*pp+(12*I)*conjugate(F[3, 0, 0,
2, 0])^2*d+3*conjugate(F[3, 0, 2, 1, 0])*a-I*F[3, 0, 1, 2, 0]*
d+3*conjugate(F[3, 0, 1, 2, 0])*c-(6*I)*conjugate(F[3, 0, 0, 2,
0])*qq-6*conjugate(F[3, 0, 0, 2, 0])*pp-(4*I)*F[3, 0, 0, 2, 0]
^2*d+12*conjugate(F[3, 0, 0, 2, 0])^2*c+(2*I)*F[3, 0, 0, 2, 0]*
qq+F[3, 0, 2, 1, 0]*a+(3*I)*conjugate(F[3, 0, 2, 1, 0])*b-I*rr+F
[3, 0, 1, 2, 0]*c-I*F[3, 0, 2, 1, 0]*b+4*F[3, 0, 0, 2, 0]^2*c+
(3*I)*conjugate(F[3, 0, 1, 2, 0])*d:
B[0,0,1] := 10*conjugate(F[5, 0, 0, 1, 0])*a+(4*I)*conjugate(F
[4, 0, 0, 2, 0])*d+4*conjugate(F[4, 0, 0, 2, 0])*c-(10*I)*
conjugate(F[5, 0, 0, 1, 0])*b:

B[0,1,1] := -(1/2)*conjugate(B[2, 0, 0])-(1/2)*B[2, 0, 0]:
B[0,3,0] := (6*I)*conjugate(F[3, 0, 0, 3, 0])*b-6*conjugate(F[3,
0, 0, 3, 0])*a:
```

```
B[1,2,0] := -6*conjugate(F[3, 0, 0, 2, 0])*c+(6*I)*conjugate(F
[3, 0, 0, 2, 0])*d+(6*I)*conjugate(F[3, 0, 1, 2, 0])*b-6*
conjugate(F[3, 0, 1, 2, 0])*a:
B[2,1,0] := -5*conjugate(B[0, 0, 1])+(6*I)*conjugate(F[3, 0, 2,
1, 0])*b-6*conjugate(F[3, 0, 2, 1, 0])*a:
B[3,0,0] := -2*conjugate(B[1, 0, 1])-2*F[3, 0, 2, 1, 0]*c+(2*I)*
F[3, 0, 2, 1, 0]*d-8*conjugate(A[0, 0, 2]):

A[0,2,1] := 0:
A[1,1,1] := conjugate(B[0,0,1]):
A[2,0,1] := 4*conjugate(A[0,0,2])+(1/2)*conjugate(B[1,0,1]):
A[0,4,0] := 0:
A[1,3,0] := 0:
A[2,2,0] := 0:
A[3,1,0] := 0:
A[4,0,0] := 0:

C[0,1,2] := 0:
C[1,0,2] := 2*conjugate(A[0, 0, 2]):
C[0,3,1] := 0:
C[1,2,1] := 0:
C[2,1,1] := 0:
C[3,0,1] := 0:
C[0,5,0] := 0:
C[1,4,0] := 0:
C[2,3,0] := 0:
C[3,2,0] := 0:
C[4,1,0] := 0:
C[5,0,0] := 2*F[5, 0, 0, 1, 0]*c-(2*I)*F[5, 0, 0, 1, 0]*d:

## ORDRE 4

B[1,0,0] := -2*pp-(2*I)*qq+4*conjugate(F[3, 0, 0, 2, 0])*c+(4*I)
*conjugate(F[3, 0, 0, 2, 0])*d:

B[0,2,0] := -6*conjugate(F[3, 0, 0, 2, 0])*a+(6*I)*conjugate(F
[3, 0, 0, 2, 0])*b-c+I*d:
B[1,1,0] := -6*pp+(6*I)*qq-2*conjugate(B[1, 0, 0]):

A[0,1,1] := pp-I*qq:
A[1,0,1] := -(1/4)*B[2, 0, 0]-(1/4)*conjugate(B[2, 0, 0])+I*rr:
A[0,3,0] := 0:
A[1,2,0] := 0:
A[2,1,0] := 0:
A[3,0,0] := - conjugate(B[0, 0, 1]):

C[0,2,1] := 0:
C[1,1,1] := 0:
C[2,0,1] := -conjugate(B[0, 0, 1]):
C[0,4,0] := 0:
C[1,3,0] := 0:
C[2,2,0] := 0:
C[3,1,0] := 0:
C[4,0,0] := 0:

## ORDRE 3
```

```
B[0,1,0] := (2*I)*mm:

A[0,2,0] := 0:
A[1,1,0] := -c+I*d:
A[2,0,0] := -2*pp+(2*I)*qq-(1/2)*conjugate(B[1, 0, 0]):

C[0,1,1] := 0:
C[1,0,1] := 2*A[2, 0, 0]+2*pp-(2*I)*qq+conjugate(B[1, 0, 0]):
C[0,3,0] := 0:
C[1,2,0] := 0:
C[2,1,0] := 0:
C[3,0,0] := 0:

## ORDRE 2

A[0,1,0] := -a+I*b:

C[0,0,1] := 2*II:
C[0,2,0] := 0:
C[1,1,0] := 0:
C[2,0,0] := c-I*d:

## ORDRE 1

C[1,0,0] := 2*a-(2*I)*b:
C[0,1,0] := 0:

## CALCULS

FF :=

z*zb

+ (1/2)*zb^2*s+(1/2)*z^2*sb

+ z*zb*s*sb

+ (1/2)*s*sb^2*z^2+(1/2)*zb^2*s^2*sb
+ conjugate(F[3, 0, 0, 2, 0])*s^2*zb^3 + F[3, 0, 0, 2, 0]*z^3*
sb^2

## 6

+ z*zb*s^2*sb^2
+ F[5,0,0,1,0]*z^5*sb
+ conjugate(F[5,0,0,1,0])*s*zb^5
+ F[4,0,0,2,0]*z^4*sb^2
+ conjugate(F[4,0,0,2,0])*s^2*zb^4
+ F[3,0,2,1,0]*z^3*zb^2*sb
+ conjugate(F[3,0,2,1,0])*z^2*s*zb^3
+ F[3,0,1,2,0]*z^3*zb*sb^2
+ conjugate(F[3,0,1,2,0])*z*s^2*zb^3
+ F[3,0,0,3,0]*z^3*sb^3
+ conjugate(F[3,0,0,3,0])*s^3*zb^3
+ 3*conjugate(F[3,0,0,2,0])*z*s^2*zb^2*sb
+ 3*F[3,0,0,2,0]*z^2*s*zb*sb^2
```

```
## ORDRES 7, 8, 9, 10, 11 : NON IMPRIMES

:



Fz  := diff(FF, z):
Fzb := diff(FF, zb):
Fs  := diff(FF, s):
Fsb := diff(FF, sb):
Fv  := diff(FF, v):



w  := FF + l*v:
wb := FF - l*v:




## VARIABLES D'ISOTROPIE

#ll:=0: mm:=0: pp:=0: qq:=0: rr:=0:

#assume(ll,real):
#assume(mm,real):
#assume(pp,real):
#assume(qq,real):
#assume(rr,real):

A[1,0,0] := ll + l*mm:
A[0,0,1] := pp + l*qq:
C[0,0,2] :=      l*rr:


## VARIABLES DE TRANSITIVITE

#a:=0: b:=0: c:=0: d:=0: e:=0:

assume(a,real):
assume(b,real):
assume(c,real):
assume(d,real):
assume(e,real):

A[0,0,0] := a + l*b:
B[0,0,0] := c + l*d:
C[0,0,0] :=     l*e:



AA := add(add(add(A[h,i,l]*z^h*s^i*w^l,
                  h=0..ordre-1-i-2*l), i=0..ordre-1-2*l), l=0..
(ordre-1)/2):
```

```
AAb := add(add(add(conjugate(A[h,i,l])*zb^h*sb^i*wb^l,
                h=0..ordre-1-i-2*l), i=0..ordre-1-2*l), l=0..
(ordre-1)/2):



BB := add(add(add(B[h,i,l]*z^h*s^i*w^l,
               h=0..ordre-2-i-2*l), i=0..ordre-2-2*l), l=0..
(ordre-2)/2):


BBb := add(add(add(conjugate(B[h,i,l])*zb^h*sb^i*wb^l,
                h=0..ordre-2-i-2*l), i=0..ordre-2-2*l), l=0..
(ordre-2)/2):



CC := add(add(add(C[h,i,l]*z^h*s^i*w^l,
               h=0..ordre-i-2*l), i=0..ordre-2*l), l=0..
ordre/2):

CCb := add(add(add(conjugate(C[h,i,l])*zb^h*sb^i*wb^l,
                h=0..ordre-i-2*l), i=0..ordre-2*l), l=0..
ordre/2):


## PROCEDURE DE MULTIPLICATION TRONQUEE

MT := proc(Expression1, Expression2)

mtaylor(expand(mtaylor(Expression1*Expression2, [z,s,zb,sb,v],
ordre+1, [1,1,1,1,2]))
                                        , [z,s,zb,sb,v],
ordre+1, [1,1,1,1,2])
end proc:


eqdef := mtaylor( - CC/2  + MT(AA,Fz)  + MT(BB,Fs)  + MT(CC,
Fv)/(2*l) - CCb/2 + MT(AAb,Fzb) + MT(BBb,Fsb) - MT(CCb,Fv)/(2*
l), [z,s,zb,sb,v], ordre+1, [1,1,1,1,2]):


#eqdef := mtaylor( - CC/2  + AA*Fz  + BB*Fs  + CC*Fv/(2*l) -
CCb/2 + AAb*Fzb + BBb*Fsb - CCb*Fv/(2*l), [z,s,zb,sb,v],
ordre+1, [1,1,1,1,2]):


## TOUTES LES EQUATIONS COMPLEXES

printlevel := 4:
for m from 0 to ordre do
for l from 0 to m/2 do
for k from 0 to m-2*l do
for j from 0 to m-k-2*l do
for i from 0 to m-j-k-2*l do
```

```
EEq||m[m-i-j-k-2*l,i,j,k,l] :=
expand(expand(coeftayl(eqdef, [z,s,zb,sb,v]=[0,0,0,0,0], [m-i-j-
k-2*l,i,j,k,l])));

od; od; od; od; od;

## SELECTIONNER CELLES QUI SONT NON NULLES

printlevel := 5:
for m from 0 to ordre do
for l from 0 to m/2 do
for k from 0 to m-2*l do
for j from 0 to m-k-2*l do
for i from 0 to m-j-k-2*l do

if EEq||m[m-i-j-k-2*l,i,j,k,l] <> 0 then
   Eq||m[m-i-j-k-2*l,i,j,k,l] := mtaylor(EEq||m[m-i-j-k-2*l,i,
j,k,l], [a,b,c,d,e]); end if;
#   zEq||m[m-i-j-k-2*l,i,j,k,l] := subs({a=0,b=0,c=0,d=0,e=0},
EEq||m[m-i-j-k-2*l,i,j,k,l]); end if;

od; od; od; od; od;
```

$$ordre := 9 \qquad (1)$$

```
>


## EXTRAIRE COEFFICIENTS DE a, b, c, d, e

printlevel := 5:
for m from 0 to ordre do
for l from 0 to m/2 do
for k from 0 to m-2*l do
for j from 0 to m-k-2*l do
for i from 0 to m-j-k-2*l do

if expand(expand(expand(diff(EEq||m[m-i-j-k-2*l,i,j,k,l], a))))
<> 0 then
  Eqa||m[m-i-j-k-2*l,i,j,k,l] := expand(expand(expand(diff
(EEq||m[m-i-j-k-2*l,i,j,k,l], a)))); end if;

if expand(expand(expand(diff(EEq||m[m-i-j-k-2*l,i,j,k,l], b))))
<> 0 then
  Eqb||m[m-i-j-k-2*l,i,j,k,l] := expand(expand(expand(diff
(EEq||m[m-i-j-k-2*l,i,j,k,l], b)))); end if;

if expand(expand(expand(diff(EEq||m[m-i-j-k-2*l,i,j,k,l], c))))
<> 0 then
  Eqc||m[m-i-j-k-2*l,i,j,k,l] := expand(expand(expand(diff
(EEq||m[m-i-j-k-2*l,i,j,k,l], c)))); end if;

if expand(expand(expand(diff(EEq||m[m-i-j-k-2*l,i,j,k,l], d))))
```

```
<> 0 then
  Eqd||m[m-i-j-k-2*l,i,j,k,l] := expand(expand(expand(diff
(EEq||m[m-i-j-k-2*l,i,j,k,l], d)))); end if;

if expand(expand(expand(diff(EEq||m[m-i-j-k-2*l,i,j,k,l], e))))
<> 0 then
  Eqe||m[m-i-j-k-2*l,i,j,k,l] := expand(expand(expand(diff
(EEq||m[m-i-j-k-2*l,i,j,k,l], e)))); end if;

od; od; od; od; od;
```

```
>

## Eq[h,i,0,0,l]

printlevel := 3:
for l from 0 to ordre/2 do
for i from 0 to ordre-2*l do

if expand(expand(EEq||ordre[ordre-i-2*l,i,0,0,l])) <> 0 then
Eq||ordre[ordre-i-2*l,i,0,0,l] := expand(expand(EEq||ordre
[ordre-i-2*l,i,0,0,l])); end if;

od; od;
```

```
>

## Eq[h,i,1,0,l]

for l from 0 to (ordre-1)/2 do
for i from 0 to ordre-1-2*l do

if expand(expand(EEq||ordre[ordre-1-i-2*l,i,1,0,l])) <> 0 then
Eq||ordre[ordre-1-i-2*l,i,1,0,l] := expand(expand(EEq||ordre
[ordre-1-i-2*l,i,1,0,l])); end if;

od; od;
```

```
>

## Eq[h,i,2,0,l]

for l from 0 to (ordre-2)/2 do
for i from 0 to ordre-2-2*l do
```

```
   if expand(expand(EEq||ordre[ordre-2-i-2*l,i,2,0,l])) <> 0 then
   Eq||ordre[ordre-2-i-2*l,i,2,0,l] := expand(expand(EEq||ordre
   [ordre-2-i-2*l,i,2,0,l])); end if;

   od; od;
```

```
> l1 := (ordre - (0+1+3+0))/2;
   for l from floor(l1) to l1 do
   if l1-floor(l1) = 0
   and expand(expand(EEq||ordre[0,1,3,0,l])) <> 0 then
   Eq||ordre[0,1,3,0,l] := expand(expand(EEq||ordre[0,1,3,0,l]));
   end if; od;
```

```
> l2 := (ordre - (0+1+4+0))/2;
   for l from floor(l2) to l2 do
   if l2-floor(l2) = 0
   and expand(expand(EEq||ordre[0,1,4,0,l])) <> 0 then
   Eq||ordre[0,1,4,0,l] := expand(expand(EEq||ordre[0,1,4,0,l]));
   end if; od;
```

```
> l3 := (ordre - (1+1+3+0))/2;
   for l from floor(l3) to l3 do
   if l3-floor(l3) = 0
   and expand(expand(EEq||ordre[1,1,3,0,l3])) <> 0 then
   Eq||ordre[1,1,3,0,l3] := expand(expand(EEq||ordre[1,1,3,0,l3]));
   end if; od;
```

```
> l4 := (ordre - (1+1+4+0))/2;
   for l from floor(l4) to l4 do
   if l4-floor(l4) = 0
   and expand(expand(EEq||ordre[1,1,4,0,l4])) <> 0 then
   Eq||ordre[1,1,4,0,l4] := expand(expand(EEq||ordre[1,1,4,0,l4]));
   end if; od;
```

```
> l5 := (ordre - (3+0+3+0))/2;
   for l from floor(l5) to l5 do
   if l5-floor(l5) = 0
   and expand(expand(EEq||ordre[3,0,3,0,l5])) <> 0 then
   Eq||ordre[3,0,3,0,l5] := expand(expand(EEq||ordre[3,0,3,0,l5]));
   end if; od;
```