

Pensieve header: Finding the A_2 $\mathcal{S}d=1$ invariant using undetermined coefficients.

Searching for $Q + p_{xx} + \epsilon(ppx + 1 + px + ppx)$ solutions.

Initialization

```
In[*]:= SetDirectory["C:\\drorbn\\AcademicPensieve\\Projects\\HigherRank"];
Once[<< KnotTheory` ; << Rot.m];
<< FormalGaussianIntegration.m;
i_+ := i + 1;
```

Loading KnotTheory` version of February 2, 2020, 10:53:45.2097.

Read more at <http://katlas.org/wiki/KnotTheory>.

Loading Rot.m from <http://drorbn.net/AP/Projects/HigherRank> to compute rotation numbers.

```
In[*]:= Features[Knot[8, 17]]
```

 KnotTheory: Loading precomputed data in PD4Knots`.

```
Out[*]=
```

```
Features[18,
C6[-1] C14[-1] X1,7[1] X3,9[-1] X5,13[-1] X8,16[1] X10,4[-1] X12,18[1] X15,2[-1] X17,11[1]]
```

```
In[*]:= T3 = T1 T2;
S = {x_, p_};
q[s_, i_, j_] := Sum[
  xv,i (pv,i+ - pv,i) + xv,j (pv,j+ - pv,j) + (T3^S - 1) xv,i (pv,i+ - pv,j+),
  {v, 3}];
L[Xi_,j_[s_]] :=
  T3^S E[q[s, i, j] + B^-1 r0[s, i, j] + E B r1[s, i, j] + E r42[s, i, j] + O[epsilon]^2];
(* gamma1[phi_, k_] := phi (3/2 - X1,k p1,k - X2,k p2,k - X3,k p3,k) ; *)
L[Ck_[0]] := E[Sum[xv,k (pv,k+ - pv,k), {v, 3}] + O[epsilon]^2];
L[Ck_[phi_]] :=
  T3^phi E[Sum[xv,k (pv,k+ - pv,k), {v, 3}] + B^-1 gamma0[phi, k] + E B gamma1[phi, k] + E gamma42[phi, k] + O[epsilon]^2];
ps_i := Sequence[p1,i, p2,i, p3,i];
xs_i := Sequence[x1,i, x2,i, x3,i];
vs_i := Sequence[ps_i, xs_i];
F[is___] := E[Sum[pi,i pv,i, {i, {is}}, {v, 3}]];
L[K_] := CF[L /@ Features[K][[2]]];
vs[K_] := Union@@Table[{vs_i}, {i, Features[K][[1]]}]
```

```
In[*]:= vs_i
```

```
Out[*]=
```

```
Sequence[p1,i, p2,i, p3,i, x1,i, x2,i, x3,i]
```

The Various Terms (r_0)

The pxx Terms (r_0)

```
In[*]:=  $\mathbf{x} = \mathbf{0}$ ;
r0[1, i_, j_] := Evaluate[Sum[
  a++k p3,k3 x1,k1 x2,k2,
  {k1, {i, j}}, {k2, {i, j}}, {k3, {i, j}}
]];
r0[1, i, j]
```

Out[*]=

$$a_1 p_{3,i} x_{1,i} x_{2,i} + a_2 p_{3,j} x_{1,i} x_{2,i} + a_5 p_{3,i} x_{1,j} x_{2,i} + a_6 p_{3,j} x_{1,j} x_{2,i} +$$

$$a_3 p_{3,i} x_{1,i} x_{2,j} + a_4 p_{3,j} x_{1,i} x_{2,j} + a_7 p_{3,i} x_{1,j} x_{2,j} + a_8 p_{3,j} x_{1,j} x_{2,j}$$

```
In[*]:=  $\mathbf{x} = \mathbf{0}$ ;
r0[-1, i_, j_] := Evaluate[Sum[
  d++k p3,k3 x1,k1 x2,k2,
  {k1, {i, j}}, {k2, {i, j}}, {k3, {i, j}}
]];
r0[-1, i, j]
```

Out[*]=

$$d_1 p_{3,i} x_{1,i} x_{2,i} + d_2 p_{3,j} x_{1,i} x_{2,i} + d_5 p_{3,i} x_{1,j} x_{2,i} + d_6 p_{3,j} x_{1,j} x_{2,i} +$$

$$d_3 p_{3,i} x_{1,i} x_{2,j} + d_4 p_{3,j} x_{1,i} x_{2,j} + d_7 p_{3,i} x_{1,j} x_{2,j} + d_8 p_{3,j} x_{1,j} x_{2,j}$$

The ppx Terms (r_1)

```
In[*]:=  $\mathbf{x} = \mathbf{0}$ ;
r1[1, i_, j_] := Evaluate[Sum[
  b++k x3,k3 p1,k1 p2,k2,
  {k1, {i, j}}, {k2, {i, j}}, {k3, {i, j}}
]];
r1[1, i, j]
```

Out[*]=

$$b_1 p_{1,i} p_{2,i} x_{3,i} + b_5 p_{1,j} p_{2,i} x_{3,i} + b_3 p_{1,i} p_{2,j} x_{3,i} + b_7 p_{1,j} p_{2,j} x_{3,i} +$$

$$b_2 p_{1,i} p_{2,i} x_{3,j} + b_6 p_{1,j} p_{2,i} x_{3,j} + b_4 p_{1,i} p_{2,j} x_{3,j} + b_8 p_{1,j} p_{2,j} x_{3,j}$$

```
In[*]:=  $\mathbf{x} = \mathbf{0}$ ;
r1[-1, i_, j_] := Evaluate[Sum[
  e++k x3,k3 p1,k1 p2,k2,
  {k1, {i, j}}, {k2, {i, j}}, {k3, {i, j}}
]];
r1[-1, i, j]
```

Out[*]=

$$e_1 p_{1,i} p_{2,i} x_{3,i} + e_5 p_{1,j} p_{2,i} x_{3,i} + e_3 p_{1,i} p_{2,j} x_{3,i} + e_7 p_{1,j} p_{2,j} x_{3,i} +$$

$$e_2 p_{1,i} p_{2,i} x_{3,j} + e_6 p_{1,j} p_{2,i} x_{3,j} + e_4 p_{1,i} p_{2,j} x_{3,j} + e_8 p_{1,j} p_{2,j} x_{3,j}$$

The ppx Terms (r_{42})

```

In[*]:= x = 0;
Short[r42[1, i_, j_] = Evaluate[Plus[
  Sum[
    C+++ Xv1,k1 Pv1,k2 Xv2,k3 Pv2,k4,
    {k1, {i, j}}, {k2, {i, j}}, {k3, {i, j}}, {k4, {i, j}}, {v1, 2}, {v2, v1, 3}
  ],
  Sum[
    C+++ Xv,k1 Pv,k2,
    {k1, {i, j}}, {k2, {i, j}}, {v, 3}
  ],
  C+++
]]]

Out[*]//Short=
C93 + C81 p1,i X1,i + <<90>> + C80 p2,j p3,j X2,j X3,j

In[*]:= x = 0;
Short[r42[-1, i_, j_] = Evaluate[Plus[
  Sum[
    f+++ Xv1,k1 Pv1,k2 Xv2,k3 Pv2,k4,
    {k1, {i, j}}, {k2, {i, j}}, {k3, {i, j}}, {k4, {i, j}}, {v1, 2}, {v2, v1, 3}
  ],
  Sum[
    f+++ Xv,k1 Pv,k2,
    {k1, {i, j}}, {k2, {i, j}}, {v, 3}
  ],
  f+++
]]]

Out[*]//Short=
f93 + f81 p1,i X1,i + <<90>> + f80 p2,j p3,j X2,j X3,j

```

The γ Terms ($\gamma_0, \gamma_1, \gamma_{42}$)

```

In[*]:= x = 0;
γ0[1, k_] := Evaluate[g+++ p3,k X1,k X2,k];
γ1[1, k_] := Evaluate[g+++ x3,k p1,k p2,k];
γ42[1, k_] := Evaluate[Plus[
  Sum[g+++ Xv,k Pv,k, {v, 3}],
  Sum[g+++ Xv1,k Pv1,k Xv2,k Pv2,k, {v1, 2}, {v2, v1, 3}]
]];
{γ0[1, k], γ0[1, k], γ42[1, k]}

Out[*]=
{g1 p3,k X1,k X2,k, g1 p3,k X1,k X2,k, g3 p1,k X1,k + g6 p1,k^2 X1,k^2 + g4 p2,k X2,k +
  g7 p1,k p2,k X1,k X2,k + g9 p2,k^2 X2,k^2 + g5 p3,k X3,k + g8 p1,k p3,k X1,k X3,k + g10 p2,k p3,k X2,k X3,k}

```

```
In[*]:= x = 0;
γ₀[-1, k_] := Evaluate[h+++ p3,k x1,k x2,k];
γ₁[-1, k_] := Evaluate[h+++ x3,k p1,k p2,k];
γ42[-1, k_] := Evaluate[Plus[
  Sum[h+++ xv,k pv,k, {v, 3}],
  Sum[h+++ xv1,k pv1,k xv2,k pv2,k, {v1, 2}, {v2, v1, 3}]
]];
{γ₀[-1, k], γ₀[-1, k], γ42[-1, k]}
```

```
Out[*]=
{h₁ p3,k x1,k x2,k, h₁ p3,k x1,k x2,k, h₃ p1,k x1,k + h₆ p1,k² x1,k² + h₄ p2,k x2,k +
h₇ p1,k p2,k x1,k x2,k + h₉ p2,k² x2,k² + h₅ p3,k x3,k + h₈ p1,k p3,k x1,k x3,k + h10 p2,k p3,k x2,k x3,k}
```

Reidemeister 3b

```
In[*]:= Timing[{LeftR3b} =
Cases[∫ ℱ[i, j, k] × ℒ /@ (Xi,j[1] Xi',k[1] Xj',k'[1]) d{vsi, vsj, vsk, vsi', vsj', vsk'},
E[ε_] := ε, ∞]]
```

```
Out[*]=
{19.5156, {Series[
T₁² p1,2+i π1,i - (-1 + T₁) T₁ p1,2+j π1,i + (1 - T₁) p1,2+k π1,i + T₁ p1,2+j π1,j + (1 - T₁) p1,2+k π1,j + p1,2+k π1,k + ... 44 ... +
T₁² T₂² p3,2+i π3,i - T₁ T₂ (-1 + T₁ T₂) p3,2+j π3,i + (1 - T₁ T₂) p3,2+k π3,i + T₁ T₂ p3,2+j π3,j + (1 - T₁ T₂) p3,2+k π3,j + p3,2+k π3,k,
3 (a₁ b₁ + a₂ b₂ + a₃ b₃ + a₄ b₄ + a₅ b₅ + a₆ b₆ + a₇ b₇ + a₈ b₈ + ... 23 ... + c80 + c81 + c82 + c83 + c90 + c91 + c92 + c93) +
... 498 ... + ... 1 ... ]}}
```

Full expression not available (original memory size: 3.8 MB)

```
In[*]:= Timing[{RightR3b} =
Cases[∫ ℱ[i, j, k] × ℒ /@ (Xj,k[1] Xi,k[1] Xi',j'[1]) d{vsi, vsj, vsk, vsi', vsj', vsk'},
E[ε_] := ε, ∞];
```

```
Out[*]=
{10.7344, Null}
```

```
In[*]:= Short[eqn = CF[LeftR3b[[1]] - RightR3b[[1]]]
cvs = Union@Cases[eqn, p_ | π_, ∞]
vars = Union@Cases[r_0[1, i, j], a_, ∞]
Short[eqns = CoefficientRules[eqn, cvs] /. (_ -> c_) :-> (c == 0), 3]
{sol} = Solve[eqns, vars]
```

Out[*]//Short=

$$\frac{T_1 T_2 \langle\langle 1 \rangle\rangle \langle\langle 1 \rangle\rangle \pi_{1,i} \pi_{2,i}}{B} - \frac{\langle\langle 1 \rangle\rangle}{B} + \langle\langle 32 \rangle\rangle + \frac{a_7 \langle\langle 5 \rangle\rangle \pi_{\langle\langle 1 \rangle\rangle}}{B}$$

Out[*]=

$$\{p_{3,2+i}, p_{3,2+j}, p_{3,2+k}, \pi_{1,i}, \pi_{1,j}, \pi_{1,k}, \pi_{2,i}, \pi_{2,j}, \pi_{2,k}\}$$

Out[*]=

$$\{a_1, a_2, a_3, a_4, a_5, a_6, a_7, a_8\}$$

Out[*]//Short=

$$\left\{ -\frac{a_3 T_1^2 T_2^2}{B} + \frac{a_3 T_1^2 T_2^3}{B} == 0, \frac{a_3 T_1^2 T_2}{B} - \frac{a_3 T_1^2 T_2^2}{B} == 0, \right.$$

$$\left. \langle\langle 22 \rangle\rangle, -\frac{a_7}{B} - \frac{a_8}{B} + \frac{a_7 T_2}{B} + \frac{a_8 T_2}{B} + \frac{a_7 T_1 T_2}{B} - \frac{a_7 T_1 T_2^2}{B} == 0 \right\}$$

Solve: Equations may not give solutions for all "solve" variables.

Out[*]=

$$\left\{ \left\{ a_1 \rightarrow 0, a_3 \rightarrow 0, a_5 \rightarrow 0, a_6 \rightarrow -\frac{a_2}{T_1} - \frac{a_4 T_2}{T_1}, a_7 \rightarrow 0, a_8 \rightarrow 0 \right\} \right\}$$

```
In[*]:= sol /. (v_ -> val_) :-> (v = CF[val]);
r_0[1, i, j]
```

Out[*]=

$$a_2 p_{3,j} x_{1,i} x_{2,i} - \frac{(a_2 + a_4 T_2) p_{3,j} x_{1,j} x_{2,i}}{T_1} + a_4 p_{3,j} x_{1,i} x_{2,j}$$

```

In[*]:= Short[eqn = CF[Coefficient[
    LeftR3b[[2]] - RightR3b[[2]] /. v : (\pi | p) __ => \mu v,
    \mu^3
  ]], 5]
cvs = Union@Cases[eqn, p__ | \pi__, \infty]
vars = Union@Cases[r1[1, i, j], b_, \infty]
Short[eqns = CoefficientRules[eqn, cvs] /. (_ -> c_) => (c == 0), 3]
{sol} = Solve[eqns, vars]

Out[*]//Short=
B b1 (-1 + T1) T1 T2^2 p1,2+j p2,2+i \pi3,i - B b1 (-1 + T1) T1 T2^2 p1,2+k p2,2+i \pi3,i + <<31>> +
B (-1 + T1) T1 (-b2 - b4 + b2 T2) p1,2+i p2,2+k \pi3,k - B (-1 + T1) T1 (-b2 - b4 + b2 T2) p1,2+j p2,2+k \pi3,k

Out[*]=
{p1,2+i, p1,2+j, p1,2+k, p2,2+i, p2,2+j, p2,2+k, \pi3,i, \pi3,j, \pi3,k}

Out[*]=
{b1, b2, b3, b4, b5, b6, b7, b8}

Out[*]//Short=
{-B b2 T1^2 T2^2 + B b2 T1^3 T2^3 == 0, B b2 T1 T2 - B b2 T1^2 T2^2 == 0, <<1>> == 0, <<19>>, <<1>> == 0,
B b1 + <<47>> == 0, -B b6 T1 - B b8 T1 - B b4 T2 - B b8 T2 + B b2 T1 T2 + <<11>> + B b2 T1^2 T2^2 == 0}

Solve: Equations may not give solutions for all "solve" variables. ⓘ

Out[*]=
{{b1 -> 0, b2 -> 0, b4 -> 0, b6 -> 0, b7 -> -b3 - b5, b8 -> 0}}

In[*]:= sol /. (v_ -> val_) => (v = CF[val]);
r1[1, i, j]

Out[*]=
b5 p1,j p2,i x3,i + b3 p1,i p2,j x3,i + (-b3 - b5) p1,j p2,j x3,i

```

```
In[*]:= Short[eqn = CF[LeftR3b[[2]] - RightR3b[[2]], 5]
cvs = Union@Cases[eqn, p__ |  $\pi$ __,  $\infty$ ]
vars = Union@Cases[r42[1, i, j], c_,  $\infty$ ]
Short[eqns = CoefficientRules[eqn, cvs] /. (_ -> c_) :-> (c == 0), 3]
Short[{sol} = Solve[eqns, vars]]
```

Out[*]//Short=

$$- \left((2 c_{11} + 2 c_{41} + c_{42} + c_{43} + 2 c_{56} + c_{57} + c_{58} + 2 c_{71} + c_{87}) (-1 + T_1) T_1^2 p_{1,2+j} \pi_{1,i} \right) -$$

$$(-1 + T_1) (4 c_1 + c_2 + c_3 + 2 c_6 + c_{16} + c_{17} + c_{18} + \ll 49 \gg) p_{1,2+k} \pi_{1,i} + \ll 1 \gg +$$

$$\ll 473 \gg + (-1 + T_2) T_2 (-c_{55} - c_{60} + c_{55} T_1 T_2) p_2 \ll 1 \gg^2 \ll 1 \gg \ll 1 \gg p_{3,2+k} \pi_{2,k} \pi_{3,k} -$$

$$(-1 + T_2) T_2 (-c_{55} - c_{60} + c_{55} T_1 T_2) p_{2,2+j} p_{3,2+k} \pi_{2,k} \pi_{3,k}$$

Out[*]=

```
{p1,2+i, p1,2+j, p1,2+k, p2,2+i, p2,2+j, p2,2+k, p3,2+i,
p3,2+j, p3,2+k,  $\pi$ 1,i,  $\pi$ 1,j,  $\pi$ 1,k,  $\pi$ 2,i,  $\pi$ 2,j,  $\pi$ 2,k,  $\pi$ 3,i,  $\pi$ 3,j,  $\pi$ 3,k}
```

Out[*]=

```
{c1, c2, c3, c4, c5, c6, c7, c8, c9, c10, c11, c12, c13, c14, c15, c16, c17, c18, c19, c20,
c21, c22, c23, c24, c25, c26, c27, c28, c29, c30, c31, c32, c33, c34, c35, c36, c37, c38, c39,
c40, c41, c42, c43, c44, c45, c46, c47, c48, c49, c50, c51, c52, c53, c54, c55, c56, c57,
c58, c59, c60, c61, c62, c63, c64, c65, c66, c67, c68, c69, c70, c71, c72, c73, c74, c75,
c76, c77, c78, c79, c80, c81, c82, c83, c84, c85, c86, c87, c88, c89, c90, c91, c92, c93}
```

Out[*]//Short=

$$\{-c_{11} T_1^4 - c_{41} T_1^4 + c_{11} T_1^5 + c_{41} T_1^5 == 0, \ll 1 \gg == 0,$$

$$\ll 315 \gg, c_{13} T_1 T_2 + c_{15} T_1 T_2 + c_{73} T_1 T_2 + c_{75} T_1 T_2 + c_{89} T_1 T_2 -$$

$$\ll 1 \gg - c_{15} T_1^2 T_2^2 - c_{73} T_1^2 T_2^2 - c_{75} T_1^2 T_2^2 - c_{89} T_1^2 T_2^2 == 0\}$$

Solve: Equations may not give solutions for all "solve" variables.

Out[*]//Short=

$$\left\{ \left\{ c_1 \rightarrow 0, \ll 60 \gg, c_{92} \rightarrow -\frac{c_{83}}{T_1 T_2} - \frac{c_{\ll 2 \gg}}{\ll 1 \gg \ll 1 \gg \ll 1 \gg} - \frac{\ll 8 \gg + \ll 1 \gg}{T_1^2 \ll 1 \gg (-1 + \ll 1 \gg)} \right\} \right\}$$

```
In[*]:= sol /. (v_ -> val_) :-> (v = CF[val]);
```

In[*]:= Short[CF[r₄₂[1, i, j]], 20]

Out[*]//Short=

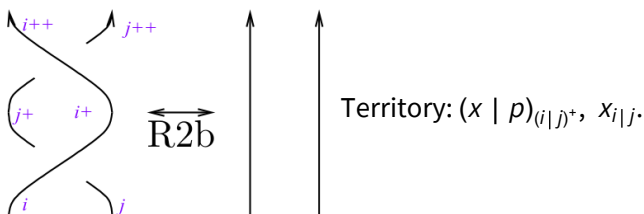
$$\begin{aligned}
 & c_{93} + c_{81} p_{1,i} x_{1,i} + c_{84} p_{1,j} x_{1,i} + (c_6 + c_{21}) p_{1,i} p_{1,j} x_{1,i}^2 + \\
 & \frac{1}{2} (-1 + T_1) (2 c_6 + 2 c_{21} + c_{16} T_1 + c_{31} T_1 + c_{46} T_1 + c_{61} T_1) p_{1,j}^2 x_{1,i}^2 - \\
 & \frac{(c_{81} + c_{84}) p_{1,j} x_{1,j}}{T_1} + (c_{16} + c_{31} + c_{46} + c_{61}) p_{1,i} p_{1,j} x_{1,i} x_{1,j} + \\
 & \frac{1}{2} (-2 c_6 - c_{16} - 2 c_{21} - c_{31} - c_{46} - c_{61} - c_{16} T_1 - c_{31} T_1 - c_{46} T_1 - c_{61} T_1) p_{1,j}^2 x_{1,i} x_{1,j} + \ll 33 \gg + \\
 & \frac{1}{(-1 + T_1) (-1 + T_2)} (-a_4 b_5 - c_{25} + c_{25} T_1 + a_4 b_3 T_2 + a_4 b_5 T_2 - a_4 b_3 T_1 T_2 + c_{25} T_1 T_2 - c_{25} T_1^2 T_2) \\
 & p_{2,j} p_{3,j} x_{2,j} x_{3,i} - \frac{1}{T_1^2 T_2 (-1 + T_1 T_2)} \\
 & (-a_2 b_5 - a_2 b_3 T_1 + a_4 b_3 T_1 - c_{83} T_1 - c_{86} T_1 - a_4 b_5 T_2 - a_4 b_3 T_1 T_2 + a_4 b_5 T_1 T_2 + c_{83} T_1^2 T_2 + c_{86} T_1^2 T_2) \\
 & p_{3,j} x_{3,j} - \frac{(a_2 b_5 - a_4 b_5 - c_8 + c_{23} + c_8 T_1 + a_4 b_5 T_2 - c_{23} T_1 T_2) p_{1,i} p_{3,j} x_{1,i} x_{3,j}}{(-1 + T_1) (-1 + T_1 T_2)} - \\
 & ((-a_2 b_3 + c_8 + a_2 b_3 T_1 - a_4 b_3 T_1 - c_8 T_1 - a_4 b_3 T_2 - c_8 T_2 + 2 a_4 b_3 T_1 T_2 + c_8 T_1 T_2) p_{1,j} p_{3,j} x_{1,i} x_{3,j}) / \\
 & ((-1 + T_2) (-1 + T_1 T_2)) - \\
 & ((a_2 b_3 - c_{10} T_1 + c_{25} T_1 + a_4 b_3 T_2 - a_4 b_3 T_1 T_2 + c_{10} T_1 T_2 - c_{25} T_1^2 T_2) p_{2,i} p_{3,j} x_{2,i} x_{3,j}) / \\
 & (T_1 (-1 + T_2) (-1 + T_1 T_2)) - \\
 & ((c_{10} T_1 - c_{10} T_1^2 + a_2 b_5 T_2 - a_2 b_5 T_1 T_2 + a_4 b_5 T_1 T_2 - c_{10} T_1 T_2 + c_{10} T_1^2 T_2 + a_4 b_5 T_2^2 - 2 a_4 b_5 T_1 T_2^2) \\
 & p_{2,j} p_{3,j} x_{2,i} x_{3,j}) / ((-1 + T_1) T_1 (-1 + T_1 T_2))
 \end{aligned}$$

In[*]:= CF[Leftr3b - RightR3b]

Out[*]=

Series[0, 0]

Reidemeister 2b



In[*]:= Timing[Short[Leftr2b = (∫ F[i, j] × L / @ (X_{i,j}[1] X_{i+,j+}[-1]) d{vs_i, vs_j, vs_{i+}, vs_{j+}}) [1]]]]

Out[*]=

{0.671875, Series[p_{1,2+i} π_{1,i} + p_{1,2+j} π_{1,j} + <<12>> + p_{3,2+j} π_{3,j}, <<1>>]}

In[*]:= RightR2b = eSeries[p_{1,2+i} π_{1,i} + p_{1,2+j} π_{1,j} + p_{2,2+i} π_{2,i} + p_{2,2+j} π_{2,j} + p_{3,2+i} π_{3,i} + p_{3,2+j} π_{3,j}, 0]

Out[*]=

Series[p_{1,2+i} π_{1,i} + p_{1,2+j} π_{1,j} + p_{2,2+i} π_{2,i} + p_{2,2+j} π_{2,j} + p_{3,2+i} π_{3,i} + p_{3,2+j} π_{3,j}, 0]


```
In[*]:= Short[eqn = CF[LeftR2b[[1]] - RightR2b[[1]]]
cvs = Union@Cases[eqn, p__ | π__, ∞]
vars = Union@Cases[r_θ[-1, i, j], d_, ∞]
Short[eqns = CoefficientRules[eqn, cvs] /. (_ -> c_) :-> (c == 0), 3]
{sol} = Solve[eqns, vars]
```

Out[*]//Short=

$$\frac{(d_7 + \ll 11 \gg + d_7 T_1 T_2) \ll 1 \gg \ll 1 \gg \ll 1 \gg \pi_{\ll 1 \gg}}{B T_1 T_2} + \ll 7 \gg + \frac{\ll 1 \gg}{B \ll 1 \gg T_2}$$

Out[*]=

$$\{p_{3,2+i}, p_{3,2+j}, \pi_{1,i}, \pi_{1,j}, \pi_{2,i}, \pi_{2,j}\}$$

Out[*]=

$$\{d_1, d_2, d_3, d_4, d_5, d_6, d_7, d_8\}$$

Out[*]//Short=

$$\left\{ \begin{aligned} \frac{d_1}{B} - \frac{d_3}{B} - \frac{d_5}{B} + \frac{d_7}{B} + \frac{d_5}{B T_1} - \frac{d_7}{B T_1} + \frac{d_3}{B T_2} - \frac{d_7}{B T_2} + \frac{d_7}{B T_1 T_2} &= 0, \\ \frac{d_3}{B T_2} - \frac{d_7}{B T_2} + \frac{d_7}{B T_1 T_2} &= 0, \ll 5 \gg, \frac{d_7}{B} + \frac{d_8}{B} - \frac{d_7}{B T_1 T_2} &= 0 \end{aligned} \right\}$$

Out[*]=

$$\left\{ \left\{ d_1 \rightarrow 0, d_2 \rightarrow -\frac{a_2 - a_4 T_1 + a_4 T_2}{T_1^2 T_2}, d_3 \rightarrow 0, d_4 \rightarrow -\frac{a_4}{T_1}, d_5 \rightarrow 0, d_6 \rightarrow -\frac{-a_2 - a_4 T_2}{T_1 T_2}, d_7 \rightarrow 0, d_8 \rightarrow 0 \right\} \right\}$$

```
In[*]:= sol /. (v_ -> val_) :-> (v = CF[val]);
r_θ[-1, i, j]
```

Out[*]=

$$\frac{(-a_2 + a_4 T_1 - a_4 T_2) p_{3,j} x_{1,i} x_{2,i}}{T_1^2 T_2} + \frac{(a_2 + a_4 T_2) p_{3,j} x_{1,j} x_{2,i}}{T_1 T_2} - \frac{a_4 p_{3,j} x_{1,i} x_{2,j}}{T_1}$$

```
In[*]:= Short[eqn = CF[LeftR2b[[2]] - RightR2b[[2]]]
cvs = Union@Cases[eqn, p__ | π__, ∞]
vars = Union@Cases[r_1[-1, i, j] + r_42[-1, i, j], e_ | f_, ∞]
Short[eqns = CoefficientRules[eqn, cvs] /. (_ -> c_) :-> (c == 0), 3]
Short[{sol} = Solve[eqns, vars]]
```

Out[*]//Short=

$$\llcorner 107 \gg + \frac{\llcorner 1 \gg}{\llcorner 1 \gg} + \frac{\llcorner 1 \gg}{T_1 \llcorner 1 \gg}$$

Out[*]=

```
{p1,2+i, p1,2+j, p2,2+i, p2,2+j, p3,2+i, p3,2+j, π1,i, π1,j, π2,i, π2,j, π3,i, π3,j}
```

Out[*]=

```
{e1, e2, e3, e4, e5, e6, e7, e8, f1, f2, f3, f4, f5, f6, f7, f8, f9, f10, f11, f12, f13, f14, f15, f16,
f17, f18, f19, f20, f21, f22, f23, f24, f25, f26, f27, f28, f29, f30, f31, f32, f33, f34, f35, f36,
f37, f38, f39, f40, f41, f42, f43, f44, f45, f46, f47, f48, f49, f50, f51, f52, f53, f54, f55,
f56, f57, f58, f59, f60, f61, f62, f63, f64, f65, f66, f67, f68, f69, f70, f71, f72, f73, f74,
f75, f76, f77, f78, f79, f80, f81, f82, f83, f84, f85, f86, f87, f88, f89, f90, f91, f92, f93}
```

Out[*]//Short=

$$\left\{ f_1 - f_{11} - f_{41} + f_{51} + \frac{f_{51}}{T_1^2} + \frac{f_{11}}{T_1} + \frac{f_{41}}{T_1} - \frac{2 f_{51}}{T_1} = 0, \llcorner 85 \gg, \right.$$

$$\left. \frac{2 a_4 b_3}{(1 - T_1)(1 - T_2)} + \frac{c_{16}}{(1 - T_1)(1 - T_2)} + \llcorner 336 \gg + \frac{f_{93} T_1 T_2}{(1 - T_1)(1 - T_2)} = 0 \right\}$$

Solve: Equations may not give solutions for all "solve" variables.

Out[*]//Short=

```
{e1 -> 0, e2 -> 0, \llcorner 84 \gg, f93 -> -c93}
```

```
In[*]:= sol /. (v_ -> val_) :-> (v = CF[val]);
```

```
In[*]:= r_1[-1, i, j]
Short[CF[r_42[-1, i, j]], 5]
```

Out[*]=

$$-\frac{b_5 p_{1,j} p_{2,i} x_{3,i}}{T_1} - \frac{b_3 p_{1,i} p_{2,j} x_{3,i}}{T_2} + \frac{(b_3 T_1 + b_5 T_2) p_{1,j} p_{2,j} x_{3,i}}{T_1 T_2}$$

Out[*]//Short=

$$-c_{93} - c_{81} p_{1,i} x_{1,i} + \llcorner 53 \gg + \frac{(\llcorner 1 \gg) \llcorner 3 \gg x_{\llcorner 1 \gg}}{T_1 (-1 + \llcorner 1 \gg) (\llcorner 1 \gg)} +$$

$$\left((a_2 b_3 - c_{10} T_1 + c_{25} T_1 + a_4 b_3 T_2 - a_4 b_3 T_1 T_2 + c_{10} T_1 T_2 - c_{25} T_1^2 T_2) p_{2,i} p_{3, \llcorner 1 \gg} \llcorner 1 \gg x_{2,i} x_{3,j} \right) /$$

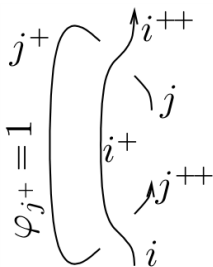
$$(T_1 (-1 + T_2) (-1 + T_1 T_2)) + \frac{(\llcorner 1 \gg) p_{2,j} p_{3,j} x_{2,i} x_{3,j}}{(-1 + T_1) T_1 T_2 (-1 + T_1 T_2)}$$

```
In[*]:= CF[LeftR2b - RightR2b]
```

Out[*]=

```
Series[0, 0]
```

Reidemeister 2c



```
In[*]:= Timing [ Short [ {LeftR2c} = Cases [
    Integrate [ F [i, j] * L / @ (X_{i+1, j} [1] X_{i, j+2} [-1] C_{j+1} [1]) d [ {v_{S_i}, v_{S_j}, v_{S_{i+}}, v_{S_{j+}}, v_{S_{j+2}}}, E [E_] -> E ]
]] ]
```

```
Out[*]= {0.71875, {Series [ p_{1, 2+i} \pi_{1, i} + p_{1, 3+j} \pi_{1, j} + <<9>> + p_{3, 3+j} \pi_{3, j}, g_1 g_2 + <<49>> + <<1>> ]}}
```

```
In[*]:= Timing [ Short [ {RightR2c} =
    Cases [ Integrate [ F [i, j] * L / @ (C_i [0] C_{i+1} [0] C_j [0] C_{j+1} [1] C_{j+2} [0]) d [ {v_{S_i}, v_{S_j}, v_{S_{i+}}, v_{S_{j+}}, v_{S_{j+2}}},
    E [E_] -> E ]
]] ]
```

```
Out[*]= {0.015625, {Series [ p_{1, 2+i} \pi_{1, i} + p_{1, 3+j} \pi_{1, j} + <<4>> + p_{3, 3+j} \pi_{3, j}, g_1 g_2 + <<16>> + <<1>> ]}}
```

```
In[*]:= Short [ eqn = CF [LeftR2c [1] - RightR2c [1]] ]
cvs = Union @ Cases [ eqn, p_ | \pi_ , \infty ]
vars = Union @ Cases [ \gamma_ [1, k], g_ , \infty ]
Short [ eqns = CoefficientRules [ eqn, cvs ] /. ( _ -> c_ ) -> ( c == 0 ), 3 ]
{sol} = Solve [ eqns, vars ]
```

```
Out[*]//Short=
\frac{g_1 (-1 + T_1) <<1>> <<1>> <<1>> \pi_{1, <<1>>} <<1>> \pi_{2, i}}{B T_1 T_2} - \frac{<<1>>}{B <<1>> <<1>>} - \frac{g_1 <<3>> <<1>>}{B T_1}
```

```
Out[*]= {p_{3, 3+j}, \pi_{1, i}, \pi_{1, j}, \pi_{2, i}, \pi_{2, j}}
```

```
Out[*]= {g_1}
```

```
Out[*]//Short=
{ \frac{g_1}{B} - \frac{g_1}{B T_1} - \frac{g_1}{B T_2} + \frac{g_1}{B T_1 T_2} == 0, -\frac{g_1}{B} + \frac{g_1}{B T_1} == 0, -\frac{g_1}{B} + \frac{g_1}{B T_2} == 0 }
```

```
Out[*]= { {g_1 -> 0} }
```

```

In[*]:= sol /. (v_ -> val_) :-> (v = CF[val]);
      γ₀[1, k]
Out[*]=
      0

In[*]:= Short[eqn = CF[Leftr2c[[2]] - RightR2c[[2]]]
      cvs = Union@Cases[eqn, p__ | π__, ∞]
      vars = Union@Cases[γ₁[1, k] + γ₄₂[1, k], g_, ∞]
      Short[eqns = CoefficientRules[eqn, cvs] /. (_ -> c_) :-> (c == 0), 3]
      Short[{sol} = Solve[eqns, vars]]
Out[*]//Short=
      (c₁₆ + c₃₁ + <<10>>) <<1>> <<1>> <<1>> π₁ <<1>> <<1>>
      T₁ + <<25>>

Out[*]=
      {p₁,₃+j, p₂,₃+j, p₃,₃+j, π₁,i, π₁,j, π₂,i, π₂,j, π₃,i, π₃,j}

Out[*]=
      {g₂, g₃, g₄, g₅, g₆, g₇, g₈, g₉, g₁₀}

Out[*]//Short=
      {g₆ + g₆/T₁² - 2g₆/T₁ == 0, -2g₆ + 2g₆/T₁ == 0, <<13>>, c₁₉ + c₃₄ + c₄₉ + <<17>> + g₄/T₂ + g₇/T₂ + 4g₉/T₂ + g₁₀/T₂ == 0,
      2a₄b₃/(1-T₁)(1-T₂) + a₄b₃/(1-T₁)T₁²(1-T₂) + <<50>> == 0}

Out[*]//Short=
      {{g₂ -> 0, g₃ -> c₁₆ + c₃₁ + c₄₆ + c₆₁, <<5>>, g₉ -> 0, g₁₀ -> 0}}

In[*]:= sol /. (v_ -> val_) :-> (v = CF[val]);
In[*]:= γ₁[1, k]
      Short[CF[γ₄₂[1, k]], 5]
Out[*]=
      0

Out[*]//Short=
      (c₁₆ + c₃₁ + c₄₆ + c₆₁) p₁,k x₁,k + (c₁₉ + c₃₄ + c₄₉ + c₆₄) p₂,k x₂,k +
      (-b₃ + b₅ + b₃T₁ - b₅T₂) (-a₂ + a₂T₁ - a₄T₁ - a₄T₂ + 2a₄T₁T₂) p₃,k x₃,k
      (-1 + T₁)T₁(-1 + T₂)(-1 + T₁T₂)

In[*]:= CF[Leftr2c - RightR2c]
Out[*]=
      ∈Series[0, 0]

```

$C_k[1]$ and $C_k[-1]$ are inverses

```

In[*]:= Timing [ Short [ { LeftCC } = Cases [ { { ∫ [ k ] × ℒ / @ ( Ck[1] Ck+1[-1] ) d { vsk, vsk+ } } , E [ ε- ] := ε ]
]]

Out[*]=
{ 0.0625, { ∈Series [ p1,2+k π1,k + p2,2+k π2,k +  $\frac{\ll 1 \gg}{B}$  + p3,2+k π3,k,  $\frac{\ll 1 \gg}{\ll 1 \gg}$  + <<8>> + <<1>> ] } }

In[*]:= Timing [ Short [ { RightCC } = Cases [ { { ∫ [ k ] × ℒ / @ ( Ck[0] Ck+1[0] ) d { vsk, vsk+ } } , E [ ε- ] := ε ]
]]

Out[*]=
{ 0., { ∈Series [ p1,2+k π1,k + p2,2+k π2,k + p3,2+k π3,k, 0 ] } }

In[*]:= Short [ eqn = CF [ LeftCC[[1]] - RightCC[[1]] ]
cvs = Union@Cases [ eqn, p__ | π__, ∞ ]
vars = Union@Cases [ γ0[-1, k], h_, ∞ ]
Short [ eqns = CoefficientRules [ eqn, cvs ] /. ( _ → c_ ) := ( c == 0 ), 3 ]
{ sol } = Solve [ eqns, vars ]

Out[*]//Short=

$$\frac{h_1 p_3 \ll 1 \gg^2 \ll 1 \gg \ll 1 \gg \pi_{\ll 1 \gg} \pi_{2,k}}{B}$$


Out[*]=
{ p3,2+k, π1,k, π2,k }

Out[*]=
{ h1 }

Out[*]//Short=
{  $\frac{h_1}{B} == 0$  }

Out[*]=
{ { h1 → 0 } }

In[*]:= sol /. ( v_ → val_ ) := ( v = CF [ val ] );
γ0[-1, k]

Out[*]=
0

```

```

In[*]:= Short[eqn = CF[LeftCC[[2]] - RightCC[[2]]]
cvs = Union@Cases[eqn, p_ |  $\pi$ _ ,  $\infty$ ]
vars = Union@Cases[ $\gamma_1[-1, k] + \gamma_{42}[-1, k], h_ , \infty$ ]
Short[eqns = CoefficientRules[eqn, cvs] /. (_ -> c_) -> (c == 0), 3]
Short[{sol} = Solve[eqns, vars]]

Out[*]//Short=
<<1>>

Out[*]=
{p1,2+k, p2,2+k, p3,2+k,  $\pi_{1,k}$ ,  $\pi_{2,k}$ ,  $\pi_{3,k}$ }

Out[*]=
{h2, h3, h4, h5, h6, h7, h8, h9, h10}

Out[*]//Short=
{h6 == 0, h7 == 0, B h2 == 0, h8 == 0, <<1>> == 0, <<1>>,
h10 == 0, C19 + C34 + C49 + C64 + h4 + h7 + 4 h9 + h10 == 0, <<1>> == 0,

$$\frac{2 a_2 b_3}{(1 - T_1) (1 - T_2) (1 - T_1 T_2)} - \frac{a_4 b_3}{(1 - T_1) (1 - T_2) (1 - T_1 T_2)} - \frac{\langle\langle 1 \rangle\rangle}{\langle\langle 1 \rangle\rangle} + \langle\langle 165 \rangle\rangle == 0}$$


Out[*]//Short=
{{h2 -> 0, h3 -> -C16 - C31 - C46 - C61, <<5>>, h9 -> 0, h10 -> 0}}

In[*]:= sol /. (v_ -> val_) -> (v = CF[val]);

In[*]:=  $\gamma_1[-1, k]$ 
Short[CF[ $\gamma_{42}[-1, k]$ ], 5]

Out[*]=
0

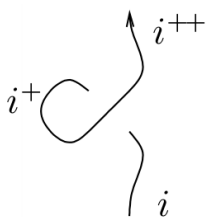
Out[*]//Short=

$$\frac{(-C_{16} - C_{31} - C_{46} - C_{61}) p_{1,k} x_{1,k} + (-C_{19} - C_{34} - C_{49} - C_{64}) p_{2,k} x_{2,k} - (-b_3 + b_5 + b_3 T_1 - b_5 T_2) (-a_2 + a_2 T_1 - a_4 T_1 - a_4 T_2 + 2 a_4 T_1 T_2) p_{3,k} x_{3,k}}{(-1 + T_1) T_1 (-1 + T_2) (-1 + T_1 T_2)}$$


In[*]:= CF[LeftCC - RightCC]

Out[*]=
Series[0, 0]
    
```

Invariance Under R1



```

In[*]:= {LeftR1} = Cases [ { {  $\int \mathcal{F}[i] \times \mathcal{L} / @ (X_{i+2,i}[1] C_{i+1}[1]) \mathcal{d}\{v_{s_i}, v_{s_{i+1}}, v_{s_{i+2}}\}$ ,  $\mathbb{E}[\mathcal{E}_-] \Rightarrow \mathcal{E}, \infty$  }
Out[*]=
{Series [  $p_{1,3+i} \pi_{1,i} + p_{2,3+i} \pi_{2,i} + p_{3,3+i} \pi_{3,i}, c_{93}$  ] }

In[*]:= {RightR1} = Cases [ { {  $\int \mathcal{F}[i] \times \mathcal{L} / @ (C_i[0] C_{i+1}[0] C_{i+2}[0]) \mathcal{d}\{v_{s_i}, v_{s_{i+1}}, v_{s_{i+2}}\}$ ,  $\mathbb{E}[\mathcal{E}_-] \Rightarrow \mathcal{E}, \infty$  }
Out[*]=
{Series [  $p_{1,3+i} \pi_{1,i} + p_{2,3+i} \pi_{2,i} + p_{3,3+i} \pi_{3,i}, 0$  ] }

In[*]:= LeftR1[[1]] == RightR1[[1]]
Out[*]=
True

In[*]:= Short [ eqn = CF [ LeftR1[[2]] - RightR1[[2]] ]
cvs = Union@Cases [ eqn, p_ |  $\pi_$ ,  $\infty$  ]
vars = Union@Cases [ eqn, (c | d | e | f | g | h)_ ,  $\infty$  ]
Short [ eqns = If [ cvs === {},
{eqn == 0},
CoefficientRules [ eqn, cvs ] /. (_ -> c_) => (c == 0)
], 3 ]
{sol} = Solve [ eqns, vars ]

Out[*]//Short=
c93

Out[*]=
{}

Out[*]=
{}

Out[*]//Short=
{c93 == 0}

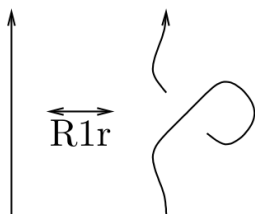
Out[*]=
{{c93 -> 0}}

In[*]:= sol /. (v_ -> val_) => (v = CF [ val ] );

In[*]:= CF [ LeftR1 - RightR1 ]
Out[*]=
Series [ 0, 0 ]

```

Invariance Under R1r



In[*]:= **LeftR1r** = Cases [{ { $\mathcal{F}[i] \times \mathcal{L} / @ (X_{i,i+2}[1] C_{i+1}[-1]) \mathbb{d} \{v_{s_i}, v_{s_{i+1}}, v_{s_{i+2}}\}$ }, $\mathbb{E}[\mathcal{E}_-] \Rightarrow \mathcal{E}, \infty$]

Out[*]=

$$\left\{ \in \text{Series} \left[p_{1,3+i} \pi_{1,i} + p_{2,3+i} \pi_{2,i} + p_{3,3+i} \pi_{3,i}, \right. \right. \\ \left. \frac{1}{T_1^2 T_2 (-1 + T_1 T_2)} \left(a_2 b_5 + a_2 b_3 T_1 - a_4 b_3 T_1 + c_{83} T_1 + c_{86} T_1 + c_{82} T_1^2 + c_{85} T_1^2 + a_4 b_5 T_2 + \right. \right. \\ \left. \left. a_4 b_3 T_1 T_2 - a_4 b_5 T_1 T_2 + c_{81} T_1 T_2 + c_{84} T_1 T_2 - c_{81} T_1^2 T_2 - c_{82} T_1^2 T_2 - 2 c_{83} T_1^2 T_2 - \right. \right. \\ \left. \left. c_{86} T_1^2 T_2 - c_{82} T_1^3 T_2 - c_{85} T_1^3 T_2 - c_{81} T_1^2 T_2^2 - c_{84} T_1^2 T_2^2 + c_{81} T_1^3 T_2^2 + c_{82} T_1^3 T_2^2 + c_{83} T_1^3 T_2^2 \right) \right] \left. \right\}$$

In[*]:= **RightR1r** = Cases [{ { $\mathcal{F}[i] \times \mathcal{L} / @ (C_i[0] C_{i+1}[0] C_{i+2}[0]) \mathbb{d} \{v_{s_i}, v_{s_{i+1}}, v_{s_{i+2}}\}$ }, $\mathbb{E}[\mathcal{E}_-] \Rightarrow \mathcal{E}, \infty$]

Out[*]=

$$\left\{ \in \text{Series} [p_{1,3+i} \pi_{1,i} + p_{2,3+i} \pi_{2,i} + p_{3,3+i} \pi_{3,i}, 0] \right\}$$

In[*]:= **LeftR1r**[[1]] == **RightR1r**[[1]]

Out[*]=

True

In[*]:= **Short** [eqn = **CF** [**LeftR1r**[[2]] - **RightR1r**[[2]]]]

cvs = **Union**@Cases [eqn, p__ | $\pi_{_}$, ∞]

vars = **Union**@Cases [eqn, (c | d | e | f | g | h)_, ∞]

Short [eqns = **CoefficientRules** [eqn, cvs] /. ($_ \rightarrow c_$) \Rightarrow (c == 0), 3]

{**sol**} = **Solve** [eqns, vars]

Out[*]//Short=

$$\frac{a_2 b_5 + \ll 31 \gg + c_{83} T_1^3 T_2^2}{T_1^2 T_2 (-1 + T_1 T_2)}$$

Out[*]=


{ }

Out[*]=

{c81, c82, c83, c84, c85, c86}

Out[*]//Short=

$$\left\{ \frac{a_2 b_5 + a_2 b_3 T_1 - a_4 b_3 T_1 + \ll 26 \gg + c_{81} T_1^3 T_2^2 + c_{82} T_1^3 T_2^2 + c_{83} T_1^3 T_2^2}{T_1^2 T_2 (-1 + T_1 T_2)} == 0 \right\}$$

Solve: Equations may not give solutions for all "solve" variables. 

Out[*]=

$$\left\{ \left\{ c_{86} \rightarrow -c_{85} T_1 - c_{84} T_2 - c_{83} (1 - T_1 T_2) - c_{82} (T_1 - T_1 T_2) - \right. \right. \\ \left. \left. c_{81} (T_2 - T_1 T_2) - \frac{-a_2 b_5 - a_2 b_3 T_1 + a_4 b_3 T_1 - a_4 b_5 T_2 - a_4 b_3 T_1 T_2 + a_4 b_5 T_1 T_2}{T_1 (-1 + T_1 T_2)} \right\} \right\}$$

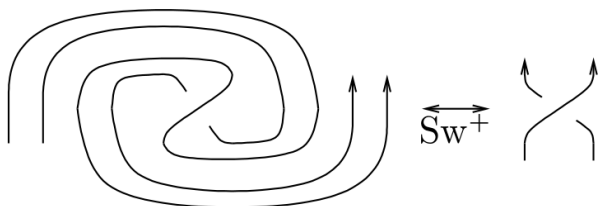
In[*]:= **sol** /. (v_ \rightarrow val_) \Rightarrow (v = **CF** [val]);

In[*]:= **CF** [**LeftR1r** - **RightR1r**]

Out[*]=

\in Series [0, 0]

Invariance Under Sw



```
In[*]:= Timing [ Short [ {LeftSw} = Cases [ { { F [ i, j ] x L / @ ( Xi+1,j+1 [ 1 ] Ci [ -1 ] Cj [ -1 ] Ci+2 [ 1 ] Cj+2 [ 1 ] )
      d [ { VSi, VSj, VSi+, VSj+, VSi+2, VSj+2 } }, E [ E_ ] := E, ∞ ]
    ] ]
```

```
Out[*]= { 0.0625, { ∈Series [ T1 p1,3+i π1,i + <<11>> + p3,3+j π3,j,  $\frac{\ll 1 \gg}{\ll 1 \gg}$  + <<56>> +  $\frac{\ll 1 \gg}{\ll 1 \gg}$  ] ] }
```

```
In[*]:= Timing [ Short [ {RightSw} = Cases [ { { F [ i, j ] x L / @ ( Xi+1,j+1 [ 1 ] Ci [ 0 ] Cj [ 0 ] Ci+2 [ 0 ] Cj+2 [ 0 ] )
      d [ { VSi, VSj, VSi+, VSj+, VSi+2, VSj+2 } }, E [ E_ ] := E, ∞ ]
    ] ]
```

```
Out[*]= { 0.28125, { ∈Series [ T1 p1,3+i π1,i + <<11>> + p3,3+j π3,j,  $\frac{\ll 1 \gg}{\ll 1 \gg}$  + <<56>> +  $\frac{\ll 1 \gg}{\ll 1 \gg}$  ] ] }
```

```
In[*]:= LeftSw == RightSw
```

```
Out[*]= True
```

The Solution

```
In[*]:= Union@Cases [ L@Xi,j [ 1 ], ( a | b | c | d | e | f | g | h )_, ∞ ]
```

```
Out[*]= { a2, a4, b3, b5, c6, c7, c8, c9, c10, c16, c19, c21, c22, c23,
  c24, c25, c31, c34, c36, c39, c46, c49, c61, c64, c81, c82, c83, c84, c85 }
```

```
In[*]:= LeafCount@CF [ L@Xi,j [ 1 ] / . { c16|19|31|34|46|49|61|64|81|82|84|85 → 0, b3|5 → 1, a2|4 → 1, B → 1 } // .
  { c21 → -c6, c22 → -c7, c24 → -c9, c7 → -1 / T1, c8|10|23|25|83 → 0 } ]
```

```
Out[*]= 1310
```

```
In[*]:= LeafCount@CF [ L@Xi,j [ 1 ] / . { c16|19|31|34|46|49|61|64|81|82|84|85 → 0, b3|5 → 1, a2|4 → 1, B → 1 } // .
  { c21 → -c6, c22 → -c7, c24 → -c9, c7 → 0, c8|10|23|25|83 → 0 } ]
```

```
Out[*]= 1205
```

In[*]:= CF[$\mathcal{L}@X_{i,j}[1]$] /. { $c_{16|19|31|34|46|49|61|64|81|82|84|85} \rightarrow 0$, $b_{3|5} \rightarrow 1$, $a_{2|4} \rightarrow 1$, $B \rightarrow 1$ } // .
 { $c_{21} \rightarrow -c_6$, $c_{22} \rightarrow -c_7$, $c_{24} \rightarrow -c_9$, $c_7 \rightarrow 0$, $c_{8|10|23|25|83} \rightarrow 0$ }

Out[*]=

$$T_1 T_2 \mathbb{E} \left[\text{Series} \left[-p_{1,i} x_{1,i} + T_1 p_{1,1+i} x_{1,i} + (1 - T_1) p_{1,1+j} x_{1,i} - p_{1,j} x_{1,j} + p_{1,1+j} x_{1,j} - p_{2,i} x_{2,i} + \right. \right. \\
 T_2 p_{2,1+i} x_{2,i} + (1 - T_2) p_{2,1+j} x_{2,i} + p_{3,j} x_{1,i} x_{2,i} - \frac{(1 + T_2) p_{3,j} x_{1,j} x_{2,i}}{T_1} - p_{2,j} x_{2,j} + p_{2,1+j} x_{2,j} + \\
 p_{3,j} x_{1,i} x_{2,j} - p_{3,i} x_{3,i} + T_1 T_2 p_{3,1+i} x_{3,i} + (1 - T_1 T_2) p_{3,1+j} x_{3,i} - p_{3,j} x_{3,j} + p_{3,1+j} x_{3,j}, \\
 \left. \frac{(-1 - T_2 + T_1 T_2 - T_2^2) p_{1,j} p_{2,j} x_{1,i} x_{2,i}}{-1 + T_1 T_2} - \frac{(T_1 - T_2) (-1 - T_2 + T_1 T_2) p_{1,j} p_{2,i} x_{1,j} x_{2,i}}{(-1 + T_1) T_1 (-1 + T_2) (-1 + T_1 T_2)} - \right. \\
 \frac{(1 + T_2) p_{1,j} p_{2,j} x_{1,j} x_{2,i}}{(-1 + T_1) T_1} - \frac{(T_1 - T_2) T_2 p_{1,i} p_{2,j} x_{1,i} x_{2,j}}{(-1 + T_1) (-1 + T_2) (-1 + T_1 T_2)} + \frac{p_{1,j} p_{2,j} x_{1,i} x_{2,j}}{-1 + T_2} + \\
 p_{1,j} p_{2,i} x_{3,i} + p_{1,i} p_{2,j} x_{3,i} - 2 p_{1,j} p_{2,j} x_{3,i} + \frac{(1 + T_2) p_{3,j} x_{3,i}}{T_1 (-1 + T_1 T_2)} - \\
 \frac{(1 - 2 T_1 T_2 + T_2^2) p_{1,j} p_{3,j} x_{1,i} x_{3,i}}{-1 + T_2} + \frac{(-T_1 + T_2 - 2 T_1 T_2 + 2 T_1^2 T_2 + T_2^2 - T_1 T_2^2) p_{1,j} p_{3,i} x_{1,j} x_{3,i}}{(-1 + T_1) T_1 (-1 + T_2) (-1 + T_1 T_2)} + \\
 \frac{(1 + T_2) p_{1,i} p_{3,j} x_{1,j} x_{3,i}}{T_1 (-1 + T_2)} + \frac{(1 + T_2) (1 - 2 T_1 + T_1 T_2) p_{1,j} p_{3,j} x_{1,j} x_{3,i}}{(-1 + T_1) T_1 (-1 + T_2)} + \\
 \frac{(1 - T_1 + 2 T_2 - 2 T_1 T_2 + T_1^2 T_2 + T_2^2 - 2 T_1 T_2^2) p_{2,j} p_{3,j} x_{2,i} x_{3,i}}{(-1 + T_1) T_1} + \\
 \left. \frac{(-1 + T_1 T_2 + T_1^2 T_2 + T_2^2 - 2 T_1 T_2^2) p_{2,j} p_{3,i} x_{2,j} x_{3,i}}{(-1 + T_1) T_1 (-1 + T_2) (-1 + T_1 T_2)} - \right. \\
 \frac{p_{2,i} p_{3,j} x_{2,j} x_{3,i}}{-1 + T_1} - \frac{(1 - 2 T_2 + T_1 T_2) p_{2,j} p_{3,j} x_{2,j} x_{3,i}}{(-1 + T_1) (-1 + T_2)} - \\
 \frac{T_2 p_{1,i} p_{3,j} x_{1,i} x_{3,j}}{(-1 + T_1) (-1 + T_1 T_2)} - \frac{(-1 - T_2 + 2 T_1 T_2) p_{1,j} p_{3,j} x_{1,i} x_{3,j}}{(-1 + T_2) (-1 + T_1 T_2)} + \\
 \left. \frac{(-1 - T_2 + T_1 T_2) p_{2,i} p_{3,j} x_{2,i} x_{3,j}}{T_1 (-1 + T_2) (-1 + T_1 T_2)} + \frac{T_2 (-1 - T_2 + 2 T_1 T_2) p_{2,j} p_{3,j} x_{2,i} x_{3,j}}{(-1 + T_1) T_1 (-1 + T_1 T_2)} \right]$$

In[*]:= CF[$\mathcal{L}@X_{i,j}[-1]$] /. { $c_{16|19|31|34|46|49|61|64|81|82|84|85} \rightarrow 0$, $b_{3|5} \rightarrow 1$, $a_{2|4} \rightarrow 1$, $B \rightarrow 1$ } // .
 { $c_{21} \rightarrow -c_6$, $c_{22} \rightarrow -c_7$, $c_{24} \rightarrow -c_9$, $c_7 \rightarrow 0$, $c_{8|10|23|25|83} \rightarrow 0$ }

Out[*]=

$$\frac{1}{T_1 T_2} \mathbb{E} \left[\text{Series} \left[-p_{1,i} x_{1,i} + \frac{p_{1,1+i} x_{1,i}}{T_1} + \frac{(-1 + T_1) p_{1,1+j} x_{1,i}}{T_1} - p_{1,j} x_{1,j} + p_{1,1+j} x_{1,j} - p_{2,i} x_{2,i} + \frac{p_{2,1+i} x_{2,i}}{T_2} \right. \right. \\
 \frac{(-1 + T_2) p_{2,1+j} x_{2,i}}{T_2} + \frac{(-1 + T_1 - T_2) p_{3,j} x_{1,i} x_{2,i}}{T_1^2 T_2} + \frac{(1 + T_2) p_{3,j} x_{1,j} x_{2,i}}{T_1 T_2} - p_{2,j} x_{2,j} + p_{2,1+j} x_{2,j} - \\
 \frac{p_{3,j} x_{1,i} x_{2,j}}{T_1} - p_{3,i} x_{3,i} + \frac{p_{3,1+i} x_{3,i}}{T_1 T_2} + \frac{(-1 + T_1 T_2) p_{3,1+j} x_{3,i}}{T_1 T_2} - p_{3,j} x_{3,j} + p_{3,1+j} x_{3,j}, \\
 \left. \left. \frac{(-1 + T_2) p_{2,1+j} x_{2,i}}{T_2} + \frac{(-1 + T_1 - T_2) p_{3,j} x_{1,i} x_{2,i}}{T_1^2 T_2} + \frac{(1 + T_2) p_{3,j} x_{1,j} x_{2,i}}{T_1 T_2} - p_{2,j} x_{2,j} + p_{2,1+j} x_{2,j} - \right. \right. \\
 \left. \left. \frac{p_{3,j} x_{1,i} x_{2,j}}{T_1} - p_{3,i} x_{3,i} + \frac{p_{3,1+i} x_{3,i}}{T_1 T_2} + \frac{(-1 + T_1 T_2) p_{3,1+j} x_{3,i}}{T_1 T_2} - p_{3,j} x_{3,j} + p_{3,1+j} x_{3,j} \right]$$

$$\begin{aligned}
 & \frac{(T_1 - T_2) (-1 - T_2 + T_1 T_2) \rho_{1,j} \rho_{2,i} x_{1,i} x_{2,i}}{T_1^2 (-1 + T_2) (-1 + T_1 T_2)} + \frac{(T_1 - T_2) \rho_{1,i} \rho_{2,j} x_{1,i} x_{2,i}}{(-1 + T_1) (-1 + T_1 T_2)} - \\
 & \frac{(1 - T_1 + 2 T_2 - T_1 T_2 + 2 T_1^2 T_2 + T_2^2 - 2 T_1 T_2^2) \rho_{1,j} \rho_{2,j} x_{1,i} x_{2,i}}{T_1^2 T_2 (-1 + T_1 T_2)} + \\
 & \frac{(T_1 - T_2) (-1 - T_2 + T_1 T_2) \rho_{1,j} \rho_{2,i} x_{1,j} x_{2,i}}{(-1 + T_1) T_1 (-1 + T_2) (-1 + T_1 T_2)} - \\
 & \frac{(1 - T_1 + 2 T_2 - 2 T_1 T_2 + T_1^2 T_2 + T_2^2 - 2 T_1 T_2^2) \rho_{1,j} \rho_{2,j} x_{1,j} x_{2,i}}{(-1 + T_1) T_1 T_2 (-1 + T_1 T_2)} + \frac{(T_1 - T_2) T_2 \rho_{1,i} \rho_{2,j} x_{1,i} x_{2,j}}{(-1 + T_1) (-1 + T_2) (-1 + T_1 T_2)} - \\
 & \frac{(-1 + 2 T_1 T_2 - T_2^2) \rho_{1,j} \rho_{2,j} x_{1,i} x_{2,j}}{T_1 (-1 + T_2) (-1 + T_1 T_2)} - \frac{\rho_{1,j} \rho_{2,i} x_{3,i}}{T_1} - \frac{\rho_{1,i} \rho_{2,j} x_{3,i}}{T_2} + \frac{(T_1 + T_2) \rho_{1,j} \rho_{2,j} x_{3,i}}{T_1 T_2} + \\
 & \frac{(-1 - T_2 + T_1 T_2 - T_2^2) \rho_{3,j} x_{3,i}}{T_1 T_2 (-1 + T_1 T_2)} - \frac{(-T_1 + T_2 - 2 T_1 T_2 + 2 T_1^2 T_2 + T_2^2 - T_1 T_2^2) \rho_{1,j} \rho_{3,i} x_{1,i} x_{3,i}}{T_1^2 (-1 + T_2) (-1 + T_1 T_2)} - \\
 & \frac{(1 - T_1 + T_2 - 2 T_1 T_2 + 2 T_1^2 T_2 - T_1 T_2^2) \rho_{1,i} \rho_{3,j} x_{1,i} x_{3,i}}{(-1 + T_1) T_1^2 (-1 + T_2) T_2} + \\
 & \frac{(1 - 2 T_1 + T_2 - 3 T_1 T_2 + 4 T_1^2 T_2 - T_1 T_2^2) \rho_{1,j} \rho_{3,j} x_{1,i} x_{3,i}}{T_1^3 (-1 + T_2) T_2} - \\
 & \frac{(-T_1 + T_2 - 2 T_1 T_2 + 2 T_1^2 T_2 + T_2^2 - T_1 T_2^2) \rho_{1,j} \rho_{3,i} x_{1,j} x_{3,i}}{(-1 + T_1) T_1 (-1 + T_2) (-1 + T_1 T_2)} - \frac{(1 + T_2) \rho_{1,i} \rho_{3,j} x_{1,j} x_{3,i}}{T_1 (-1 + T_2) T_2} + \\
 & \frac{(1 - 2 T_1 + T_1^2 + T_2 - 3 T_1 T_2 + 3 T_1^2 T_2 - T_1 T_2^2) \rho_{1,j} \rho_{3,j} x_{1,j} x_{3,i}}{(-1 + T_1) T_1^2 (-1 + T_2) T_2} - \\
 & \frac{(-1 + T_1 T_2 + T_1^2 T_2 + T_2^2 - 2 T_1 T_2^2) \rho_{2,j} \rho_{3,i} x_{2,i} x_{3,i}}{(-1 + T_1) T_1 T_2 (-1 + T_1 T_2)} - \\
 & \frac{(-T_1 + T_2 + T_1^2 T_2 + T_2^2 - 2 T_1 T_2^2) \rho_{2,i} \rho_{3,j} x_{2,i} x_{3,i}}{(-1 + T_1) T_1^2 (-1 + T_2) T_2} + \\
 & \frac{(-T_1 + 2 T_2 + T_1^2 T_2 + 2 T_2^2 - 4 T_1 T_2^2) \rho_{2,j} \rho_{3,j} x_{2,i} x_{3,i}}{(-1 + T_1) T_1^2 T_2^2} - \\
 & \frac{(-1 + T_1 T_2 + T_1^2 T_2 + T_2^2 - 2 T_1 T_2^2) \rho_{2,j} \rho_{3,i} x_{2,j} x_{3,i}}{(-1 + T_1) T_1 (-1 + T_2) (-1 + T_1 T_2)} + \frac{\rho_{2,i} \rho_{3,j} x_{2,j} x_{3,i}}{(-1 + T_1) T_1} + \\
 & \frac{(-1 - T_1 + T_1^2 + 2 T_1 T_2 + T_1^2 T_2 + T_2^2 - 3 T_1 T_2^2) \rho_{2,j} \rho_{3,j} x_{2,j} x_{3,i}}{(-1 + T_1) T_1^2 (-1 + T_2) T_2} + \frac{T_2 \rho_{1,i} \rho_{3,j} x_{1,i} x_{3,j}}{(-1 + T_1) (-1 + T_1 T_2)} + \\
 & \frac{(-1 + 2 T_1 T_2 - T_2^2) \rho_{1,j} \rho_{3,j} x_{1,i} x_{3,j}}{T_1 (-1 + T_2) (-1 + T_1 T_2)} - \frac{(-1 - T_2 + T_1 T_2) \rho_{2,i} \rho_{3,j} x_{2,i} x_{3,j}}{T_1 (-1 + T_2) (-1 + T_1 T_2)} + \\
 & \left. \frac{(1 - T_1 + 2 T_2 - 2 T_1 T_2 + T_1^2 T_2 + T_2^2 - 2 T_1 T_2^2) \rho_{2,j} \rho_{3,j} x_{2,i} x_{3,j}}{(-1 + T_1) T_1 T_2 (-1 + T_1 T_2)} \right]]
 \end{aligned}$$

```
In[*]:= MatrixForm@CF[ {
  {r0[1, i, j], r1[1, i, j]},
  {r0[-1, i, j], r1[-1, i, j]},
  {(-a2 + a2 T1 - a4 T1 - a4 T2 + 2 a4 T1 T2), (-b3 + b5 + b3 T1 - b5 T2)}
} /. {b3 -> 0, a4 -> 0, b5 -> T1, a2 -> T1}]
```

Out[*]//MatrixForm=

$$\begin{pmatrix} T_1 p_{3,j} x_{1,i} x_{2,i} - p_{3,j} x_{1,j} x_{2,i} & T_1 p_{1,j} p_{2,i} x_{3,i} - T_1 p_{1,j} p_{2,j} x_{3,i} \\ -\frac{p_{3,j} x_{1,i} x_{2,i}}{T_1 T_2} + \frac{p_{3,j} x_{1,j} x_{2,i}}{T_2} & -p_{1,j} p_{2,i} x_{3,i} + p_{1,j} p_{2,j} x_{3,i} \\ (-1 + T_1) T_1 & -T_1 (-1 + T_2) \end{pmatrix}$$

```
In[*]:= MatrixForm@CF[ {
  {r0[1, i, j], r1[1, i, j]},
  {r0[-1, i, j], r1[-1, i, j]},
  {(-a2 + a2 T1 - a4 T1 - a4 T2 + 2 a4 T1 T2), (-b3 + b5 + b3 T1 - b5 T2)}
} /. {b3 -> 0, a4 -> 0, b5 -> 1, a2 -> 1}]
```

Out[*]//MatrixForm=

$$\begin{pmatrix} p_{3,j} x_{1,i} x_{2,i} - \frac{p_{3,j} x_{1,j} x_{2,i}}{T_1} & p_{1,j} p_{2,i} x_{3,i} - p_{1,j} p_{2,j} x_{3,i} \\ -\frac{p_{3,j} x_{1,i} x_{2,i}}{T_1^2 T_2} + \frac{p_{3,j} x_{1,j} x_{2,i}}{T_1 T_2} & -\frac{p_{1,j} p_{2,i} x_{3,i}}{T_1} + \frac{p_{1,j} p_{2,j} x_{3,i}}{T_1} \\ -1 + T_1 & 1 - T_2 \end{pmatrix}$$

```
In[*]:= MatrixForm@CF[ {
  {r0[1, i, j], r1[1, i, j]},
  {r0[-1, i, j], r1[-1, i, j]},
  {(-a2 + a2 T1 - a4 T1 - a4 T2 + 2 a4 T1 T2), (-b3 + b5 + b3 T1 - b5 T2)}
} /. {b3 -> T2^(1/2), b5 -> -T1^(1/2), a4 -> T1^(1/2), a2 -> -sqrt(T1 T2)}]
```

Out[*]//MatrixForm=

$$\begin{pmatrix} -\sqrt{T_1} T_2 p_{3,j} x_{1,i} x_{2,i} + \sqrt{T_1} p_{3,j} x_{1,i} x_{2,j} & -\sqrt{T_1} p_{1,j} p_{2,i} x_{3,i} + \sqrt{T_2} p_{1,i} p_{2,j} x_{3,i} + (\sqrt{T_1} - \sqrt{T_2}) p_{1,j} p_{2,j} x_{3,i} \\ \frac{p_{3,j} x_{1,i} x_{2,i}}{\sqrt{T_1} T_2} - \frac{p_{3,j} x_{1,i} x_{2,j}}{\sqrt{T_1}} & \frac{p_{1,j} p_{2,i} x_{3,i}}{\sqrt{T_1}} - \frac{p_{1,i} p_{2,j} x_{3,i}}{\sqrt{T_2}} + \frac{(\sqrt{T_1} - \sqrt{T_2}) p_{1,j} p_{2,j} x_{3,i}}{\sqrt{T_1} \sqrt{T_2}} \\ T_1^{3/2} (-1 + T_2) & (\sqrt{T_1} + \sqrt{T_2}) (-1 + \sqrt{T_1} \sqrt{T_2}) \end{pmatrix}$$

```
In[*]:= MatrixForm@CF[ {
  {r0[1, i, j], r1[1, i, j]},
  {r0[-1, i, j], r1[-1, i, j]},
  {(-a2 + a2 T1 - a4 T1 - a4 T2 + 2 a4 T1 T2), (-b3 + b5 + b3 T1 - b5 T2)}
} /. {a2 -> -T2 a4, b5 -> -b3 T1} /. {b3 -> T1 - 1, a4 -> 1}]
```

Out[*]//MatrixForm=

$$\begin{pmatrix} -T_2 p_{3,j} x_{1,i} x_{2,i} + p_{3,j} x_{1,i} x_{2,j} & -((-1 + T_1) T_1 p_{1,j} p_{2,i} x_{3,i}) + (-1 + T_1) p_{1,i} p_{2,j} x_{3,i} + (-1 + T_1)^2 p_{1,j} p_{2,j} x_{3,i} \\ \frac{p_{3,j} x_{1,i} x_{2,i}}{T_1 T_2} - \frac{p_{3,j} x_{1,i} x_{2,j}}{T_1} & (-1 + T_1) p_{1,j} p_{2,i} x_{3,i} - \frac{(-1+T_1) p_{1,i} p_{2,j} x_{3,i}}{T_2} - \frac{(-1+T_1) (-1+T_2) p_{1,j} p_{2,j} x_{3,i}}{T_2} \\ T_1 (-1 + T_2) & (-1 + T_1) (-1 + T_1 T_2) \end{pmatrix}$$

```
In[*]:= MatrixForm@CF[{
  {r0[1, i, j], r1[1, i, j]},
  {r0[-1, i, j], r1[-1, i, j]},
  {(-a2 + a2 T1 - a4 T1 - a4 T2 + 2 a4 T1 T2), (-b3 + b5 + b3 T1 - b5 T2)}
} /. {a2 -> -T2 a4, b5 -> -b3 T1} /. {b3 -> 1, a4 -> 1 - T1^-1}]
```

```
Out[*]//MatrixForm=
(
  - ((-1+T1) T2 p3,j x1,i x2,i) / T1 + ((-1+T1) p3,j x1,i x2,j) / T1 - T1 p1,j p2,i x3,i + p1,i p2,j x3,i + (-1 + T1) p1,j p2,j x3,i
  ( (-1+T1) p3,j x1,i x2,i) / T1^2 T2 - ((-1+T1) p3,j x1,i x2,j) / T1^2 p1,j p2,i x3,i - p1,i p2,j x3,i - ((-1+T2) p1,j p2,j x3,i) / T2
  (-1 + T1) (-1 + T2) -1 + T1 T2
)
```

```
{b3 -> T2^1/2 b3, b5 -> T1^1/2 b5}, {b3 -> T2, b5 -> -T1, a2 -> T1 - T2, a4 -> 1}
```

```
In[*]:= L[Ck[1]]
```

```
Out[*]=
```


```
T1 T2 E[Series[(-p1,k + p1,1+k) x1,k + (-p2,k + p2,1+k) x2,k + (-p3,k + p3,1+k) x3,k,
(C16 + C31 + C46 + C61) p1,k x1,k + (C19 + C34 + C49 + C64) p2,k x2,k +
(-b3 + b5 + b3 T1 - b5 T2) (-a2 + a2 T1 - a4 T1 - a4 T2 + 2 a4 T1 T2) p3,k x3,k] /
(-1 + T1) T1 (-1 + T2) (-1 + T1 T2)]
```

```
In[*]:= Factor[ ( (-b3 + b5 + b3 T1 - b5 T2) (-a2 + a2 T1 - a4 T1 - a4 T2 + 2 a4 T1 T2) p3,k x3,k ) /
  (-1 + T1) T1 (-1 + T2) (-1 + T1 T2) ] /.
  {a2 -> -T2 a4, b5 -> -b3 T1} /. {b3 -> T1 - 1, a4 -> 1}]
```

```
Out[*]=
```

```
p3,k x3,k
```

```
In[*]:= L[Ck[1]] /. C16|19|31|34|46|49|61|64|81|82|84|85 -> 0 /. T2 -> 1
```

Power: Infinite expression $\frac{1}{0}$ encountered. 

```
Out[*]=
```

```
T1 E[Series[(-p1,k + p1,1+k) x1,k + (-p2,k + p2,1+k) x2,k + (-p3,k + p3,1+k) x3,k, ComplexInfinity]]
```

```
In[*]:= L[Ck[-1]]
```

```
Out[*]=
```

```
1 / T1 T2 E[Series[(-p1,k + p1,1+k) x1,k + (-p2,k + p2,1+k) x2,k + (-p3,k + p3,1+k) x3,k,
(-C16 - C31 - C46 - C61) p1,k x1,k + (-C19 - C34 - C49 - C64) p2,k x2,k -
(-b3 + b5 + b3 T1 - b5 T2) (-a2 + a2 T1 - a4 T1 - a4 T2 + 2 a4 T1 T2) p3,k x3,k] /
(-1 + T1) T1 (-1 + T2) (-1 + T1 T2)]
```

Some Knots

```
In[*]:= tab1 = Last /@ Table[K = Knot[n, 1];
```

```
Echo@Timing[K -> Integrate[Series[ $\mathcal{L}[K] \times d$  vs[K],
```

```
{n, 3, 10}];
```

```
In[*]:= tab1[[1]]
```

```
Out[*]=
```

Knot[3, 1] ->

$$\begin{aligned}
 & - \left(i T_1^2 T_2^2 \mathbb{E} \left[\text{Series} \left[0, - \left(-c_{81} - c_{82} - c_{84} - c_{85} + c_{16} T_1 + c_{31} T_1 + c_{46} T_1 + c_{61} T_1 + 5 c_{81} T_1 + 4 c_{82} T_1 + \right. \right. \right. \\
 & \quad 4 c_{84} T_1 + 4 c_{85} T_1 - 3 c_{16} T_1^2 - 3 c_{31} T_1^2 - 3 c_{46} T_1^2 - 3 c_{61} T_1^2 - 10 c_{81} T_1^2 - 8 c_{82} T_1^2 - \\
 & \quad 6 c_{84} T_1^2 - 8 c_{85} T_1^2 + 5 c_{16} T_1^3 + 5 c_{31} T_1^3 + 5 c_{46} T_1^3 + 5 c_{61} T_1^3 + 11 c_{81} T_1^3 + 10 c_{82} T_1^3 + \\
 & \quad 5 c_{84} T_1^3 + 10 c_{85} T_1^3 - 5 c_{16} T_1^4 - 5 c_{31} T_1^4 - 5 c_{46} T_1^4 - 5 c_{61} T_1^4 - 7 c_{81} T_1^4 - 8 c_{82} T_1^4 - \\
 & \quad 2 c_{84} T_1^4 - 8 c_{85} T_1^4 + 2 c_{16} T_1^5 + 2 c_{31} T_1^5 + 2 c_{46} T_1^5 + 2 c_{61} T_1^5 + 2 c_{81} T_1^5 + 4 c_{82} T_1^5 + 4 c_{85} T_1^5 - \\
 & \quad c_{82} T_1^6 - c_{85} T_1^6 - a_2 b_3 T_2 + a_2 b_5 T_2 + c_{19} T_2 + c_{34} T_2 + c_{49} T_2 + c_{64} T_2 + 4 c_{81} T_2 + 5 c_{82} T_2 + \\
 & \quad 4 c_{84} T_2 + 4 c_{85} T_2 + 4 a_2 b_3 T_1 T_2 - a_4 b_3 T_1 T_2 - 3 a_2 b_5 T_1 T_2 + a_4 b_5 T_1 T_2 - 3 c_{16} T_1 T_2 - \\
 & \quad 3 c_{19} T_1 T_2 - 3 c_{31} T_1 T_2 - 3 c_{34} T_1 T_2 - 3 c_{46} T_1 T_2 - 3 c_{49} T_1 T_2 - 3 c_{61} T_1 T_2 - 3 c_{64} T_1 T_2 - \\
 & \quad 17 c_{81} T_1 T_2 - 17 c_{82} T_1 T_2 - 13 c_{84} T_1 T_2 - 13 c_{85} T_1 T_2 - 8 a_2 b_3 T_1^2 T_2 + 3 a_4 b_3 T_1^2 T_2 + \\
 & \quad 5 a_2 b_5 T_1^2 T_2 - 2 a_4 b_5 T_1^2 T_2 + 7 c_{16} T_1^2 T_2 + 5 c_{19} T_1^2 T_2 + 7 c_{31} T_1^2 T_2 + 5 c_{34} T_1^2 T_2 + \\
 & \quad 7 c_{46} T_1^2 T_2 + 5 c_{49} T_1^2 T_2 + 7 c_{61} T_1^2 T_2 + 5 c_{64} T_1^2 T_2 + 28 c_{81} T_1^2 T_2 + 28 c_{82} T_1^2 T_2 + 15 c_{84} T_1^2 T_2 + \\
 & \quad 20 c_{85} T_1^2 T_2 + 10 a_2 b_3 T_1^3 T_2 - 5 a_4 b_3 T_1^3 T_2 - 5 a_2 b_5 T_1^3 T_2 + 3 a_4 b_5 T_1^3 T_2 - 9 c_{16} T_1^3 T_2 - \\
 & \quad 5 c_{19} T_1^3 T_2 - 9 c_{31} T_1^3 T_2 - 5 c_{34} T_1^3 T_2 - 9 c_{46} T_1^3 T_2 - 5 c_{49} T_1^3 T_2 - 9 c_{61} T_1^3 T_2 - 5 c_{64} T_1^3 T_2 - \\
 & \quad 23 c_{81} T_1^3 T_2 - 26 c_{82} T_1^3 T_2 - 8 c_{84} T_1^3 T_2 - 16 c_{85} T_1^3 T_2 - 8 a_2 b_3 T_1^4 T_2 + 5 a_4 b_3 T_1^4 T_2 + \\
 & \quad 3 a_2 b_5 T_1^4 T_2 - 2 a_4 b_5 T_1^4 T_2 + 5 c_{16} T_1^4 T_2 + 3 c_{19} T_1^4 T_2 + 5 c_{31} T_1^4 T_2 + 3 c_{34} T_1^4 T_2 + \\
 & \quad 5 c_{46} T_1^4 T_2 + 3 c_{49} T_1^4 T_2 + 5 c_{61} T_1^4 T_2 + 3 c_{64} T_1^4 T_2 + 7 c_{81} T_1^4 T_2 + 10 c_{82} T_1^4 T_2 - c_{84} T_1^4 T_2 + \\
 & \quad 2 c_{85} T_1^4 T_2 + 4 a_2 b_3 T_1^5 T_2 - 3 a_4 b_3 T_1^5 T_2 - a_2 b_5 T_1^5 T_2 + a_4 b_5 T_1^5 T_2 + 4 c_{16} T_1^5 T_2 - c_{19} T_1^5 T_2 + \\
 & \quad 4 c_{31} T_1^5 T_2 - c_{34} T_1^5 T_2 + 4 c_{46} T_1^5 T_2 - c_{49} T_1^5 T_2 + 4 c_{61} T_1^5 T_2 - c_{64} T_1^5 T_2 + 4 c_{81} T_1^5 T_2 + \\
 & \quad 4 c_{82} T_1^5 T_2 + 3 c_{84} T_1^5 T_2 + 8 c_{85} T_1^5 T_2 - a_2 b_3 T_1^6 T_2 + a_4 b_3 T_1^6 T_2 - 4 c_{16} T_1^6 T_2 - 4 c_{31} T_1^6 T_2 - \\
 & \quad 4 c_{46} T_1^6 T_2 - 4 c_{61} T_1^6 T_2 - 3 c_{81} T_1^6 T_2 - 7 c_{82} T_1^6 T_2 - 8 c_{85} T_1^6 T_2 + 3 c_{82} T_1^7 T_2 + 3 c_{85} T_1^7 T_2 + \\
 & \quad 2 a_2 b_3 T_2^2 - a_4 b_3 T_2^2 - 3 a_2 b_5 T_2^2 + a_4 b_5 T_2^2 - 3 c_{19} T_2^2 - 3 c_{34} T_2^2 - 3 c_{49} T_2^2 - 3 c_{64} T_2^2 - \\
 & \quad 8 c_{81} T_2^2 - 10 c_{82} T_2^2 - 8 c_{84} T_2^2 - 6 c_{85} T_2^2 - 7 a_2 b_3 T_1 T_2^2 + 7 a_4 b_3 T_1 T_2^2 + 8 a_2 b_5 T_1 T_2^2 - \\
 & \quad 7 a_4 b_5 T_1 T_2^2 + 5 c_{16} T_1 T_2^2 + 7 c_{19} T_1 T_2^2 + 5 c_{31} T_1 T_2^2 + 7 c_{34} T_1 T_2^2 + 5 c_{46} T_1 T_2^2 + 7 c_{49} T_1 T_2^2 + \\
 & \quad 5 c_{61} T_1 T_2^2 + 7 c_{64} T_1 T_2^2 + 28 c_{81} T_1 T_2^2 + 28 c_{82} T_1 T_2^2 + 20 c_{84} T_1 T_2^2 + 15 c_{85} T_1 T_2^2 + \\
 & \quad 11 a_2 b_3 T_1^2 T_2^2 - 16 a_4 b_3 T_1^2 T_2^2 - 11 a_2 b_5 T_1^2 T_2^2 + 12 a_4 b_5 T_1^2 T_2^2 - 9 c_{16} T_1^2 T_2^2 - 9 c_{19} T_1^2 T_2^2 - \\
 & \quad 9 c_{31} T_1^2 T_2^2 - 9 c_{34} T_1^2 T_2^2 - 9 c_{46} T_1^2 T_2^2 - 9 c_{49} T_1^2 T_2^2 - 9 c_{61} T_1^2 T_2^2 - 9 c_{64} T_1^2 T_2^2 - 34 c_{81} T_1^2 T_2^2 - \\
 & \quad 34 c_{82} T_1^2 T_2^2 - 14 c_{84} T_1^2 T_2^2 - 14 c_{85} T_1^2 T_2^2 - 8 a_2 b_3 T_1^3 T_2^2 + 21 a_4 b_3 T_1^3 T_2^2 + 7 a_2 b_5 T_1^3 T_2^2 - \\
 & \quad 14 a_4 b_5 T_1^3 T_2^2 + 9 c_{16} T_1^3 T_2^2 + 5 c_{19} T_1^3 T_2^2 + 9 c_{31} T_1^3 T_2^2 + 5 c_{34} T_1^3 T_2^2 + 9 c_{46} T_1^3 T_2^2 + \\
 & \quad 5 c_{49} T_1^3 T_2^2 + 9 c_{61} T_1^3 T_2^2 + 5 c_{64} T_1^3 T_2^2 + 11 c_{81} T_1^3 T_2^2 + 12 c_{82} T_1^3 T_2^2 - 3 c_{84} T_1^3 T_2^2 - \\
 & \quad 4 c_{85} T_1^3 T_2^2 - a_2 b_3 T_1^4 T_2^2 - 15 a_4 b_3 T_1^4 T_2^2 + 6 a_2 b_5 T_1^4 T_2^2 - c_{16} T_1^4 T_2^2 + c_{19} T_1^4 T_2^2 - c_{31} T_1^4 T_2^2 + \\
 & \quad c_{34} T_1^4 T_2^2 - c_{46} T_1^4 T_2^2 + c_{49} T_1^4 T_2^2 - c_{61} T_1^4 T_2^2 + c_{64} T_1^4 T_2^2 + 17 c_{81} T_1^4 T_2^2 + 24 c_{82} T_1^4 T_2^2 + \\
 & \quad 14 c_{84} T_1^4 T_2^2 + 26 c_{85} T_1^4 T_2^2 + 7 a_2 b_3 T_1^5 T_2^2 + 4 a_4 b_3 T_1^5 T_2^2 - 3 a_2 b_5 T_1^5 T_2^2 - a_4 b_5 T_1^5 T_2^2 - \\
 & \quad 10 c_{16} T_1^5 T_2^2 - 3 c_{19} T_1^5 T_2^2 - 10 c_{31} T_1^5 T_2^2 - 3 c_{34} T_1^5 T_2^2 - 10 c_{46} T_1^5 T_2^2 - 3 c_{49} T_1^5 T_2^2 - \\
 & \quad 10 c_{61} T_1^5 T_2^2 - 3 c_{64} T_1^5 T_2^2 - 22 c_{81} T_1^5 T_2^2 - 36 c_{82} T_1^5 T_2^2 - 8 c_{84} T_1^5 T_2^2 - 28 c_{85} T_1^5 T_2^2 - \\
 & \quad 6 a_2 b_3 T_1^6 T_2^2 + 2 a_4 b_3 T_1^6 T_2^2 + 2 a_2 b_5 T_1^6 T_2^2 - 2 a_4 b_5 T_1^6 T_2^2 + 2 c_{16} T_1^6 T_2^2 + 2 c_{19} T_1^6 T_2^2 +
 \end{aligned}$$

$$\begin{aligned}
 & 2 c_{31} T_1^6 T_2^2 + 2 c_{34} T_1^6 T_2^2 + 2 c_{46} T_1^6 T_2^2 + 2 c_{49} T_1^6 T_2^2 + 2 c_{61} T_1^6 T_2^2 + 2 c_{64} T_1^6 T_2^2 + 7 c_{81} T_1^6 T_2^2 + \\
 & 22 c_{82} T_1^6 T_2^2 - c_{84} T_1^6 T_2^2 + 14 c_{85} T_1^6 T_2^2 + 2 a_2 b_3 T_1^7 T_2^2 - 2 a_4 b_3 T_1^7 T_2^2 + 4 c_{16} T_1^7 T_2^2 + \\
 & 4 c_{31} T_1^7 T_2^2 + 4 c_{46} T_1^7 T_2^2 + 4 c_{61} T_1^7 T_2^2 + c_{81} T_1^7 T_2^2 - 4 c_{82} T_1^7 T_2^2 - c_{85} T_1^7 T_2^2 - 2 c_{82} T_1^8 T_2^2 - \\
 & 2 c_{85} T_1^8 T_2^2 - 3 a_2 b_3 T_2^3 + 2 a_4 b_3 T_2^3 + 5 a_2 b_5 T_2^3 - 3 a_4 b_5 T_2^3 + 5 c_{19} T_2^3 + 5 c_{34} T_2^3 + 5 c_{49} T_2^3 + \\
 & 5 c_{64} T_2^3 + 10 c_{81} T_2^3 + 11 c_{82} T_2^3 + 10 c_{84} T_2^3 + 5 c_{85} T_2^3 + 9 a_2 b_3 T_1 T_2^3 - 12 a_4 b_3 T_1 T_2^3 - \\
 & 11 a_2 b_5 T_1 T_2^3 + 16 a_4 b_5 T_1 T_2^3 - 5 c_{16} T_1 T_2^3 - 9 c_{19} T_1 T_2^3 - 5 c_{31} T_1 T_2^3 - 9 c_{34} T_1 T_2^3 - \\
 & 5 c_{46} T_1 T_2^3 - 9 c_{49} T_1 T_2^3 - 5 c_{61} T_1 T_2^3 - 9 c_{64} T_1 T_2^3 - 26 c_{81} T_1 T_2^3 - 23 c_{82} T_1 T_2^3 - \\
 & 16 c_{84} T_1 T_2^3 - 8 c_{85} T_1 T_2^3 - 11 a_2 b_3 T_1^2 T_2^3 + 22 a_4 b_3 T_1^2 T_2^3 + 11 a_2 b_5 T_1^2 T_2^3 - 22 a_4 b_5 T_1^2 T_2^3 + \\
 & 5 c_{16} T_1^2 T_2^3 + 9 c_{19} T_1^2 T_2^3 + 5 c_{31} T_1^2 T_2^3 + 9 c_{34} T_1^2 T_2^3 + 5 c_{46} T_1^2 T_2^3 + 9 c_{49} T_1^2 T_2^3 + 5 c_{61} T_1^2 T_2^3 + \\
 & 9 c_{64} T_1^2 T_2^3 + 12 c_{81} T_1^2 T_2^3 + 11 c_{82} T_1^2 T_2^3 - 4 c_{84} T_1^2 T_2^3 - 3 c_{85} T_1^2 T_2^3 + 2 a_2 b_3 T_1^3 T_2^3 - \\
 & 19 a_4 b_3 T_1^3 T_2^3 + a_2 b_5 T_1^3 T_2^3 + 18 a_4 b_5 T_1^3 T_2^3 - c_{16} T_1^3 T_2^3 - c_{19} T_1^3 T_2^3 - c_{31} T_1^3 T_2^3 - c_{34} T_1^3 T_2^3 - \\
 & c_{46} T_1^3 T_2^3 - c_{49} T_1^3 T_2^3 - c_{61} T_1^3 T_2^3 - c_{64} T_1^3 T_2^3 + 30 c_{81} T_1^3 T_2^3 + 30 c_{82} T_1^3 T_2^3 + 26 c_{84} T_1^3 T_2^3 + \\
 & 26 c_{85} T_1^3 T_2^3 + 13 a_2 b_3 T_1^4 T_2^3 - 2 a_4 b_3 T_1^4 T_2^3 - 13 a_2 b_5 T_1^4 T_2^3 + 5 a_4 b_5 T_1^4 T_2^3 - 8 c_{16} T_1^4 T_2^3 - \\
 & 5 c_{19} T_1^4 T_2^3 - 8 c_{31} T_1^4 T_2^3 - 5 c_{34} T_1^4 T_2^3 - 8 c_{46} T_1^4 T_2^3 - 5 c_{49} T_1^4 T_2^3 - 8 c_{61} T_1^4 T_2^3 - 5 c_{64} T_1^4 T_2^3 - \\
 & 54 c_{81} T_1^4 T_2^3 - 66 c_{82} T_1^4 T_2^3 - 28 c_{84} T_1^4 T_2^3 - 40 c_{85} T_1^4 T_2^3 - 19 a_2 b_3 T_1^5 T_2^3 + 20 a_4 b_3 T_1^5 T_2^3 + \\
 & 13 a_2 b_5 T_1^5 T_2^3 - 11 a_4 b_5 T_1^5 T_2^3 + 13 c_{16} T_1^5 T_2^3 + 3 c_{19} T_1^5 T_2^3 + 13 c_{31} T_1^5 T_2^3 + 3 c_{34} T_1^5 T_2^3 + \\
 & 13 c_{46} T_1^5 T_2^3 + 3 c_{49} T_1^5 T_2^3 + 13 c_{61} T_1^5 T_2^3 + 3 c_{64} T_1^5 T_2^3 + 36 c_{81} T_1^5 T_2^3 + 54 c_{82} T_1^5 T_2^3 + \\
 & 8 c_{84} T_1^5 T_2^3 + 26 c_{85} T_1^5 T_2^3 + 13 a_2 b_3 T_1^6 T_2^3 - 19 a_4 b_3 T_1^6 T_2^3 - 6 a_2 b_5 T_1^6 T_2^3 + 10 a_4 b_5 T_1^6 T_2^3 + \\
 & 5 c_{16} T_1^6 T_2^3 + 5 c_{31} T_1^6 T_2^3 + 5 c_{46} T_1^6 T_2^3 + 5 c_{61} T_1^6 T_2^3 - 4 c_{81} T_1^6 T_2^3 - 17 c_{82} T_1^6 T_2^3 + 4 c_{84} T_1^6 T_2^3 - \\
 & 3 c_{85} T_1^6 T_2^3 - 4 a_2 b_3 T_1^7 T_2^3 + 8 a_4 b_3 T_1^7 T_2^3 - 7 c_{16} T_1^7 T_2^3 - 2 c_{19} T_1^7 T_2^3 - 7 c_{31} T_1^7 T_2^3 - \\
 & 2 c_{34} T_1^7 T_2^3 - 7 c_{46} T_1^7 T_2^3 - 2 c_{49} T_1^7 T_2^3 - 7 c_{61} T_1^7 T_2^3 - 2 c_{64} T_1^7 T_2^3 - 4 c_{81} T_1^7 T_2^3 - 7 c_{82} T_1^7 T_2^3 - \\
 & 8 c_{85} T_1^7 T_2^3 - 2 c_{16} T_1^8 T_2^3 - 2 c_{31} T_1^8 T_2^3 - 2 c_{46} T_1^8 T_2^3 - 2 c_{61} T_1^8 T_2^3 + 7 c_{82} T_1^8 T_2^3 + 5 c_{85} T_1^8 T_2^3 + \\
 & 2 a_2 b_3 T_2^4 - 3 a_4 b_3 T_2^4 - 5 a_2 b_5 T_2^4 + 5 a_4 b_5 T_2^4 - 5 c_{19} T_2^4 - 5 c_{34} T_2^4 - 5 c_{49} T_2^4 - 5 c_{64} T_2^4 - \\
 & 8 c_{81} T_2^4 - 7 c_{82} T_2^4 - 8 c_{84} T_2^4 - 2 c_{85} T_2^4 - 3 a_2 b_3 T_1 T_2^4 + 14 a_4 b_3 T_1 T_2^4 + 7 a_2 b_5 T_1 T_2^4 - \\
 & 21 a_4 b_5 T_1 T_2^4 + 3 c_{16} T_1 T_2^4 + 5 c_{19} T_1 T_2^4 + 3 c_{31} T_1 T_2^4 + 5 c_{34} T_1 T_2^4 + 3 c_{46} T_1 T_2^4 + 5 c_{49} T_1 T_2^4 + \\
 & 3 c_{61} T_1 T_2^4 + 5 c_{64} T_1 T_2^4 + 10 c_{81} T_1 T_2^4 + 7 c_{82} T_1 T_2^4 + 2 c_{84} T_1 T_2^4 - c_{85} T_1 T_2^4 - 5 a_2 b_3 T_1^2 T_2^4 - \\
 & 18 a_4 b_3 T_1^2 T_2^4 + a_2 b_5 T_1^2 T_2^4 + 19 a_4 b_5 T_1^2 T_2^4 + c_{16} T_1^2 T_2^4 - c_{19} T_1^2 T_2^4 + c_{31} T_1^2 T_2^4 - c_{34} T_1^2 T_2^4 + \\
 & c_{46} T_1^2 T_2^4 - c_{49} T_1^2 T_2^4 + c_{61} T_1^2 T_2^4 - c_{64} T_1^2 T_2^4 + 24 c_{81} T_1^2 T_2^4 + 17 c_{82} T_1^2 T_2^4 + 26 c_{84} T_1^2 T_2^4 + \\
 & 14 c_{85} T_1^2 T_2^4 + 24 a_2 b_3 T_1^3 T_2^4 + a_4 b_3 T_1^3 T_2^4 - 21 a_2 b_5 T_1^3 T_2^4 - a_4 b_5 T_1^3 T_2^4 - 5 c_{16} T_1^3 T_2^4 - \\
 & 8 c_{19} T_1^3 T_2^4 - 5 c_{31} T_1^3 T_2^4 - 8 c_{34} T_1^3 T_2^4 - 5 c_{46} T_1^3 T_2^4 - 8 c_{49} T_1^3 T_2^4 - 5 c_{61} T_1^3 T_2^4 - 8 c_{64} T_1^3 T_2^4 - \\
 & 66 c_{81} T_1^3 T_2^4 - 54 c_{82} T_1^3 T_2^4 - 40 c_{84} T_1^3 T_2^4 - 28 c_{85} T_1^3 T_2^4 - 41 a_2 b_3 T_1^4 T_2^4 + 34 a_4 b_3 T_1^4 T_2^4 + \\
 & 33 a_2 b_5 T_1^4 T_2^4 - 37 a_4 b_5 T_1^4 T_2^4 + 8 c_{16} T_1^4 T_2^4 + 8 c_{19} T_1^4 T_2^4 + 8 c_{31} T_1^4 T_2^4 + 8 c_{34} T_1^4 T_2^4 + \\
 & 8 c_{46} T_1^4 T_2^4 + 8 c_{49} T_1^4 T_2^4 + 8 c_{61} T_1^4 T_2^4 + 8 c_{64} T_1^4 T_2^4 + 66 c_{81} T_1^4 T_2^4 + 66 c_{82} T_1^4 T_2^4 + 26 c_{84} T_1^4 T_2^4 + \\
 & 26 c_{85} T_1^4 T_2^4 + 39 a_2 b_3 T_1^5 T_2^4 - 52 a_4 b_3 T_1^5 T_2^4 - 25 a_2 b_5 T_1^5 T_2^4 + 35 a_4 b_5 T_1^5 T_2^4 - 3 c_{16} T_1^5 T_2^4 - \\
 & 3 c_{31} T_1^5 T_2^4 - 3 c_{46} T_1^5 T_2^4 - 3 c_{61} T_1^5 T_2^4 - 24 c_{81} T_1^5 T_2^4 - 30 c_{82} T_1^5 T_2^4 + 2 c_{84} T_1^5 T_2^4 - 4 c_{85} T_1^5 T_2^4 - \\
 & 22 a_2 b_3 T_1^6 T_2^4 + 38 a_4 b_3 T_1^6 T_2^4 + 10 a_2 b_5 T_1^6 T_2^4 - 22 a_4 b_5 T_1^6 T_2^4 - 15 c_{16} T_1^6 T_2^4 - 3 c_{19} T_1^6 T_2^4 - \\
 & 15 c_{31} T_1^6 T_2^4 - 3 c_{34} T_1^6 T_2^4 - 15 c_{46} T_1^6 T_2^4 - 3 c_{49} T_1^6 T_2^4 - 15 c_{61} T_1^6 T_2^4 - 3 c_{64} T_1^6 T_2^4 - \\
 & 10 c_{81} T_1^6 T_2^4 - 11 c_{82} T_1^6 T_2^4 - 8 c_{84} T_1^6 T_2^4 - 14 c_{85} T_1^6 T_2^4 + 6 a_2 b_3 T_1^7 T_2^4 - 14 a_4 b_3 T_1^7 T_2^4 + \\
 & 5 c_{16} T_1^7 T_2^4 + 3 c_{19} T_1^7 T_2^4 + 5 c_{31} T_1^7 T_2^4 + 3 c_{34} T_1^7 T_2^4 + 5 c_{46} T_1^7 T_2^4 + 3 c_{49} T_1^7 T_2^4 + 5 c_{61} T_1^7 T_2^4 + \\
 & 3 c_{64} T_1^7 T_2^4 + 8 c_{81} T_1^7 T_2^4 + 23 c_{82} T_1^7 T_2^4 + 15 c_{85} T_1^7 T_2^4 + 6 c_{16} T_1^8 T_2^4 + c_{19} T_1^8 T_2^4 + 6 c_{31} T_1^8 T_2^4 + \\
 & c_{34} T_1^8 T_2^4 + 6 c_{46} T_1^8 T_2^4 + c_{49} T_1^8 T_2^4 + 6 c_{61} T_1^8 T_2^4 + c_{64} T_1^8 T_2^4 - 11 c_{82} T_1^8 T_2^4 - 6 c_{85} T_1^8 T_2^4 - \\
 & a_2 b_3 T_2^5 + 2 a_4 b_3 T_2^5 + 3 a_2 b_5 T_2^5 - 5 a_4 b_5 T_2^5 + 2 c_{19} T_2^5 + 2 c_{34} T_2^5 + 2 c_{49} T_2^5 + 2 c_{64} T_2^5 + \\
 & 4 c_{81} T_2^5 + 2 c_{82} T_2^5 + 4 c_{84} T_2^5 - 6 a_4 b_3 T_1 T_2^5 + 15 a_4 b_5 T_1 T_2^5 - c_{16} T_1 T_2^5 + 4 c_{19} T_1 T_2^5 - \\
 & c_{31} T_1 T_2^5 + 4 c_{34} T_1 T_2^5 - c_{46} T_1 T_2^5 + 4 c_{49} T_1 T_2^5 - c_{61} T_1 T_2^5 + 4 c_{64} T_1 T_2^5 + 4 c_{81} T_1 T_2^5 + \\
 & 4 c_{82} T_1 T_2^5 + 8 c_{84} T_1 T_2^5 + 3 c_{85} T_1 T_2^5 + 8 a_2 b_3 T_1^2 T_2^5 - 5 a_4 b_3 T_1^2 T_2^5 - 13 a_2 b_5 T_1^2 T_2^5 + \\
 & 2 a_4 b_5 T_1^2 T_2^5 - 3 c_{16} T_1^2 T_2^5 - 10 c_{19} T_1^2 T_2^5 - 3 c_{31} T_1^2 T_2^5 - 10 c_{34} T_1^2 T_2^5 - 3 c_{46} T_1^2 T_2^5 -
 \end{aligned}$$

$$\begin{aligned}
 & 10 c_{49} T_1^2 T_2^5 - 3 c_{61} T_1^2 T_2^5 - 10 c_{64} T_1^2 T_2^5 - 36 c_{81} T_1^2 T_2^5 - 22 c_{82} T_1^2 T_2^5 - 28 c_{84} T_1^2 T_2^5 - \\
 & 8 c_{85} T_1^2 T_2^5 - 22 a_2 b_3 T_1^3 T_2^5 + 37 a_4 b_3 T_1^3 T_2^5 + 33 a_2 b_5 T_1^3 T_2^5 - 34 a_4 b_5 T_1^3 T_2^5 + 3 c_{16} T_1^3 T_2^5 + \\
 & 13 c_{19} T_1^3 T_2^5 + 3 c_{31} T_1^3 T_2^5 + 13 c_{34} T_1^3 T_2^5 + 3 c_{46} T_1^3 T_2^5 + 13 c_{49} T_1^3 T_2^5 + 3 c_{61} T_1^3 T_2^5 + \\
 & 13 c_{64} T_1^3 T_2^5 + 54 c_{81} T_1^3 T_2^5 + 36 c_{82} T_1^3 T_2^5 + 26 c_{84} T_1^3 T_2^5 + 8 c_{85} T_1^3 T_2^5 + 32 a_2 b_3 T_1^4 T_2^5 - \\
 & 74 a_4 b_3 T_1^4 T_2^5 - 40 a_2 b_5 T_1^4 T_2^5 + 74 a_4 b_5 T_1^4 T_2^5 - 3 c_{19} T_1^4 T_2^5 - 3 c_{34} T_1^4 T_2^5 - 3 c_{49} T_1^4 T_2^5 - \\
 & 3 c_{64} T_1^4 T_2^5 - 30 c_{81} T_1^4 T_2^5 - 24 c_{82} T_1^4 T_2^5 - 4 c_{84} T_1^4 T_2^5 + 2 c_{85} T_1^4 T_2^5 - 28 a_2 b_3 T_1^5 T_2^5 + \\
 & 79 a_4 b_3 T_1^5 T_2^5 + 27 a_2 b_5 T_1^5 T_2^5 - 57 a_4 b_5 T_1^5 T_2^5 - 7 c_{16} T_1^5 T_2^5 - 7 c_{19} T_1^5 T_2^5 - 7 c_{31} T_1^5 T_2^5 - \\
 & 7 c_{34} T_1^5 T_2^5 - 7 c_{46} T_1^5 T_2^5 - 7 c_{49} T_1^5 T_2^5 - 7 c_{61} T_1^5 T_2^5 - 7 c_{64} T_1^5 T_2^5 - 12 c_{81} T_1^5 T_2^5 - \\
 & 12 c_{82} T_1^5 T_2^5 - 16 c_{84} T_1^5 T_2^5 - 16 c_{85} T_1^5 T_2^5 + 15 a_2 b_3 T_1^6 T_2^5 - 49 a_4 b_3 T_1^6 T_2^5 - 10 a_2 b_5 T_1^6 T_2^5 + \\
 & 30 a_4 b_5 T_1^6 T_2^5 + 13 c_{16} T_1^6 T_2^5 + 5 c_{19} T_1^6 T_2^5 + 13 c_{31} T_1^6 T_2^5 + 5 c_{34} T_1^6 T_2^5 + 13 c_{46} T_1^6 T_2^5 + \\
 & 5 c_{49} T_1^6 T_2^5 + 13 c_{61} T_1^6 T_2^5 + 5 c_{64} T_1^6 T_2^5 + 26 c_{81} T_1^6 T_2^5 + 34 c_{82} T_1^6 T_2^5 + 10 c_{84} T_1^6 T_2^5 + \\
 & 20 c_{85} T_1^6 T_2^5 - 4 a_2 b_3 T_1^7 T_2^5 + 16 a_4 b_3 T_1^7 T_2^5 + 5 c_{16} T_1^7 T_2^5 - c_{19} T_1^7 T_2^5 + 5 c_{31} T_1^7 T_2^5 - \\
 & c_{34} T_1^7 T_2^5 + 5 c_{46} T_1^7 T_2^5 - c_{49} T_1^7 T_2^5 + 5 c_{61} T_1^7 T_2^5 - c_{64} T_1^7 T_2^5 - 10 c_{81} T_1^7 T_2^5 - 28 c_{82} T_1^7 T_2^5 - \\
 & 13 c_{85} T_1^7 T_2^5 - 10 c_{16} T_1^8 T_2^5 - 3 c_{19} T_1^8 T_2^5 - 10 c_{31} T_1^8 T_2^5 - 3 c_{34} T_1^8 T_2^5 - 10 c_{46} T_1^8 T_2^5 - \\
 & 3 c_{49} T_1^8 T_2^5 - 10 c_{61} T_1^8 T_2^5 - 3 c_{64} T_1^8 T_2^5 + 10 c_{82} T_1^8 T_2^5 + 4 c_{85} T_1^8 T_2^5 - a_4 b_3 T_1^6 T_2^6 - a_2 b_5 T_1^6 T_2^6 + \\
 & 3 a_4 b_5 T_1^6 T_2^6 - c_{81} T_1^6 T_2^6 - c_{84} T_1^6 T_2^6 + 2 a_2 b_3 T_1 T_1^6 T_2^6 + a_4 b_3 T_1 T_1^6 T_2^6 - 3 a_2 b_5 T_1 T_1^6 T_2^6 - 4 a_4 b_5 T_1 T_1^6 T_2^6 - \\
 & 4 c_{19} T_1 T_1^6 T_2^6 - 4 c_{34} T_1 T_1^6 T_2^6 - 4 c_{49} T_1 T_1^6 T_2^6 - 4 c_{64} T_1 T_1^6 T_2^6 - 7 c_{81} T_1 T_1^6 T_2^6 - 3 c_{82} T_1 T_1^6 T_2^6 - 8 c_{84} T_1 T_1^6 T_2^6 - \\
 & 8 a_2 b_3 T_1^2 T_1^6 T_2^6 + 11 a_4 b_3 T_1^2 T_1^6 T_2^6 + 13 a_2 b_5 T_1^2 T_1^6 T_2^6 - 20 a_4 b_5 T_1^2 T_1^6 T_2^6 + 2 c_{16} T_1^2 T_1^6 T_2^6 + 2 c_{19} T_1^2 T_1^6 T_2^6 + \\
 & 2 c_{31} T_1^2 T_1^6 T_2^6 + 2 c_{34} T_1^2 T_1^6 T_2^6 + 2 c_{46} T_1^2 T_1^6 T_2^6 + 2 c_{49} T_1^2 T_1^6 T_2^6 + 2 c_{61} T_1^2 T_1^6 T_2^6 + 2 c_{64} T_1^2 T_1^6 T_2^6 + 22 c_{81} T_1^2 T_1^6 T_2^6 + \\
 & 7 c_{82} T_1^2 T_1^6 T_2^6 + 14 c_{84} T_1^2 T_1^6 T_2^6 - c_{85} T_1^2 T_1^6 T_2^6 + 16 a_2 b_3 T_1^3 T_1^6 T_2^6 - 35 a_4 b_3 T_1^3 T_1^6 T_2^6 - 25 a_2 b_5 T_1^3 T_1^6 T_2^6 + \\
 & 52 a_4 b_5 T_1^3 T_1^6 T_2^6 + 5 c_{19} T_1^3 T_1^6 T_2^6 + 5 c_{34} T_1^3 T_1^6 T_2^6 + 5 c_{49} T_1^3 T_1^6 T_2^6 + 5 c_{64} T_1^3 T_1^6 T_2^6 - 17 c_{81} T_1^3 T_1^6 T_2^6 - \\
 & 4 c_{82} T_1^3 T_1^6 T_2^6 - 3 c_{84} T_1^3 T_1^6 T_2^6 + 4 c_{85} T_1^3 T_1^6 T_2^6 - 20 a_2 b_3 T_1^4 T_1^6 T_2^6 + 57 a_4 b_3 T_1^4 T_1^6 T_2^6 + 27 a_2 b_5 T_1^4 T_1^6 T_2^6 - \\
 & 79 a_4 b_5 T_1^4 T_1^6 T_2^6 - 3 c_{16} T_1^4 T_1^6 T_2^6 - 15 c_{19} T_1^4 T_1^6 T_2^6 - 3 c_{31} T_1^4 T_1^6 T_2^6 - 15 c_{34} T_1^4 T_1^6 T_2^6 - 3 c_{46} T_1^4 T_1^6 T_2^6 - \\
 & 15 c_{49} T_1^4 T_1^6 T_2^6 - 3 c_{61} T_1^4 T_1^6 T_2^6 - 15 c_{64} T_1^4 T_1^6 T_2^6 - 11 c_{81} T_1^4 T_1^6 T_2^6 - 10 c_{82} T_1^4 T_1^6 T_2^6 - 14 c_{84} T_1^4 T_1^6 T_2^6 - \\
 & 8 c_{85} T_1^4 T_1^6 T_2^6 + 16 a_2 b_3 T_1^5 T_1^6 T_2^6 - 55 a_4 b_3 T_1^5 T_1^6 T_2^6 - 17 a_2 b_5 T_1^5 T_1^6 T_2^6 + 55 a_4 b_5 T_1^5 T_1^6 T_2^6 + 5 c_{16} T_1^5 T_1^6 T_2^6 + \\
 & 13 c_{19} T_1^5 T_1^6 T_2^6 + 5 c_{31} T_1^5 T_1^6 T_2^6 + 13 c_{34} T_1^5 T_1^6 T_2^6 + 5 c_{46} T_1^5 T_1^6 T_2^6 + 13 c_{49} T_1^5 T_1^6 T_2^6 + 5 c_{61} T_1^5 T_1^6 T_2^6 + \\
 & 13 c_{64} T_1^5 T_1^6 T_2^6 + 34 c_{81} T_1^5 T_1^6 T_2^6 + 26 c_{82} T_1^5 T_1^6 T_2^6 + 20 c_{84} T_1^5 T_1^6 T_2^6 + 10 c_{85} T_1^5 T_1^6 T_2^6 - 8 a_2 b_3 T_1^6 T_1^6 T_2^6 + \\
 & 32 a_4 b_3 T_1^6 T_1^6 T_2^6 + 6 a_2 b_5 T_1^6 T_1^6 T_2^6 - 26 a_4 b_5 T_1^6 T_1^6 T_2^6 - c_{16} T_1^6 T_1^6 T_2^6 - c_{19} T_1^6 T_1^6 T_2^6 - c_{31} T_1^6 T_1^6 T_2^6 - c_{34} T_1^6 T_1^6 T_2^6 - \\
 & c_{46} T_1^6 T_1^6 T_2^6 - c_{49} T_1^6 T_1^6 T_2^6 - c_{61} T_1^6 T_1^6 T_2^6 - c_{64} T_1^6 T_1^6 T_2^6 - 28 c_{81} T_1^6 T_1^6 T_2^6 - 28 c_{82} T_1^6 T_1^6 T_2^6 - 8 c_{84} T_1^6 T_1^6 T_2^6 - \\
 & 8 c_{85} T_1^6 T_1^6 T_2^6 + 2 a_2 b_3 T_1^7 T_1^6 T_2^6 - 10 a_4 b_3 T_1^7 T_1^6 T_2^6 - 13 c_{16} T_1^7 T_1^6 T_2^6 - 5 c_{19} T_1^7 T_1^6 T_2^6 - 13 c_{31} T_1^7 T_1^6 T_2^6 - \\
 & 5 c_{34} T_1^7 T_1^6 T_2^6 - 13 c_{46} T_1^7 T_1^6 T_2^6 - 5 c_{49} T_1^7 T_1^6 T_2^6 - 13 c_{61} T_1^7 T_1^6 T_2^6 - 5 c_{64} T_1^7 T_1^6 T_2^6 + 8 c_{81} T_1^7 T_1^6 T_2^6 + \\
 & 17 c_{82} T_1^7 T_1^6 T_2^6 + 4 c_{85} T_1^7 T_1^6 T_2^6 + 10 c_{16} T_1^8 T_1^6 T_2^6 + 5 c_{19} T_1^8 T_1^6 T_2^6 + 10 c_{31} T_1^8 T_1^6 T_2^6 + 5 c_{34} T_1^8 T_1^6 T_2^6 + \\
 & 10 c_{46} T_1^8 T_1^6 T_2^6 + 5 c_{49} T_1^8 T_1^6 T_2^6 + 10 c_{61} T_1^8 T_1^6 T_2^6 + 5 c_{64} T_1^8 T_1^6 T_2^6 - 5 c_{82} T_1^8 T_1^6 T_2^6 - c_{85} T_1^8 T_1^6 T_2^6 - a_4 b_5 T_1^7 T_2^7 + \\
 & 2 a_4 b_3 T_1 T_1^7 T_2^7 + 2 a_2 b_5 T_1 T_1^7 T_2^7 - 2 a_4 b_5 T_1 T_1^7 T_2^7 + 3 c_{81} T_1 T_1^7 T_2^7 + 3 c_{84} T_1 T_1^7 T_2^7 - 10 a_4 b_3 T_1^2 T_1^7 T_2^7 - \\
 & 6 a_2 b_5 T_1^2 T_1^7 T_2^7 + 19 a_4 b_5 T_1^2 T_1^7 T_2^7 + 4 c_{19} T_1^2 T_1^7 T_2^7 + 4 c_{34} T_1^2 T_1^7 T_2^7 + 4 c_{49} T_1^2 T_1^7 T_2^7 + 4 c_{64} T_1^2 T_1^7 T_2^7 - \\
 & 4 c_{81} T_1^2 T_1^7 T_2^7 + c_{82} T_1^2 T_1^7 T_2^7 - c_{84} T_1^2 T_1^7 T_2^7 + 22 a_4 b_3 T_1^3 T_1^7 T_2^7 + 10 a_2 b_5 T_1^3 T_1^7 T_2^7 - 38 a_4 b_5 T_1^3 T_1^7 T_2^7 - \\
 & 2 c_{16} T_1^3 T_1^7 T_2^7 - 7 c_{19} T_1^3 T_1^7 T_2^7 - 2 c_{31} T_1^3 T_1^7 T_2^7 - 7 c_{34} T_1^3 T_1^7 T_2^7 - 2 c_{46} T_1^3 T_1^7 T_2^7 - 7 c_{49} T_1^3 T_1^7 T_2^7 - 2 c_{61} T_1^3 T_1^7 T_2^7 - \\
 & 7 c_{64} T_1^3 T_1^7 T_2^7 - 7 c_{81} T_1^3 T_1^7 T_2^7 - 4 c_{82} T_1^3 T_1^7 T_2^7 - 8 c_{84} T_1^3 T_1^7 T_2^7 - 30 a_4 b_3 T_1^4 T_1^7 T_2^7 - 10 a_2 b_5 T_1^4 T_1^7 T_2^7 + \\
 & 49 a_4 b_5 T_1^4 T_1^7 T_2^7 + 3 c_{16} T_1^4 T_1^7 T_2^7 + 5 c_{19} T_1^4 T_1^7 T_2^7 + 3 c_{31} T_1^4 T_1^7 T_2^7 + 5 c_{34} T_1^4 T_1^7 T_2^7 + 3 c_{46} T_1^4 T_1^7 T_2^7 + \\
 & 5 c_{49} T_1^4 T_1^7 T_2^7 + 3 c_{61} T_1^4 T_1^7 T_2^7 + 5 c_{64} T_1^4 T_1^7 T_2^7 + 23 c_{81} T_1^4 T_1^7 T_2^7 + 8 c_{82} T_1^4 T_1^7 T_2^7 + 15 c_{84} T_1^4 T_1^7 T_2^7 + \\
 & 26 a_4 b_3 T_1^5 T_1^7 T_2^7 + 6 a_2 b_5 T_1^5 T_1^7 T_2^7 - 32 a_4 b_5 T_1^5 T_1^7 T_2^7 - c_{16} T_1^5 T_1^7 T_2^7 + 5 c_{19} T_1^5 T_1^7 T_2^7 - c_{31} T_1^5 T_1^7 T_2^7 + \\
 & 5 c_{34} T_1^5 T_1^7 T_2^7 - c_{46} T_1^5 T_1^7 T_2^7 + 5 c_{49} T_1^5 T_1^7 T_2^7 - c_{61} T_1^5 T_1^7 T_2^7 + 5 c_{64} T_1^5 T_1^7 T_2^7 - 28 c_{81} T_1^5 T_1^7 T_2^7 - 10 c_{82} T_1^5 T_1^7 T_2^7 - \\
 & 13 c_{84} T_1^5 T_1^7 T_2^7 - 14 a_4 b_3 T_1^6 T_1^7 T_2^7 - 2 a_2 b_5 T_1^6 T_1^7 T_2^7 + 14 a_4 b_5 T_1^6 T_1^7 T_2^7 - 5 c_{16} T_1^6 T_1^7 T_2^7 - 13 c_{19} T_1^6 T_1^7 T_2^7 - \\
 & 5 c_{31} T_1^6 T_1^7 T_2^7 - 13 c_{34} T_1^6 T_1^7 T_2^7 - 5 c_{46} T_1^6 T_1^7 T_2^7 - 13 c_{49} T_1^6 T_1^7 T_2^7 - 5 c_{61} T_1^6 T_1^7 T_2^7 - 13 c_{64} T_1^6 T_1^7 T_2^7 + \\
 & 17 c_{81} T_1^6 T_1^7 T_2^7 + 8 c_{82} T_1^6 T_1^7 T_2^7 + 4 c_{84} T_1^6 T_1^7 T_2^7 + 4 a_4 b_3 T_1^7 T_1^7 T_2^7 + 11 c_{16} T_1^7 T_1^7 T_2^7 + 11 c_{19} T_1^7 T_1^7 T_2^7 + \\
 & 11 c_{31} T_1^7 T_1^7 T_2^7 + 11 c_{34} T_1^7 T_1^7 T_2^7 + 11 c_{46} T_1^7 T_1^7 T_2^7 + 11 c_{49} T_1^7 T_1^7 T_2^7 + 11 c_{61} T_1^7 T_1^7 T_2^7 + 11 c_{64} T_1^7 T_1^7 T_2^7 -
 \end{aligned}$$

$$\begin{aligned}
 & 4 c_{81} T_1^7 T_2^7 - 4 c_{82} T_1^7 T_2^7 - 6 c_{16} T_1^8 T_2^7 - 5 c_{19} T_1^8 T_2^7 - 6 c_{31} T_1^8 T_2^7 - 5 c_{34} T_1^8 T_2^7 - 6 c_{46} T_1^8 T_2^7 - \\
 & 5 c_{49} T_1^8 T_2^7 - 6 c_{61} T_1^8 T_2^7 - 5 c_{64} T_1^8 T_2^7 + c_{82} T_1^8 T_2^7 + 2 a_4 b_5 T_1 T_2^8 - 8 a_4 b_5 T_1^2 T_2^8 - \\
 & 2 c_{81} T_1^2 T_2^8 - 2 c_{84} T_1^2 T_2^8 + 14 a_4 b_5 T_1^3 T_2^8 - 2 c_{19} T_1^3 T_2^8 - 2 c_{34} T_1^3 T_2^8 - 2 c_{49} T_1^3 T_2^8 - \\
 & 2 c_{64} T_1^3 T_2^8 + 7 c_{81} T_1^3 T_2^8 + 5 c_{84} T_1^3 T_2^8 - 16 a_4 b_5 T_1^4 T_2^8 + c_{16} T_1^4 T_2^8 + 6 c_{19} T_1^4 T_2^8 + c_{31} T_1^4 T_2^8 + \\
 & 6 c_{34} T_1^4 T_2^8 + c_{46} T_1^4 T_2^8 + 6 c_{49} T_1^4 T_2^8 + c_{61} T_1^4 T_2^8 + 6 c_{64} T_1^4 T_2^8 - 11 c_{81} T_1^4 T_2^8 - 6 c_{84} T_1^4 T_2^8 + \\
 & 10 a_4 b_5 T_1^5 T_2^8 - 3 c_{16} T_1^5 T_2^8 - 10 c_{19} T_1^5 T_2^8 - 3 c_{31} T_1^5 T_2^8 - 10 c_{34} T_1^5 T_2^8 - 3 c_{46} T_1^5 T_2^8 - \\
 & 10 c_{49} T_1^5 T_2^8 - 3 c_{61} T_1^5 T_2^8 - 10 c_{64} T_1^5 T_2^8 + 10 c_{81} T_1^5 T_2^8 + 4 c_{84} T_1^5 T_2^8 - 4 a_4 b_5 T_1^6 T_2^8 + \\
 & 5 c_{16} T_1^6 T_2^8 + 10 c_{19} T_1^6 T_2^8 + 5 c_{31} T_1^6 T_2^8 + 10 c_{34} T_1^6 T_2^8 + 5 c_{46} T_1^6 T_2^8 + 10 c_{49} T_1^6 T_2^8 + \\
 & 5 c_{61} T_1^6 T_2^8 + 10 c_{64} T_1^6 T_2^8 - 5 c_{81} T_1^6 T_2^8 - c_{84} T_1^6 T_2^8 - 5 c_{16} T_1^7 T_2^8 - 6 c_{19} T_1^7 T_2^8 - 5 c_{31} T_1^7 T_2^8 - \\
 & 6 c_{34} T_1^7 T_2^8 - 5 c_{46} T_1^7 T_2^8 - 6 c_{49} T_1^7 T_2^8 - 5 c_{61} T_1^7 T_2^8 - 6 c_{64} T_1^7 T_2^8 + c_{81} T_1^7 T_2^8 + 2 c_{16} T_1^8 T_2^8 + \\
 & 2 c_{19} T_1^8 T_2^8 + 2 c_{31} T_1^8 T_2^8 + 2 c_{34} T_1^8 T_2^8 + 2 c_{46} T_1^8 T_2^8 + 2 c_{49} T_1^8 T_2^8 + 2 c_{61} T_1^8 T_2^8 + 2 c_{64} T_1^8 T_2^8) / \\
 & ((-1 + T_1) (1 - T_1 + T_1^2)^2 (-1 + T_2) (-1 + T_1 T_2) (1 - T_2 + T_2^2)^2 (1 - T_1 T_2 + T_1^2 T_2^2))) / \\
 & ((1 - T_1 + T_1^2) (1 - T_2 + T_2^2) (1 - T_1 T_2 + T_1^2 T_2^2)))
 \end{aligned}$$

Factor [Cases [tab1, eSeries [0, e_] => e, inf] /. C_16|19|31|34|46|49|61|64|81|82|84|85 -> 0]

In[]:=

$$(-b_3 + b_5 + b_3 T_1 - b_5 T_2) (-a_2 + a_2 T_1 - a_4 T_1 - a_4 T_2 + 2 a_4 T_1 T_2)$$

Out[]:=

$$\begin{aligned}
 & \left\{ - \frac{T_2 (-1 + T_1 - T_1^2 + T_2 - T_1^2 T_2 + 2 T_1^3 T_2 - T_2^2 - T_1 T_2^2 + T_1^2 T_2^2 - 2 T_1^3 T_2^2 + 2 T_1 T_2^3 - 2 T_1^2 T_2^3 + 2 T_1^3 T_2^3)}{(-1 + T_1) (1 - T_1 + T_1^2) (-1 + T_2) (-1 + T_1 T_2) (1 - T_2 + T_2^2) (1 - T_1 T_2 + T_1^2 T_2^2)}, \right. \\
 & - \frac{1 + T_1 T_2}{(-1 + T_1) T_1 (-1 + T_2) (1 - 3 T_1 T_2 + T_1^2 T_2^2)}, \\
 & - \left((T_2 (-1 + T_1 - T_1^2 + T_1^3 - T_1^4 + T_2 - T_1^4 T_2 + 2 T_1^5 T_2 - T_2^2 - 2 T_1^2 T_2^2 + 2 T_1^3 T_2^2 - T_1^4 T_2^2 + T_1^5 T_2^2 - 3 T_1^6 T_2^2 + T_2^3 + \right. \\
 & \quad 2 T_1^2 T_2^3 - 2 T_1^4 T_2^3 + 2 T_1^5 T_2^3 - T_1^6 T_2^3 + 4 T_1^7 T_2^3 - T_2^4 - T_1 T_2^4 - T_1^2 T_2^4 - 2 T_1^3 T_2^4 + 2 T_1^4 T_2^4 - 2 T_1^5 T_2^4 + \\
 & \quad T_1^6 T_2^4 - 4 T_1^7 T_2^4 + 2 T_1 T_2^5 + T_1^2 T_2^5 + 2 T_1^3 T_2^5 - 2 T_1^4 T_2^5 + 2 T_1^5 T_2^5 - T_1^6 T_2^5 + 4 T_1^7 T_2^5 - 3 T_1^2 T_2^6 - \\
 & \quad T_1^3 T_2^6 + T_1^4 T_2^6 - T_1^5 T_2^6 + T_1^6 T_2^6 - 4 T_1^7 T_2^6 + 4 T_1^3 T_2^7 - 4 T_1^4 T_2^7 + 4 T_1^5 T_2^7 - 4 T_1^6 T_2^7 + 4 T_1^7 T_2^7) / \\
 & \quad \left. ((-1 + T_1) (1 - T_1 + T_1^2 - T_1^3 + T_1^4) (-1 + T_2) (-1 + T_1 T_2) (1 - T_2 + T_2^2 - T_2^3 + T_2^4) (1 - T_1 T_2 + T_1^2 T_2^2 - T_1^3 T_2^3 + T_1^4 T_2^4)) \right), \\
 & - \left((-7 + 17 T_1 - 7 T_1^2 + 17 T_2 - 44 T_1 T_2 + 26 T_1^2 T_2 - 3 T_1^3 T_2 - 7 T_2^2 + 26 T_1 T_2^2 - 24 T_1^2 T_2^2 - 14 T_1^3 T_2^2 + \right. \\
 & \quad 9 T_1^4 T_2^2 - 3 T_1 T_2^3 - 14 T_1^2 T_2^3 + 56 T_1^3 T_2^3 - 23 T_1^4 T_2^3 + 9 T_1^5 T_2^3 - 23 T_1^6 T_2^3 + 9 T_1^7 T_2^3) / ((-2 + T_1) (-1 + T_1) \\
 & \quad T_1 (-1 + 2 T_1) (-2 + T_2) (-1 + T_2) (-1 + 2 T_2) (-2 + T_1 T_2) (-1 + T_1 T_2) (-1 + 2 T_1 T_2)) \right), \\
 & - \left((T_2 (-1 + T_1 - T_1^2 + T_1^3 - T_1^4 + T_1^5 - T_1^6 + T_2 - T_1^6 T_2 + 2 T_1^7 T_2 - T_2^2 - 2 T_1^2 T_2^2 + 2 T_1^3 T_2^2 - 2 T_1^4 T_2^2 + 2 T_1^5 T_2^2 - \right. \\
 & \quad T_1^6 T_2^2 + T_1^7 T_2^2 - 3 T_1^8 T_2^2 + T_2^3 + 2 T_1^2 T_2^3 - 2 T_1^6 T_2^3 + 2 T_1^7 T_2^3 - T_1^8 T_2^3 + 4 T_1^9 T_2^3 - T_2^4 - 2 T_1^2 T_2^4 - 3 T_1^4 T_2^4 + \\
 & \quad 3 T_1^5 T_2^4 - T_1^6 T_2^4 + 2 T_1^7 T_2^4 - 3 T_1^8 T_2^4 + T_1^9 T_2^4 - 5 T_1^{10} T_2^4 + T_2^5 + 2 T_1^2 T_2^5 + 3 T_1^4 T_2^5 - 3 T_1^6 T_2^5 + 2 T_1^7 T_2^5 - \\
 & \quad 2 T_1^8 T_2^5 + 4 T_1^9 T_2^5 - T_1^{10} T_2^5 + 6 T_1^{11} T_2^5 - T_2^6 - T_1 T_2^6 - T_1^2 T_2^6 - 2 T_1^3 T_2^6 - T_1^4 T_2^6 - 3 T_1^5 T_2^6 + 3 T_1^6 T_2^6 - \\
 & \quad 2 T_1^7 T_2^6 + 2 T_1^8 T_2^6 - 4 T_1^9 T_2^6 + T_1^{10} T_2^6 - 6 T_1^{11} T_2^6 + 2 T_1 T_2^7 + T_1^2 T_2^7 + 2 T_1^3 T_2^7 + 2 T_1^4 T_2^7 + 2 T_1^5 T_2^7 - \\
 & \quad 2 T_1^6 T_2^7 + 2 T_1^7 T_2^7 - 2 T_1^8 T_2^7 + 4 T_1^9 T_2^7 - T_1^{10} T_2^7 + 6 T_1^{11} T_2^7 - 3 T_1^2 T_2^8 - T_1^3 T_2^8 - 3 T_1^4 T_2^8 - 2 T_1^5 T_2^8 + \\
 & \quad 2 T_1^6 T_2^8 - 2 T_1^7 T_2^8 + 2 T_1^8 T_2^8 - 4 T_1^9 T_2^8 + T_1^{10} T_2^8 - 6 T_1^{11} T_2^8 + 4 T_1^3 T_2^9 + T_1^4 T_2^9 + 4 T_1^5 T_2^9 - 4 T_1^6 T_2^9 + \\
 & \quad 4 T_1^7 T_2^9 - 4 T_1^8 T_2^9 + 4 T_1^9 T_2^9 - T_1^{10} T_2^9 + 6 T_1^{11} T_2^9 - 5 T_1^4 T_2^{10} - T_1^5 T_2^{10} + T_1^6 T_2^{10} - T_1^7 T_2^{10} + T_1^8 T_2^{10} - T_1^9 T_2^{10} + \\
 & \quad T_1^{10} T_2^{10} - 6 T_1^{11} T_2^{10} + 6 T_1^5 T_2^{11} - 6 T_1^6 T_2^{11} + 6 T_1^7 T_2^{11} - 6 T_1^8 T_2^{11} + 6 T_1^9 T_2^{11} - 6 T_1^{10} T_2^{11} + 6 T_1^{11} T_2^{11})) / \\
 & \quad \left. ((-1 + T_1) (1 - T_1 + T_1^2 - T_1^3 + T_1^4 - T_1^5 + T_1^6) (-1 + T_2) (-1 + T_1 T_2) (1 - T_2 + T_2^2 - T_2^3 + T_2^4 - T_2^5 + T_2^6) \right. \\
 & \quad \left. (1 - T_1 T_2 + T_1^2 T_2^2 - T_1^3 T_2^3 + T_1^4 T_2^4 - T_1^5 T_2^5 + T_1^6 T_2^6)) \right), \\
 & - \left((-18 + 40 T_1 - 18 T_1^2 + 40 T_2 - 111 T_1 T_2 + 99 T_1^2 T_2 - 23 T_1^3 T_2 - 18 T_2^2 + 99 T_1 T_2^2 - 132 T_1^2 T_2^2 - \right. \\
 & \quad \left. 27 T_1^3 T_2^2 + 36 T_1^4 T_2^2 - 23 T_1 T_2^3 - 27 T_1^2 T_2^3 + 183 T_1^3 T_2^3 - 86 T_1^4 T_2^3 + 36 T_1^5 T_2^3 - 86 T_1^6 T_2^3 + 36 T_1^7 T_2^3) / \right.
 \end{aligned}$$

$$\begin{aligned}
 & \left((-1 + T_1) T_1 (3 - 7 T_1 + 3 T_1^2) (-1 + T_2) (-1 + T_1 T_2) (3 - 7 T_2 + 3 T_2^2) (3 - 7 T_1 T_2 + 3 T_1^2 T_2^2) \right), \\
 & - \left(T_2 (-1 + T_1 - T_1^2 + T_1^3 - T_1^4 + T_1^5 - T_1^6 + T_1^7 - T_1^8 + T_2 - T_1^8 T_2 + 2 T_1^9 T_2 - T_2^2 - 2 T_1^2 T_2^2 + 2 T_1^3 T_2^2 - 2 T_1^4 T_2^2 + \right. \\
 & \quad 2 T_1^5 T_2^2 - 2 T_1^6 T_2^2 + 2 T_1^7 T_2^2 - T_1^8 T_2^2 + T_1^9 T_2^2 - 3 T_1^{10} T_2^2 + T_2^3 + 2 T_1^2 T_2^3 - 2 T_1^3 T_2^3 + 2 T_1^4 T_2^3 - T_1^{10} T_2^3 + \\
 & \quad 4 T_1^{11} T_2^3 - T_2^4 - 2 T_1^2 T_2^4 - 3 T_1^3 T_2^4 + 3 T_1^4 T_2^4 - 3 T_1^5 T_2^4 - 3 T_1^6 T_2^4 + 3 T_1^7 T_2^4 - T_1^8 T_2^4 + 2 T_1^9 T_2^4 - 3 T_1^{10} T_2^4 + T_1^{11} T_2^4 - \\
 & \quad 5 T_1^{12} T_2^4 + T_2^5 + 2 T_1^2 T_2^5 + 3 T_1^3 T_2^5 - 3 T_1^4 T_2^5 + 2 T_1^5 T_2^5 - 2 T_1^6 T_2^5 + 4 T_1^{11} T_2^5 - T_1^{12} T_2^5 + 6 T_1^{13} T_2^5 - T_2^6 - \\
 & \quad 2 T_1^2 T_2^6 - 3 T_1^3 T_2^6 - 4 T_1^4 T_2^6 + 4 T_1^5 T_2^6 - T_1^6 T_2^6 + 3 T_1^7 T_2^6 - 3 T_1^8 T_2^6 + 2 T_1^9 T_2^6 - 3 T_1^{10} T_2^6 + 2 T_1^{11} T_2^6 - 5 T_1^{12} T_2^6 + T_1^{13} T_2^6 - \\
 & \quad 7 T_1^{14} T_2^6 + T_2^7 + 2 T_1^2 T_2^7 + 3 T_1^3 T_2^7 + 4 T_1^4 T_2^7 - 4 T_1^5 T_2^7 + 2 T_1^6 T_2^7 - 3 T_1^7 T_2^7 + 4 T_1^{11} T_2^7 - 2 T_1^{12} T_2^7 + \\
 & \quad 6 T_1^{13} T_2^7 - T_1^{14} T_2^7 + 8 T_1^{15} T_2^7 - T_2^8 - T_1 T_2^8 - T_1^2 T_2^8 - 2 T_1^3 T_2^8 - T_1^4 T_2^8 - 3 T_1^5 T_2^8 - T_1^6 T_2^8 - 4 T_1^7 T_2^8 + \\
 & \quad 4 T_1^8 T_2^8 - 2 T_1^9 T_2^8 + 3 T_1^{10} T_2^8 - 4 T_1^{11} T_2^8 + 2 T_1^{12} T_2^8 - 6 T_1^{13} T_2^8 + T_1^{14} T_2^8 - 8 T_1^{15} T_2^8 + 2 T_1 T_2^9 + T_1^2 T_2^9 + \\
 & \quad 2 T_1^3 T_2^9 + 2 T_1^4 T_2^9 + 2 T_1^5 T_2^9 + 3 T_1^6 T_2^9 + 2 T_1^7 T_2^9 - 2 T_1^8 T_2^9 + 2 T_1^9 T_2^9 - 3 T_1^{10} T_2^9 + 4 T_1^{11} T_2^9 - 2 T_1^{12} T_2^9 + \\
 & \quad 6 T_1^{13} T_2^9 - T_1^{14} T_2^9 + 8 T_1^{15} T_2^9 - 3 T_1^2 T_2^{10} - T_1^3 T_2^{10} - 3 T_1^4 T_2^{10} - 2 T_1^5 T_2^{10} - 3 T_1^6 T_2^{10} - 3 T_1^7 T_2^{10} + \\
 & \quad 3 T_1^8 T_2^{10} - 3 T_1^9 T_2^{10} + 3 T_1^{10} T_2^{10} - 4 T_1^{11} T_2^{10} + 2 T_1^{12} T_2^{10} - 6 T_1^{13} T_2^{10} + T_1^{14} T_2^{10} - 8 T_1^{15} T_2^{10} + 4 T_1^3 T_2^{11} + \\
 & \quad T_1^4 T_2^{11} + 4 T_1^5 T_2^{11} + 2 T_1^6 T_2^{11} + 4 T_1^7 T_2^{11} - 4 T_1^8 T_2^{11} + 4 T_1^9 T_2^{11} - 4 T_1^{10} T_2^{11} + 4 T_1^{11} T_2^{11} - 2 T_1^{12} T_2^{11} + \\
 & \quad 6 T_1^{13} T_2^{11} - T_1^{14} T_2^{11} + 8 T_1^{15} T_2^{11} - 5 T_1^4 T_2^{12} - T_1^5 T_2^{12} - 5 T_1^6 T_2^{12} - 2 T_1^7 T_2^{12} + 2 T_1^8 T_2^{12} - 2 T_1^9 T_2^{12} + \\
 & \quad 2 T_1^{10} T_2^{12} - 2 T_1^{11} T_2^{12} + 2 T_1^{12} T_2^{12} - 6 T_1^{13} T_2^{12} + T_1^{14} T_2^{12} - 8 T_1^{15} T_2^{12} + 6 T_1^5 T_2^{13} + T_1^6 T_2^{13} + 6 T_1^7 T_2^{13} - \\
 & \quad 6 T_1^8 T_2^{13} + 6 T_1^9 T_2^{13} - 6 T_1^{10} T_2^{13} + 6 T_1^{11} T_2^{13} - 6 T_1^{12} T_2^{13} + 6 T_1^{13} T_2^{13} - T_1^{14} T_2^{13} + 8 T_1^{15} T_2^{13} - 7 T_1^6 T_2^{14} - \\
 & \quad T_1^7 T_2^{14} + T_1^8 T_2^{14} - T_1^9 T_2^{14} + T_1^{10} T_2^{14} - T_1^{11} T_2^{14} + T_1^{12} T_2^{14} - T_1^{13} T_2^{14} + T_1^{14} T_2^{14} - 8 T_1^{15} T_2^{14} + 8 T_1^7 T_2^{15} - \\
 & \quad 8 T_1^8 T_2^{15} + 8 T_1^9 T_2^{15} - 8 T_1^{10} T_2^{15} + 8 T_1^{11} T_2^{15} - 8 T_1^{12} T_2^{15} + 8 T_1^{13} T_2^{15} - 8 T_1^{14} T_2^{15} + 8 T_1^{15} T_2^{15}) \Big) / \\
 & \left((-1 + T_1) (1 - T_1 + T_1^2) (1 - T_1^3 + T_1^6) (-1 + T_2) (-1 + T_1 T_2) (1 - T_2 + T_2^2) \right. \\
 & \quad \left. (1 - T_1 T_2 + T_1^2 T_2^2) (1 - T_2^3 + T_2^6) (1 - T_1^3 T_2^3 + T_1^6 T_2^6) \right), \\
 & - \left((2 (-14 + 29 T_1 - 14 T_1^2 + 29 T_2 - 102 T_1 T_2 + 132 T_1^2 T_2 - 43 T_1^3 T_2 - 14 T_2^2 + 132 T_1 T_2^2 - 210 T_1^2 T_2^2 - \right. \\
 & \quad \left. 12 T_1^3 T_2^2 + 50 T_1^4 T_2^2 - 43 T_1 T_2^3 - 12 T_1^2 T_2^3 + 222 T_1^3 T_2^3 - 115 T_1^4 T_2^3 + 50 T_1^5 T_2^3 - 115 T_1^6 T_2^3 + 50 T_1^7 T_2^3) \Big) / \right. \\
 & \left. \left((-1 + T_1) T_1 (4 - 9 T_1 + 4 T_1^2) (-1 + T_2) (-1 + T_1 T_2) (4 - 9 T_2 + 4 T_2^2) (4 - 9 T_1 T_2 + 4 T_1^2 T_2^2) \right) \right\}
 \end{aligned}$$

In[*]:= **K** = Knot["K11n34"]; **Conway** = $\int \mathcal{L}[K] \times \mathbf{d}$ vs [K]

☞ **KnotTheory**: Loading precomputed data in DTCode4KnotsTo11`.

☞ **KnotTheory**: The GaussCode to PD conversion was written by Siddarth Sankaran at the University of Toronto in the summer of 2005.

Out[*]=

- i

$$\begin{aligned}
 & E \left[\epsilon \text{Series} \left[0, - \left((a_2 b_3 T_1^2 - a_2 b_5 T_1^2 - 4 a_2 b_3 T_1^3 + a_4 b_3 T_1^3 + 3 a_2 b_5 T_1^3 - a_4 b_5 T_1^3 + 6 a_2 b_3 T_1^4 - 3 a_4 b_3 T_1^4 - \right. \right. \right. \\
 & \quad 3 a_2 b_5 T_1^4 + 2 a_4 b_5 T_1^4 - 4 a_2 b_3 T_1^5 + 3 a_4 b_3 T_1^5 + a_2 b_5 T_1^5 - a_4 b_5 T_1^5 + a_2 b_3 T_1^6 - a_4 b_3 T_1^6 - \\
 & \quad 2 a_2 b_3 T_1 T_2 + 2 a_2 b_5 T_1 T_2 + 6 a_2 b_3 T_1^2 T_2 - a_4 b_3 T_1^2 T_2 - 3 a_2 b_5 T_1^2 T_2 + a_4 b_5 T_1^2 T_2 - 6 a_2 b_3 T_1^3 T_2 - \\
 & \quad a_4 b_3 T_1^3 T_2 - a_2 b_5 T_1^3 T_2 + 3 a_4 b_5 T_1^3 T_2 + 2 a_2 b_3 T_1^4 T_2 + 7 a_4 b_3 T_1^4 T_2 + 3 a_2 b_5 T_1^4 T_2 - 7 a_4 b_5 T_1^4 T_2 + \\
 & \quad 2 a_2 b_3 T_1^5 T_2 - 7 a_4 b_3 T_1^5 T_2 - 3 a_2 b_5 T_1^5 T_2 + 3 a_4 b_5 T_1^5 T_2 - 6 a_2 b_3 T_1^6 T_2 + 4 a_4 b_3 T_1^6 T_2 + \\
 & \quad 4 a_2 b_5 T_1^6 T_2 - 2 a_4 b_5 T_1^6 T_2 + 6 a_2 b_3 T_1^7 T_2 - 4 a_4 b_3 T_1^7 T_2 - 2 a_2 b_5 T_1^7 T_2 + 2 a_4 b_5 T_1^7 T_2 - \\
 & \quad 2 a_2 b_3 T_1^8 T_2 + 2 a_4 b_3 T_1^8 T_2 + a_2 b_3 T_1^2 T_2^2 - a_2 b_5 T_1^2 T_2^2 - a_4 b_3 T_1 T_2^2 - 3 a_2 b_5 T_1 T_2^2 + a_4 b_5 T_1 T_2^2 - \\
 & \quad 5 a_2 b_3 T_1^2 T_2^2 + 9 a_4 b_3 T_1^2 T_2^2 + 8 a_2 b_5 T_1^2 T_2^2 - 9 a_4 b_5 T_1^2 T_2^2 + 6 a_2 b_3 T_1^3 T_2^2 - 14 a_4 b_3 T_1^3 T_2^2 - \\
 & \quad 4 a_2 b_5 T_1^3 T_2^2 + 4 a_4 b_5 T_1^3 T_2^2 - 4 a_2 b_3 T_1^4 T_2^2 + 6 a_4 b_3 T_1^4 T_2^2 + 2 a_2 b_5 T_1^4 T_2^2 + 5 a_4 b_5 T_1^4 T_2^2 + \\
 & \quad 4 a_2 b_3 T_1^5 T_2^2 - 2 a_4 b_5 T_1^5 T_2^2 - 4 a_2 b_3 T_1^6 T_2^2 - 6 a_4 b_3 T_1^6 T_2^2 - 2 a_2 b_5 T_1^6 T_2^2 + 8 a_4 b_5 T_1^6 T_2^2 + \\
 & \quad 6 a_2 b_3 T_1^7 T_2^2 + 8 a_4 b_3 T_1^7 T_2^2 - 2 a_2 b_5 T_1^7 T_2^2 - 4 a_4 b_5 T_1^7 T_2^2 - 5 a_2 b_3 T_1^8 T_2^2 + a_2 b_5 T_1^8 T_2^2 - \\
 & \quad 2 a_4 b_5 T_1^8 T_2^2 - a_4 b_3 T_1^9 T_2^2 + a_2 b_5 T_1^9 T_2^2 - a_4 b_5 T_1^9 T_2^2 + a_2 b_3 T_1^{10} T_2^2 - a_4 b_3 T_1^{10} T_2^2 - 2 a_2 b_3 T_2^3 + \\
 & \quad a_4 b_3 T_2^3 + 3 a_2 b_5 T_2^3 - a_4 b_5 T_2^3 + 4 a_2 b_3 T_1 T_2^3 - 3 a_4 b_3 T_1 T_2^3 - a_2 b_5 T_1 T_2^3 + a_4 b_5 T_1 T_2^3 - \\
 & \quad 2 a_2 b_3 T_1^2 T_2^3 - 4 a_4 b_3 T_1^2 T_2^3 - 4 a_2 b_5 T_1^2 T_2^3 + 14 a_4 b_5 T_1^2 T_2^3 + 10 a_4 b_3 T_1^3 T_2^3 + 2 a_2 b_5 T_1^3 T_2^3 - \left. \right)
 \end{aligned}$$

$$\begin{aligned}
 & 10 a_4 b_5 T_1^3 T_2^3 + a_2 b_3 T_1^4 T_2^3 - 6 a_4 b_3 T_1^4 T_2^3 - 3 a_2 b_5 T_1^4 T_2^3 + 2 a_4 b_5 T_1^4 T_2^3 - a_2 b_3 T_1^5 T_2^3 + 7 a_4 b_3 T_1^5 T_2^3 + \\
 & 2 a_2 b_5 T_1^5 T_2^3 - 5 a_4 b_5 T_1^5 T_2^3 - a_2 b_3 T_1^6 T_2^3 - 6 a_4 b_3 T_1^6 T_2^3 - a_2 b_5 T_1^6 T_2^3 - 5 a_4 b_5 T_1^6 T_2^3 + a_2 b_3 T_1^7 T_2^3 + \\
 & 7 a_4 b_3 T_1^7 T_2^3 + 4 a_2 b_5 T_1^7 T_2^3 - 4 a_4 b_5 T_1^7 T_2^3 + 2 c_{19} T_1^7 T_2^3 + 2 c_{34} T_1^7 T_2^3 + 2 c_{49} T_1^7 T_2^3 + 2 c_{64} T_1^7 T_2^3 - \\
 & 9 a_4 b_3 T_1^8 T_2^3 - a_2 b_5 T_1^8 T_2^3 + 5 a_4 b_5 T_1^8 T_2^3 - 2 c_{19} T_1^8 T_2^3 - 2 c_{34} T_1^8 T_2^3 - 2 c_{49} T_1^8 T_2^3 - 2 c_{64} T_1^8 T_2^3 - \\
 & 2 a_2 b_3 T_1^9 T_2^3 + a_4 b_3 T_1^9 T_2^3 + a_2 b_5 T_1^9 T_2^3 + 3 a_4 b_5 T_1^9 T_2^3 + 4 a_2 b_3 T_1^{10} T_2^3 - 2 a_2 b_5 T_1^{10} T_2^3 + \\
 & 2 a_4 b_5 T_1^{10} T_2^3 - 2 a_2 b_3 T_1^{11} T_2^3 + 2 a_4 b_3 T_1^{11} T_2^3 + a_2 b_5 T_1^{11} T_2^3 - 2 a_4 b_3 T_1^{11} T_2^3 - 3 a_2 b_5 T_1^{11} T_2^3 + 3 a_4 b_5 T_1^{11} T_2^3 - \\
 & 2 a_2 b_3 T_1 T_2^4 + 7 a_4 b_3 T_1 T_2^4 + 3 a_2 b_5 T_1 T_2^4 - 7 a_4 b_5 T_1 T_2^4 - a_2 b_3 T_1^2 T_2^4 - 5 a_4 b_3 T_1^2 T_2^4 + \\
 & 2 a_2 b_5 T_1^2 T_2^4 - 6 a_4 b_5 T_1^2 T_2^4 + 5 a_2 b_3 T_1^3 T_2^4 - 2 a_4 b_3 T_1^3 T_2^4 - 3 a_2 b_5 T_1^3 T_2^4 + 6 a_4 b_5 T_1^3 T_2^4 - \\
 & 2 a_2 b_3 T_1^4 T_2^4 + 4 a_4 b_3 T_1^4 T_2^4 - 4 a_4 b_5 T_1^4 T_2^4 - 3 a_2 b_3 T_1^5 T_2^4 - a_4 b_3 T_1^5 T_2^4 + 2 a_2 b_5 T_1^5 T_2^4 + \\
 & 4 a_4 b_5 T_1^5 T_2^4 + 4 a_2 b_3 T_1^6 T_2^4 - 3 a_4 b_3 T_1^6 T_2^4 - 3 a_2 b_5 T_1^6 T_2^4 + a_4 b_5 T_1^6 T_2^4 - 3 a_2 b_3 T_1^7 T_2^4 + \\
 & 4 a_4 b_3 T_1^7 T_2^4 + a_2 b_5 T_1^7 T_2^4 + 4 a_4 b_5 T_1^7 T_2^4 - 6 c_{19} T_1^7 T_2^4 - 6 c_{34} T_1^7 T_2^4 - 6 c_{49} T_1^7 T_2^4 - 6 c_{64} T_1^7 T_2^4 - \\
 & 2 a_2 b_3 T_1^8 T_2^4 - a_4 b_3 T_1^8 T_2^4 + 3 a_2 b_5 T_1^8 T_2^4 - 4 a_4 b_5 T_1^8 T_2^4 + 4 c_{19} T_1^8 T_2^4 + 4 c_{34} T_1^8 T_2^4 + 4 c_{49} T_1^8 T_2^4 + \\
 & 4 c_{64} T_1^8 T_2^4 + 5 a_2 b_3 T_1^9 T_2^4 - 5 a_4 b_3 T_1^9 T_2^4 - 4 a_2 b_5 T_1^9 T_2^4 + 2 a_4 b_5 T_1^9 T_2^4 + 2 c_{19} T_1^9 T_2^4 + 2 c_{34} T_1^9 T_2^4 + \\
 & 2 c_{49} T_1^9 T_2^4 + 2 c_{64} T_1^9 T_2^4 - a_2 b_3 T_1^{10} T_2^4 + 8 a_4 b_3 T_1^{10} T_2^4 + a_2 b_5 T_1^{10} T_2^4 - 6 a_4 b_5 T_1^{10} T_2^4 - 2 a_2 b_3 T_1^{11} T_2^4 - \\
 & 3 a_4 b_3 T_1^{11} T_2^4 + a_2 b_5 T_1^{11} T_2^4 - a_4 b_5 T_1^{11} T_2^4 + a_2 b_3 T_1^{12} T_2^4 - a_4 b_3 T_1^{12} T_2^4 + a_4 b_3 T_2^5 + a_2 b_5 T_2^5 - \\
 & 3 a_4 b_5 T_2^5 + 2 a_2 b_3 T_1 T_2^5 - 3 a_4 b_3 T_1 T_2^5 - 3 a_2 b_5 T_1 T_2^5 + 7 a_4 b_5 T_1 T_2^5 - 4 a_2 b_3 T_1^2 T_2^5 + 2 a_4 b_3 T_1^2 T_2^5 + \\
 & 3 a_2 b_5 T_1^3 T_2^5 + 5 a_4 b_3 T_1^3 T_2^5 + 2 a_2 b_5 T_1^3 T_2^5 - 7 a_4 b_5 T_1^3 T_2^5 - 2 a_2 b_3 T_1^4 T_2^5 - 4 a_4 b_3 T_1^4 T_2^5 + \\
 & 2 a_2 b_5 T_1^4 T_2^5 + a_4 b_5 T_1^4 T_2^5 - 3 a_2 b_3 T_1^5 T_2^5 - 5 a_4 b_3 T_1^5 T_2^5 + 2 a_2 b_5 T_1^5 T_2^5 + 5 a_4 b_5 T_1^5 T_2^5 + \\
 & 4 a_2 b_3 T_1^6 T_2^5 + 2 a_4 b_3 T_1^6 T_2^5 + 2 a_2 b_5 T_1^6 T_2^5 + 4 a_2 b_3 T_1^7 T_2^5 - 5 a_4 b_3 T_1^7 T_2^5 - 5 a_2 b_5 T_1^7 T_2^5 + \\
 & 9 a_4 b_5 T_1^7 T_2^5 + 6 c_{19} T_1^7 T_2^5 + 6 c_{34} T_1^7 T_2^5 + 6 c_{49} T_1^7 T_2^5 + 6 c_{64} T_1^7 T_2^5 - 3 a_2 b_3 T_1^8 T_2^5 + 3 a_4 b_3 T_1^8 T_2^5 - \\
 & 4 a_2 b_5 T_1^8 T_2^5 + 5 a_4 b_5 T_1^8 T_2^5 - 2 a_2 b_3 T_1^9 T_2^5 + 9 a_4 b_3 T_1^9 T_2^5 + 3 a_2 b_5 T_1^9 T_2^5 - 9 a_4 b_5 T_1^9 T_2^5 - \\
 & 6 c_{19} T_1^9 T_2^5 - 6 c_{34} T_1^9 T_2^5 - 6 c_{49} T_1^9 T_2^5 - 6 c_{64} T_1^9 T_2^5 + 3 a_2 b_3 T_1^{10} T_2^5 - 4 a_4 b_3 T_1^{10} T_2^5 - a_2 b_5 T_1^{10} T_2^5 + \\
 & 3 a_4 b_5 T_1^{10} T_2^5 - 4 a_2 b_3 T_1^{11} T_2^5 - a_4 b_3 T_1^{11} T_2^5 + a_2 b_5 T_1^{11} T_2^5 + a_4 b_5 T_1^{11} T_2^5 + 2 a_2 b_3 T_1^{12} T_2^5 + a_4 b_5 T_2^6 - \\
 & 2 a_2 b_3 T_1 T_2^6 + 2 a_4 b_3 T_1 T_2^6 + 4 a_2 b_5 T_1 T_2^6 - 4 a_4 b_5 T_1 T_2^6 + 2 a_2 b_3 T_1^2 T_2^6 - 8 a_4 b_3 T_1^2 T_2^6 - \\
 & 2 a_2 b_5 T_1^2 T_2^6 + 6 a_4 b_5 T_1^2 T_2^6 + 2 a_2 b_3 T_1^3 T_2^6 + 5 a_4 b_3 T_1^3 T_2^6 - a_2 b_5 T_1^3 T_2^6 + 6 a_4 b_5 T_1^3 T_2^6 - \\
 & a_4 b_3 T_1^4 T_2^6 - 3 a_2 b_5 T_1^4 T_2^6 + 3 a_4 b_5 T_1^4 T_2^6 + 2 c_{16} T_1^4 T_2^6 + 2 c_{31} T_1^4 T_2^6 + 2 c_{46} T_1^4 T_2^6 + 2 c_{61} T_1^4 T_2^6 - \\
 & 8 a_2 b_3 T_1^5 T_2^6 + 2 a_2 b_5 T_1^5 T_2^6 - 2 a_4 b_5 T_1^5 T_2^6 - 6 c_{16} T_1^5 T_2^6 - 6 c_{31} T_1^5 T_2^6 - 6 c_{46} T_1^5 T_2^6 - 6 c_{61} T_1^5 T_2^6 + \\
 & 22 a_2 b_3 T_1^6 T_2^6 + 2 a_4 b_3 T_1^6 T_2^6 - 16 a_2 b_5 T_1^6 T_2^6 - 2 a_4 b_5 T_1^6 T_2^6 + 6 c_{16} T_1^6 T_2^6 + 6 c_{31} T_1^6 T_2^6 + \\
 & 6 c_{46} T_1^6 T_2^6 + 6 c_{61} T_1^6 T_2^6 - 32 a_2 b_3 T_1^7 T_2^6 + 20 a_4 b_3 T_1^7 T_2^6 + 20 a_2 b_5 T_1^7 T_2^6 - 27 a_4 b_5 T_1^7 T_2^6 - \\
 & 2 c_{16} T_1^7 T_2^6 - 2 c_{19} T_1^7 T_2^6 - 2 c_{31} T_1^7 T_2^6 - 2 c_{34} T_1^7 T_2^6 - 2 c_{46} T_1^7 T_2^6 - 2 c_{49} T_1^7 T_2^6 - 2 c_{61} T_1^7 T_2^6 - \\
 & 2 c_{64} T_1^7 T_2^6 + 22 a_2 b_3 T_1^8 T_2^6 - 23 a_4 b_3 T_1^8 T_2^6 - 5 a_2 b_5 T_1^8 T_2^6 - a_4 b_5 T_1^8 T_2^6 + 2 c_{16} T_1^8 T_2^6 - 4 c_{19} T_1^8 T_2^6 + \\
 & 2 c_{31} T_1^8 T_2^6 - 4 c_{34} T_1^8 T_2^6 + 2 c_{46} T_1^8 T_2^6 - 4 c_{49} T_1^8 T_2^6 + 2 c_{61} T_1^8 T_2^6 - 4 c_{64} T_1^8 T_2^6 - 8 a_2 b_3 T_1^9 T_2^6 + \\
 & 3 a_4 b_3 T_1^9 T_2^6 + a_2 b_5 T_1^9 T_2^6 + 5 a_4 b_5 T_1^9 T_2^6 - 6 c_{16} T_1^9 T_2^6 + 6 c_{19} T_1^9 T_2^6 - 6 c_{31} T_1^9 T_2^6 + 6 c_{34} T_1^9 T_2^6 - \\
 & 6 c_{46} T_1^9 T_2^6 + 6 c_{49} T_1^9 T_2^6 - 6 c_{61} T_1^9 T_2^6 + 6 c_{64} T_1^9 T_2^6 + 2 a_4 b_3 T_1^{10} T_2^6 + 4 a_2 b_5 T_1^{10} T_2^6 - a_4 b_5 T_1^{10} T_2^6 + \\
 & 6 c_{16} T_1^{10} T_2^6 + 6 c_{31} T_1^{10} T_2^6 + 6 c_{46} T_1^{10} T_2^6 + 6 c_{61} T_1^{10} T_2^6 + 2 a_2 b_3 T_1^{11} T_2^6 - 8 a_4 b_3 T_1^{11} T_2^6 - \\
 & 2 a_2 b_5 T_1^{11} T_2^6 + 6 a_4 b_5 T_1^{11} T_2^6 - 2 c_{16} T_1^{11} T_2^6 - 2 c_{31} T_1^{11} T_2^6 - 2 c_{46} T_1^{11} T_2^6 - 2 c_{61} T_1^{11} T_2^6 + \\
 & 2 a_2 b_3 T_1^{12} T_2^6 + 4 a_4 b_3 T_1^{12} T_2^6 - 2 a_2 b_5 T_1^{12} T_2^6 + 2 a_4 b_5 T_1^{12} T_2^6 - 2 a_2 b_3 T_1^{13} T_2^6 + 2 a_4 b_3 T_1^{13} T_2^6 - \\
 & 2 a_4 b_3 T_1 T_2^7 - 2 a_2 b_5 T_1 T_2^7 + 4 a_4 b_5 T_1 T_2^7 + 2 a_2 b_3 T_1^2 T_2^7 + 4 a_4 b_3 T_1^2 T_2^7 - 2 a_2 b_5 T_1^2 T_2^7 - \\
 & 8 a_4 b_5 T_1^2 T_2^7 - 4 a_2 b_3 T_1^3 T_2^7 + 4 a_4 b_3 T_1^3 T_2^7 + 4 a_2 b_5 T_1^3 T_2^7 - 7 a_4 b_5 T_1^3 T_2^7 + 3 a_2 b_3 T_1^4 T_2^7 - \\
 & 4 a_4 b_3 T_1^4 T_2^7 + a_2 b_5 T_1^4 T_2^7 - 4 a_4 b_5 T_1^4 T_2^7 - 2 c_{16} T_1^4 T_2^7 - 2 c_{31} T_1^4 T_2^7 - 2 c_{46} T_1^4 T_2^7 - 2 c_{61} T_1^4 T_2^7 - \\
 & 2 a_2 b_3 T_1^5 T_2^7 - 9 a_4 b_3 T_1^5 T_2^7 - 5 a_2 b_5 T_1^5 T_2^7 + 5 a_4 b_5 T_1^5 T_2^7 + 4 c_{16} T_1^5 T_2^7 + 4 c_{31} T_1^5 T_2^7 + 4 c_{46} T_1^5 T_2^7 + \\
 & 4 c_{61} T_1^5 T_2^7 - 3 a_2 b_3 T_1^6 T_2^7 + 27 a_4 b_3 T_1^6 T_2^7 + 20 a_2 b_5 T_1^6 T_2^7 - 20 a_4 b_5 T_1^6 T_2^7 + 4 a_2 b_3 T_1^7 T_2^7 - \\
 & 52 a_4 b_3 T_1^7 T_2^7 - 16 a_2 b_5 T_1^7 T_2^7 + 52 a_4 b_5 T_1^7 T_2^7 - 4 c_{16} T_1^7 T_2^7 + 2 c_{19} T_1^7 T_2^7 - 4 c_{31} T_1^7 T_2^7 + \\
 & 2 c_{34} T_1^7 T_2^7 - 4 c_{46} T_1^7 T_2^7 + 2 c_{49} T_1^7 T_2^7 - 4 c_{61} T_1^7 T_2^7 + 2 c_{64} T_1^7 T_2^7 + 4 a_2 b_3 T_1^8 T_2^7 + 38 a_4 b_3 T_1^8 T_2^7 + \\
 & 2 a_2 b_5 T_1^8 T_2^7 - 9 a_4 b_5 T_1^8 T_2^7 - 3 a_2 b_3 T_1^9 T_2^7 - 10 a_4 b_3 T_1^9 T_2^7 - 3 a_2 b_5 T_1^9 T_2^7 + 4 a_4 b_5 T_1^9 T_2^7 + \\
 & 4 c_{16} T_1^9 T_2^7 - 2 c_{19} T_1^9 T_2^7 + 4 c_{31} T_1^9 T_2^7 - 2 c_{34} T_1^9 T_2^7 + 4 c_{46} T_1^9 T_2^7 - 2 c_{49} T_1^9 T_2^7 + 4 c_{61} T_1^9 T_2^7 -
 \end{aligned}$$

$$\begin{aligned}
 & 2 c_{64} T_1^9 T_2^7 - 2 a_2 b_3 T_1^{10} T_2^7 + 3 a_4 b_3 T_1^{10} T_2^7 - a_2 b_5 T_1^{10} T_2^7 + 3 a_4 b_5 T_1^{10} T_2^7 + 3 a_2 b_3 T_1^{11} T_2^7 + \\
 & 3 a_4 b_3 T_1^{11} T_2^7 - 2 a_2 b_5 T_1^{11} T_2^7 - 8 a_4 b_5 T_1^{11} T_2^7 - 4 c_{16} T_1^{11} T_2^7 - 4 c_{31} T_1^{11} T_2^7 - 4 c_{46} T_1^{11} T_2^7 - \\
 & 4 c_{61} T_1^{11} T_2^7 - 4 a_2 b_3 T_1^{12} T_2^7 + 4 a_4 b_3 T_1^{12} T_2^7 + 4 a_2 b_5 T_1^{12} T_2^7 - 8 a_4 b_5 T_1^{12} T_2^7 + 2 c_{16} T_1^{12} T_2^7 + \\
 & 2 c_{31} T_1^{12} T_2^7 + 2 c_{46} T_1^{12} T_2^7 + 2 c_{61} T_1^{12} T_2^7 + 2 a_2 b_3 T_1^{13} T_2^7 - 6 a_4 b_3 T_1^{13} T_2^7 - 2 a_4 b_5 T_1 T_2^8 + \\
 & a_2 b_3 T_1^2 T_2^8 + 2 a_4 b_3 T_1^2 T_2^8 + a_2 b_5 T_1^2 T_2^8 - 2 a_2 b_3 T_1^3 T_2^8 - 5 a_4 b_3 T_1^3 T_2^8 - a_2 b_5 T_1^3 T_2^8 + 9 a_4 b_5 T_1^3 T_2^8 - \\
 & a_2 b_3 T_1^4 T_2^8 + 4 a_4 b_3 T_1^4 T_2^8 + 3 a_2 b_5 T_1^4 T_2^8 + a_4 b_5 T_1^4 T_2^8 + 5 a_2 b_3 T_1^5 T_2^8 - 5 a_4 b_3 T_1^5 T_2^8 - 4 a_2 b_5 T_1^5 T_2^8 - \\
 & 3 a_4 b_5 T_1^5 T_2^8 + 2 c_{16} T_1^5 T_2^8 + 2 c_{31} T_1^5 T_2^8 + 2 c_{46} T_1^5 T_2^8 + 2 c_{61} T_1^5 T_2^8 - 2 a_2 b_3 T_1^6 T_2^8 + a_4 b_3 T_1^6 T_2^8 - \\
 & 5 a_2 b_5 T_1^6 T_2^8 + 23 a_4 b_5 T_1^6 T_2^8 - 6 c_{16} T_1^6 T_2^8 - 6 c_{31} T_1^6 T_2^8 - 6 c_{46} T_1^6 T_2^8 - 6 c_{61} T_1^6 T_2^8 - 3 a_2 b_3 T_1^7 T_2^8 + \\
 & 9 a_4 b_3 T_1^7 T_2^8 + 2 a_2 b_5 T_1^7 T_2^8 - 38 a_4 b_5 T_1^7 T_2^8 + 6 c_{16} T_1^7 T_2^8 - 6 c_{19} T_1^7 T_2^8 + 6 c_{31} T_1^7 T_2^8 - 6 c_{34} T_1^7 T_2^8 + \\
 & 6 c_{46} T_1^7 T_2^8 - 6 c_{49} T_1^7 T_2^8 + 6 c_{61} T_1^7 T_2^8 - 6 c_{64} T_1^7 T_2^8 + 4 a_2 b_3 T_1^8 T_2^8 + 2 a_4 b_3 T_1^8 T_2^8 + 2 a_2 b_5 T_1^8 T_2^8 - \\
 & 2 a_4 b_5 T_1^8 T_2^8 - 2 c_{16} T_1^8 T_2^8 + 4 c_{19} T_1^8 T_2^8 - 2 c_{31} T_1^8 T_2^8 + 4 c_{34} T_1^8 T_2^8 - 2 c_{46} T_1^8 T_2^8 + 4 c_{49} T_1^8 T_2^8 - \\
 & 2 c_{61} T_1^8 T_2^8 + 4 c_{64} T_1^8 T_2^8 - 3 a_2 b_3 T_1^9 T_2^8 - 5 a_4 b_3 T_1^9 T_2^8 + 2 a_2 b_5 T_1^9 T_2^8 - 7 a_4 b_5 T_1^9 T_2^8 + 2 c_{16} T_1^9 T_2^8 + \\
 & 2 c_{19} T_1^9 T_2^8 + 2 c_{31} T_1^9 T_2^8 + 2 c_{34} T_1^9 T_2^8 + 2 c_{46} T_1^9 T_2^8 + 2 c_{49} T_1^9 T_2^8 + 2 c_{61} T_1^9 T_2^8 + 2 c_{64} T_1^9 T_2^8 - \\
 & 2 a_2 b_3 T_1^{10} T_2^8 - 4 a_4 b_3 T_1^{10} T_2^8 + 2 a_2 b_5 T_1^{10} T_2^8 - 6 c_{16} T_1^{10} T_2^8 - 6 c_{31} T_1^{10} T_2^8 - 6 c_{46} T_1^{10} T_2^8 - \\
 & 6 c_{61} T_1^{10} T_2^8 + 5 a_2 b_3 T_1^{11} T_2^8 + a_4 b_3 T_1^{11} T_2^8 + 2 a_4 b_5 T_1^{11} T_2^8 + 6 c_{16} T_1^{11} T_2^8 + 6 c_{31} T_1^{11} T_2^8 + \\
 & 6 c_{46} T_1^{11} T_2^8 + 6 c_{61} T_1^{11} T_2^8 - a_2 b_3 T_1^{12} T_2^8 - 4 a_4 b_3 T_1^{12} T_2^8 - 3 a_2 b_5 T_1^{12} T_2^8 + 10 a_4 b_5 T_1^{12} T_2^8 - \\
 & 2 c_{16} T_1^{12} T_2^8 - 2 c_{31} T_1^{12} T_2^8 - 2 c_{46} T_1^{12} T_2^8 - 2 c_{61} T_1^{12} T_2^8 - 2 a_2 b_3 T_1^{13} T_2^8 + 5 a_4 b_3 T_1^{13} T_2^8 + \\
 & a_2 b_5 T_1^{13} T_2^8 - a_4 b_5 T_1^{13} T_2^8 + a_2 b_3 T_1^{14} T_2^8 - a_4 b_3 T_1^{14} T_2^8 + a_4 b_3 T_1^2 T_2^9 + a_2 b_5 T_1^2 T_2^9 - \\
 & 2 a_2 b_3 T_1^3 T_2^9 - 3 a_4 b_3 T_1^3 T_2^9 + a_2 b_5 T_1^3 T_2^9 - a_4 b_5 T_1^3 T_2^9 + 4 a_2 b_3 T_1^4 T_2^9 - 2 a_4 b_3 T_1^4 T_2^9 - \\
 & 4 a_2 b_5 T_1^4 T_2^9 + 5 a_4 b_5 T_1^4 T_2^9 - 2 a_2 b_3 T_1^5 T_2^9 + 9 a_4 b_3 T_1^5 T_2^9 + 3 a_2 b_5 T_1^5 T_2^9 - 9 a_4 b_5 T_1^5 T_2^9 - \\
 & 5 a_4 b_3 T_1^6 T_2^9 + a_2 b_5 T_1^6 T_2^9 - 3 a_4 b_5 T_1^6 T_2^9 + a_2 b_3 T_1^7 T_2^9 - 4 a_4 b_3 T_1^7 T_2^9 - 3 a_2 b_5 T_1^7 T_2^9 + \\
 & 10 a_4 b_5 T_1^7 T_2^9 + 6 c_{19} T_1^7 T_2^9 + 6 c_{34} T_1^7 T_2^9 + 6 c_{49} T_1^7 T_2^9 + 6 c_{64} T_1^7 T_2^9 - a_2 b_3 T_1^8 T_2^9 + 7 a_4 b_3 T_1^8 T_2^9 + \\
 & 2 a_2 b_5 T_1^8 T_2^9 + 5 a_4 b_5 T_1^8 T_2^9 - a_2 b_3 T_1^9 T_2^9 - 5 a_4 b_3 T_1^9 T_2^9 + 5 a_4 b_5 T_1^9 T_2^9 - 6 c_{19} T_1^9 T_2^9 - 6 c_{34} T_1^9 T_2^9 - \\
 & 6 c_{49} T_1^9 T_2^9 - 6 c_{64} T_1^9 T_2^9 + a_2 b_3 T_1^{10} T_2^9 - 2 a_4 b_3 T_1^{10} T_2^9 - 3 a_2 b_5 T_1^{10} T_2^9 + 3 a_4 b_5 T_1^{10} T_2^9 + \\
 & 8 a_4 b_3 T_1^{11} T_2^9 + 2 a_2 b_5 T_1^{11} T_2^9 - 4 a_4 b_5 T_1^{11} T_2^9 - 2 a_2 b_3 T_1^{12} T_2^9 - 3 a_4 b_3 T_1^{12} T_2^9 + 3 a_2 b_5 T_1^{12} T_2^9 - \\
 & 5 a_4 b_5 T_1^{12} T_2^9 + 4 a_2 b_3 T_1^{13} T_2^9 - 5 a_4 b_3 T_1^{13} T_2^9 - 3 a_2 b_5 T_1^{13} T_2^9 + 5 a_4 b_5 T_1^{13} T_2^9 - 2 a_2 b_3 T_1^{14} T_2^9 + \\
 & 4 a_4 b_3 T_1^{14} T_2^9 + a_2 b_5 T_1^2 T_2^{10} - 2 a_4 b_3 T_1^3 T_2^{10} - 2 a_2 b_5 T_1^3 T_2^{10} + a_2 b_3 T_1^4 T_2^{10} + 6 a_4 b_3 T_1^4 T_2^{10} + \\
 & a_2 b_5 T_1^4 T_2^{10} - 8 a_4 b_5 T_1^4 T_2^{10} - 3 a_4 b_3 T_1^5 T_2^{10} - a_2 b_5 T_1^5 T_2^{10} + 4 a_4 b_5 T_1^5 T_2^{10} - 5 a_2 b_3 T_1^6 T_2^{10} + \\
 & a_4 b_3 T_1^6 T_2^{10} + 4 a_2 b_5 T_1^6 T_2^{10} - 2 a_4 b_5 T_1^6 T_2^{10} + 6 a_2 b_3 T_1^7 T_2^{10} - 3 a_4 b_3 T_1^7 T_2^{10} - a_2 b_5 T_1^7 T_2^{10} - \\
 & 3 a_4 b_5 T_1^7 T_2^{10} - 2 c_{19} T_1^7 T_2^{10} - 2 c_{34} T_1^7 T_2^{10} - 2 c_{49} T_1^7 T_2^{10} - 2 c_{64} T_1^7 T_2^{10} - 4 a_2 b_3 T_1^8 T_2^{10} + \\
 & 2 a_2 b_5 T_1^8 T_2^{10} + 4 a_4 b_5 T_1^8 T_2^{10} - 4 c_{19} T_1^8 T_2^{10} - 4 c_{34} T_1^8 T_2^{10} - 4 c_{49} T_1^8 T_2^{10} - 4 c_{64} T_1^8 T_2^{10} + \\
 & 4 a_2 b_3 T_1^9 T_2^{10} - 3 a_4 b_3 T_1^9 T_2^{10} - 3 a_2 b_5 T_1^9 T_2^{10} + 2 a_4 b_5 T_1^9 T_2^{10} + 6 c_{19} T_1^9 T_2^{10} + 6 c_{34} T_1^9 T_2^{10} + \\
 & 6 c_{49} T_1^9 T_2^{10} + 6 c_{64} T_1^9 T_2^{10} - 4 a_2 b_3 T_1^{10} T_2^{10} + 4 a_4 b_3 T_1^{10} T_2^{10} + 2 a_2 b_5 T_1^{10} T_2^{10} - 4 a_4 b_5 T_1^{10} T_2^{10} + \\
 & 6 a_2 b_3 T_1^{11} T_2^{10} - 2 a_4 b_3 T_1^{11} T_2^{10} - 4 a_2 b_5 T_1^{11} T_2^{10} + 6 a_4 b_5 T_1^{11} T_2^{10} - 5 a_2 b_3 T_1^{12} T_2^{10} + \\
 & 2 a_4 b_3 T_1^{12} T_2^{10} - a_2 b_5 T_1^{12} T_2^{10} + a_4 b_5 T_1^{12} T_2^{10} + 5 a_4 b_3 T_1^{13} T_2^{10} + 3 a_2 b_5 T_1^{13} T_2^{10} - 9 a_4 b_5 T_1^{13} T_2^{10} + \\
 & a_2 b_3 T_1^{14} T_2^{10} - 5 a_4 b_3 T_1^{14} T_2^{10} - 2 a_4 b_5 T_1^3 T_2^{11} + a_4 b_3 T_1^4 T_2^{11} + a_2 b_5 T_1^4 T_2^{11} + 3 a_4 b_5 T_1^4 T_2^{11} - \\
 & a_4 b_3 T_1^5 T_2^{11} + a_2 b_5 T_1^5 T_2^{11} + a_4 b_5 T_1^5 T_2^{11} - 2 a_2 b_3 T_1^6 T_2^{11} - 6 a_4 b_3 T_1^6 T_2^{11} - 2 a_2 b_5 T_1^6 T_2^{11} + \\
 & 8 a_4 b_5 T_1^6 T_2^{11} + 6 a_2 b_3 T_1^7 T_2^{11} + 8 a_4 b_3 T_1^7 T_2^{11} - 2 a_2 b_5 T_1^7 T_2^{11} - 3 a_4 b_5 T_1^7 T_2^{11} - 6 a_2 b_3 T_1^8 T_2^{11} - \\
 & 2 a_4 b_3 T_1^8 T_2^{11} - a_4 b_5 T_1^8 T_2^{11} + 2 c_{19} T_1^8 T_2^{11} + 2 c_{34} T_1^8 T_2^{11} + 2 c_{49} T_1^8 T_2^{11} + 2 c_{64} T_1^8 T_2^{11} + \\
 & 2 a_2 b_3 T_1^9 T_2^{11} + 4 a_4 b_3 T_1^9 T_2^{11} + 2 a_2 b_5 T_1^9 T_2^{11} - 8 a_4 b_5 T_1^9 T_2^{11} - 2 c_{19} T_1^9 T_2^{11} - 2 c_{34} T_1^9 T_2^{11} - \\
 & 2 c_{49} T_1^9 T_2^{11} - 2 c_{64} T_1^9 T_2^{11} + 2 a_2 b_3 T_1^{10} T_2^{11} - 6 a_4 b_3 T_1^{10} T_2^{11} - 4 a_2 b_5 T_1^{10} T_2^{11} + 2 a_4 b_5 T_1^{10} T_2^{11} - \\
 & 6 a_2 b_3 T_1^{11} T_2^{11} + 10 a_4 b_3 T_1^{11} T_2^{11} + 8 a_2 b_5 T_1^{11} T_2^{11} - 10 a_4 b_5 T_1^{11} T_2^{11} + 6 a_2 b_3 T_1^{12} T_2^{11} - \\
 & 13 a_4 b_3 T_1^{12} T_2^{11} - 3 a_2 b_5 T_1^{12} T_2^{11} + 5 a_4 b_5 T_1^{12} T_2^{11} - 2 a_2 b_3 T_1^{13} T_2^{11} + 3 a_4 b_3 T_1^{13} T_2^{11} - a_2 b_5 T_1^{13} T_2^{11} + \\
 & 7 a_4 b_5 T_1^{13} T_2^{11} + 2 a_4 b_3 T_1^{14} T_2^{11} + a_4 b_5 T_1^4 T_2^{12} - 2 a_2 b_3 T_1^6 T_2^{12} - 2 a_2 b_5 T_1^6 T_2^{12} - 4 a_4 b_5 T_1^6 T_2^{12} + \\
 & 8 a_4 b_3 T_1^7 T_2^{12} + 4 a_2 b_5 T_1^7 T_2^{12} - 4 a_4 b_5 T_1^7 T_2^{12} + a_2 b_3 T_1^8 T_2^{12} - 10 a_4 b_3 T_1^8 T_2^{12} - 3 a_2 b_5 T_1^8 T_2^{12} + \\
 & 4 a_4 b_5 T_1^8 T_2^{12} - 4 a_2 b_3 T_1^9 T_2^{12} + 5 a_4 b_3 T_1^9 T_2^{12} + 3 a_2 b_5 T_1^9 T_2^{12} + 3 a_4 b_5 T_1^9 T_2^{12} + 6 a_2 b_3 T_1^{10} T_2^{12} -
 \end{aligned}$$

$$\begin{aligned}
 & a_4 b_3 T_1^{10} T_2^{12} - a_2 b_5 T_1^{10} T_2^{12} - 2 a_4 b_5 T_1^{10} T_2^{12} - 4 a_2 b_3 T_1^{11} T_2^{12} - 5 a_4 b_3 T_1^{11} T_2^{12} - 3 a_2 b_5 T_1^{11} T_2^{12} + \\
 & 13 a_4 b_5 T_1^{11} T_2^{12} + a_2 b_3 T_1^{12} T_2^{12} + 9 a_4 b_3 T_1^{12} T_2^{12} + 2 a_2 b_5 T_1^{12} T_2^{12} - 9 a_4 b_5 T_1^{12} T_2^{12} - 4 a_4 b_3 T_1^{13} T_2^{12} - \\
 & 2 a_4 b_5 T_1^{13} T_2^{12} - 2 a_4 b_5 T_1^6 T_2^{13} + 6 a_4 b_5 T_1^7 T_2^{13} + a_4 b_3 T_1^8 T_2^{13} + a_2 b_5 T_1^8 T_2^{13} - 5 a_4 b_5 T_1^8 T_2^{13} - \\
 & 5 a_4 b_3 T_1^9 T_2^{13} - 3 a_2 b_5 T_1^9 T_2^{13} + 5 a_4 b_5 T_1^9 T_2^{13} + 9 a_4 b_3 T_1^{10} T_2^{13} + 3 a_2 b_5 T_1^{10} T_2^{13} - 5 a_4 b_5 T_1^{10} T_2^{13} - \\
 & 7 a_4 b_3 T_1^{11} T_2^{13} - a_2 b_5 T_1^{11} T_2^{13} - 3 a_4 b_5 T_1^{11} T_2^{13} + 2 a_4 b_3 T_1^{12} T_2^{13} + 4 a_4 b_5 T_1^{12} T_2^{13} + a_4 b_5 T_1^{12} T_2^{14} - \\
 & 4 a_4 b_5 T_1^9 T_2^{14} + 5 a_4 b_5 T_1^{10} T_2^{14} - 2 a_4 b_5 T_1^{11} T_2^{14} \Big/ \left((-1 + T_1) T_1^7 (-1 + T_2) T_2^6 (-1 + T_1 T_2) \right) \Big]
 \end{aligned}$$

In[*]:= **K = Knot**["K11n42"]; **KT =** $\int \mathcal{L}[K] \times d$ vs **[K]**

Out[*]=

- i

$$\begin{aligned}
 & E \left[\epsilon \text{Series} \left[0, \left(a_2 b_3 T_1 - a_2 b_5 T_1 - a_2 b_3 T_1^2 + a_4 b_3 T_1^2 - a_4 b_5 T_1^2 - a_2 b_3 T_1^3 + a_2 b_5 T_1^3 - a_4 b_5 T_1^3 + a_2 b_3 T_1^4 - \right. \right. \right. \\
 & a_4 b_3 T_1^4 - 2 c_{19} T_1^4 - 2 c_{34} T_1^4 - 2 c_{49} T_1^4 - 2 c_{64} T_1^4 + 2 c_{19} T_1^5 + 2 c_{34} T_1^5 + 2 c_{49} T_1^5 + 2 c_{64} T_1^5 + \\
 & a_2 b_3 T_2 - a_2 b_5 T_2 - 4 a_2 b_3 T_1 T_2 + 2 a_4 b_3 T_1 T_2 + 4 a_2 b_5 T_1 T_2 - 2 a_4 b_5 T_1 T_2 + 3 a_2 b_3 T_1^2 T_2 - \\
 & 5 a_4 b_3 T_1^2 T_2 + 4 a_4 b_5 T_1^2 T_2 - a_4 b_3 T_1^3 T_2 - a_2 b_5 T_1^3 T_2 + 5 a_4 b_5 T_1^3 T_2 + 3 a_2 b_3 T_1^4 T_2 + 2 a_4 b_3 T_1^4 T_2 - \\
 & 3 a_2 b_5 T_1^4 T_2 + 2 a_4 b_5 T_1^4 T_2 + 6 c_{19} T_1^4 T_2 + 6 c_{34} T_1^4 T_2 + 6 c_{49} T_1^4 T_2 + 6 c_{64} T_1^4 T_2 - 4 a_2 b_3 T_1^5 T_2 + \\
 & 3 a_4 b_3 T_1^5 T_2 + a_2 b_5 T_1^5 T_2 - a_4 b_5 T_1^5 T_2 - 4 c_{19} T_1^5 T_2 - 4 c_{34} T_1^5 T_2 - 4 c_{49} T_1^5 T_2 - 4 c_{64} T_1^5 T_2 + \\
 & a_2 b_3 T_1^6 T_2 - a_4 b_3 T_1^6 T_2 - 2 c_{19} T_1^6 T_2 - 2 c_{34} T_1^6 T_2 - 2 c_{49} T_1^6 T_2 - 2 c_{64} T_1^6 T_2 + a_2 b_3 T_2^2 + a_4 b_3 T_2^2 - \\
 & a_4 b_5 T_2^2 - 4 a_2 b_3 T_1 T_2^2 - 4 a_4 b_3 T_1 T_2^2 + 5 a_4 b_5 T_1 T_2^2 + 7 a_2 b_3 T_1^2 T_2^2 + 3 a_4 b_3 T_1^2 T_2^2 - 4 a_2 b_5 T_1^2 T_2^2 - \\
 & 3 a_4 b_5 T_1^2 T_2^2 - 4 a_2 b_3 T_1^3 T_2^2 + 4 a_4 b_3 T_1^3 T_2^2 - 8 a_4 b_5 T_1^3 T_2^2 - 4 a_2 b_3 T_1^4 T_2^2 + 3 a_4 b_3 T_1^4 T_2^2 + 7 a_2 b_5 T_1^4 T_2^2 - \\
 & 9 a_4 b_5 T_1^4 T_2^2 - 6 c_{19} T_1^4 T_2^2 - 6 c_{34} T_1^4 T_2^2 - 6 c_{49} T_1^4 T_2^2 - 6 c_{64} T_1^4 T_2^2 + 7 a_2 b_3 T_1^5 T_2^2 - 11 a_4 b_3 T_1^5 T_2^2 - \\
 & 4 a_2 b_5 T_1^5 T_2^2 + 5 a_4 b_5 T_1^5 T_2^2 - 4 a_2 b_3 T_1^6 T_2^2 + 5 a_4 b_3 T_1^6 T_2^2 + a_2 b_5 T_1^6 T_2^2 - a_4 b_5 T_1^6 T_2^2 + 6 c_{19} T_1^6 T_2^2 + \\
 & 6 c_{34} T_1^6 T_2^2 + 6 c_{49} T_1^6 T_2^2 + 6 c_{64} T_1^6 T_2^2 + a_2 b_3 T_1^7 T_2^2 - a_4 b_3 T_1^7 T_2^2 + a_4 b_3 T_2^3 + a_2 b_5 T_2^3 - 2 a_2 b_3 T_1 T_2^3 - \\
 & 5 a_4 b_3 T_1 T_2^3 - a_2 b_5 T_1 T_2^3 + a_4 b_5 T_1 T_2^3 - 2 c_{16} T_1 T_2^3 - 2 c_{31} T_1 T_2^3 - 2 c_{46} T_1 T_2^3 - 2 c_{61} T_1 T_2^3 + \\
 & 6 a_2 b_3 T_1^2 T_2^3 + 8 a_4 b_3 T_1^2 T_2^3 - 4 a_4 b_5 T_1^2 T_2^3 + 6 c_{16} T_1^2 T_2^3 + 6 c_{31} T_1^2 T_2^3 + 6 c_{46} T_1^2 T_2^3 + 6 c_{61} T_1^2 T_2^3 - \\
 & 6 a_2 b_3 T_1^3 T_2^3 - 4 a_4 b_3 T_1^3 T_2^3 + 2 a_2 b_5 T_1^3 T_2^3 + 4 a_4 b_5 T_1^3 T_2^3 - 6 c_{16} T_1^3 T_2^3 - 6 c_{31} T_1^3 T_2^3 - 6 c_{46} T_1^3 T_2^3 - \\
 & 6 c_{61} T_1^3 T_2^3 + 4 a_2 b_3 T_1^4 T_2^3 - 6 a_4 b_3 T_1^4 T_2^3 - 6 a_2 b_5 T_1^4 T_2^3 + 13 a_4 b_5 T_1^4 T_2^3 + 2 c_{16} T_1^4 T_2^3 + 2 c_{19} T_1^4 T_2^3 + \\
 & 2 c_{31} T_1^4 T_2^3 + 2 c_{34} T_1^4 T_2^3 + 2 c_{46} T_1^4 T_2^3 + 2 c_{49} T_1^4 T_2^3 + 2 c_{61} T_1^4 T_2^3 + 2 c_{64} T_1^4 T_2^3 - 6 a_2 b_3 T_1^5 T_2^3 + \\
 & 13 a_4 b_3 T_1^5 T_2^3 + 7 a_2 b_5 T_1^5 T_2^3 - 11 a_4 b_5 T_1^5 T_2^3 - 2 c_{16} T_1^5 T_2^3 + 4 c_{19} T_1^5 T_2^3 - 2 c_{31} T_1^5 T_2^3 + 4 c_{34} T_1^5 T_2^3 - \\
 & 2 c_{46} T_1^5 T_2^3 + 4 c_{49} T_1^5 T_2^3 - 2 c_{61} T_1^5 T_2^3 + 4 c_{64} T_1^5 T_2^3 + 6 a_2 b_3 T_1^6 T_2^3 - 11 a_4 b_3 T_1^6 T_2^3 - 3 a_2 b_5 T_1^6 T_2^3 + \\
 & 5 a_4 b_5 T_1^6 T_2^3 + 6 c_{16} T_1^6 T_2^3 - 6 c_{19} T_1^6 T_2^3 + 6 c_{31} T_1^6 T_2^3 - 6 c_{34} T_1^6 T_2^3 + 6 c_{46} T_1^6 T_2^3 - 6 c_{49} T_1^6 T_2^3 + \\
 & 6 c_{61} T_1^6 T_2^3 - 6 c_{64} T_1^6 T_2^3 - 2 a_2 b_3 T_1^7 T_2^3 + 4 a_4 b_3 T_1^7 T_2^3 - 6 c_{16} T_1^7 T_2^3 - 6 c_{31} T_1^7 T_2^3 - 6 c_{46} T_1^7 T_2^3 - \\
 & 6 c_{61} T_1^7 T_2^3 + 2 c_{16} T_1^8 T_2^3 + 2 c_{31} T_1^8 T_2^3 + 2 c_{46} T_1^8 T_2^3 + 2 c_{61} T_1^8 T_2^3 + a_4 b_5 T_2^4 + a_2 b_3 T_1 T_2^4 - 2 a_4 b_3 T_1 T_2^4 - \\
 & 3 a_2 b_5 T_1 T_2^4 - 2 a_4 b_5 T_1 T_2^4 + 2 c_{16} T_1 T_2^4 + 2 c_{31} T_1 T_2^4 + 2 c_{46} T_1 T_2^4 + 2 c_{61} T_1 T_2^4 - 4 a_2 b_3 T_1^2 T_2^4 + \\
 & 9 a_4 b_3 T_1^2 T_2^4 + 7 a_2 b_5 T_1^2 T_2^4 - 3 a_4 b_5 T_1^2 T_2^4 - 4 c_{16} T_1^2 T_2^4 - 4 c_{31} T_1^2 T_2^4 - 4 c_{46} T_1^2 T_2^4 - 4 c_{61} T_1^2 T_2^4 + \\
 & 7 a_2 b_3 T_1^3 T_2^4 - 13 a_4 b_3 T_1^3 T_2^4 - 6 a_2 b_5 T_1^3 T_2^4 + 6 a_4 b_5 T_1^3 T_2^4 - 4 a_2 b_3 T_1^4 T_2^4 + 10 a_4 b_3 T_1^4 T_2^4 + \\
 & 2 a_2 b_5 T_1^4 T_2^4 - 10 a_4 b_5 T_1^4 T_2^4 + 4 c_{16} T_1^4 T_2^4 - 2 c_{19} T_1^4 T_2^4 + 4 c_{31} T_1^4 T_2^4 - 2 c_{34} T_1^4 T_2^4 + 4 c_{46} T_1^4 T_2^4 - \\
 & 2 c_{49} T_1^4 T_2^4 + 4 c_{61} T_1^4 T_2^4 - 2 c_{64} T_1^4 T_2^4 - 4 a_2 b_3 T_1^5 T_2^4 - 8 a_4 b_3 T_1^5 T_2^4 + 11 a_4 b_5 T_1^5 T_2^4 + 7 a_2 b_3 T_1^6 T_2^4 + \\
 & 6 a_4 b_3 T_1^6 T_2^4 - a_2 b_5 T_1^6 T_2^4 - 6 a_4 b_5 T_1^6 T_2^4 - 4 c_{16} T_1^6 T_2^4 + 2 c_{19} T_1^6 T_2^4 - 4 c_{31} T_1^6 T_2^4 + 2 c_{34} T_1^6 T_2^4 - \\
 & 4 c_{46} T_1^6 T_2^4 + 2 c_{49} T_1^6 T_2^4 - 4 c_{61} T_1^6 T_2^4 + 2 c_{64} T_1^6 T_2^4 - 4 a_2 b_3 T_1^7 T_2^4 - a_4 b_3 T_1^7 T_2^4 + a_2 b_5 T_1^7 T_2^4 - \\
 & a_4 b_5 T_1^7 T_2^4 + a_2 b_3 T_1^8 T_2^4 - a_4 b_3 T_1^8 T_2^4 + 4 c_{16} T_1^8 T_2^4 + 4 c_{31} T_1^8 T_2^4 + 4 c_{46} T_1^8 T_2^4 + 4 c_{61} T_1^8 T_2^4 - 2 c_{16} T_1^9 T_2^4 - \\
 & 2 c_{31} T_1^9 T_2^4 - 2 c_{46} T_1^9 T_2^4 - 2 c_{61} T_1^9 T_2^4 + a_4 b_3 T_1 T_2^5 + a_2 b_5 T_1 T_2^5 - 3 a_4 b_5 T_1 T_2^5 + a_2 b_3 T_1^2 T_2^5 - \\
 & 5 a_4 b_3 T_1^2 T_2^5 - 4 a_2 b_5 T_1^2 T_2^5 + 11 a_4 b_5 T_1^2 T_2^5 - 2 c_{16} T_1^2 T_2^5 - 2 c_{31} T_1^2 T_2^5 - 2 c_{46} T_1^2 T_2^5 - 2 c_{61} T_1^2 T_2^5 - \\
 & 4 a_2 b_3 T_1^3 T_2^5 + 11 a_4 b_3 T_1^3 T_2^5 + 7 a_2 b_5 T_1^3 T_2^5 - 13 a_4 b_5 T_1^3 T_2^5 + 6 c_{16} T_1^3 T_2^5 + 6 c_{31} T_1^3 T_2^5 + 6 c_{46} T_1^3 T_2^5 + \\
 & 6 c_{61} T_1^3 T_2^5 + 3 a_2 b_3 T_1^4 T_2^5 - 11 a_4 b_3 T_1^4 T_2^5 + 8 a_4 b_5 T_1^4 T_2^5 - 6 c_{16} T_1^4 T_2^5 + 6 c_{19} T_1^4 T_2^5 - 6 c_{31} T_1^4 T_2^5 + \\
 & 6 c_{34} T_1^4 T_2^5 - 6 c_{46} T_1^4 T_2^5 + 6 c_{49} T_1^4 T_2^5 - 6 c_{61} T_1^4 T_2^5 + 6 c_{64} T_1^4 T_2^5 - 4 a_4 b_3 T_1^5 T_2^5 - 4 a_2 b_5 T_1^5 T_2^5 + \\
 & 4 a_4 b_5 T_1^5 T_2^5 + 2 c_{16} T_1^5 T_2^5 - 4 c_{19} T_1^5 T_2^5 + 2 c_{31} T_1^5 T_2^5 - 4 c_{34} T_1^5 T_2^5 + 2 c_{46} T_1^5 T_2^5 - 4 c_{49} T_1^5 T_2^5 +
 \end{aligned}$$

$$\begin{aligned}
 & 2 c_{61} T_1^5 T_2^5 - 4 c_{64} T_1^5 T_2^5 + 3 a_2 b_3 T_1^6 T_2^5 + 11 a_4 b_3 T_1^6 T_2^5 - a_4 b_5 T_1^6 T_2^5 - 2 c_{16} T_1^6 T_2^5 - 2 c_{19} T_1^6 T_2^5 - \\
 & 2 c_{31} T_1^6 T_2^5 - 2 c_{34} T_1^6 T_2^5 - 2 c_{46} T_1^6 T_2^5 - 2 c_{49} T_1^6 T_2^5 - 2 c_{61} T_1^6 T_2^5 - 2 c_{64} T_1^6 T_2^5 - 4 a_2 b_3 T_1^7 T_2^5 - \\
 & 4 a_4 b_3 T_1^7 T_2^5 + 2 a_4 b_5 T_1^7 T_2^5 + 6 c_{16} T_1^7 T_2^5 + 6 c_{31} T_1^7 T_2^5 + 6 c_{46} T_1^7 T_2^5 + 6 c_{61} T_1^7 T_2^5 + a_2 b_3 T_1^8 T_2^5 + \\
 & a_4 b_3 T_1^8 T_2^5 - 6 c_{16} T_1^8 T_2^5 - 6 c_{31} T_1^8 T_2^5 - 6 c_{46} T_1^8 T_2^5 - 6 c_{61} T_1^8 T_2^5 + 2 c_{16} T_1^9 T_2^5 + 2 c_{31} T_1^9 T_2^5 + 2 c_{46} T_1^9 T_2^5 + \\
 & 2 c_{61} T_1^9 T_2^5 + a_4 b_5 T_1 T_2^6 + a_4 b_3 T_1^2 T_2^6 + a_2 b_5 T_1^2 T_2^6 - 5 a_4 b_5 T_1^3 T_2^6 - 5 a_4 b_3 T_1^3 T_2^6 - 3 a_2 b_5 T_1^3 T_2^6 + \\
 & 11 a_4 b_5 T_1^3 T_2^6 + a_2 b_3 T_1^4 T_2^6 + 6 a_4 b_3 T_1^4 T_2^6 - a_2 b_5 T_1^4 T_2^6 - 6 a_4 b_5 T_1^4 T_2^6 - 6 c_{19} T_1^4 T_2^6 - 6 c_{34} T_1^4 T_2^6 - \\
 & 6 c_{49} T_1^4 T_2^6 - 6 c_{64} T_1^4 T_2^6 - a_2 b_3 T_1^5 T_2^6 + a_4 b_3 T_1^5 T_2^6 - 11 a_4 b_5 T_1^5 T_2^6 - a_2 b_3 T_1^6 T_2^6 + 3 a_4 b_3 T_1^6 T_2^6 + \\
 & 4 a_2 b_5 T_1^6 T_2^6 - 3 a_4 b_5 T_1^6 T_2^6 + 6 c_{19} T_1^6 T_2^6 + 6 c_{34} T_1^6 T_2^6 + 6 c_{49} T_1^6 T_2^6 + 6 c_{64} T_1^6 T_2^6 + a_2 b_3 T_1^7 T_2^6 - \\
 & 8 a_4 b_3 T_1^7 T_2^6 - a_2 b_5 T_1^7 T_2^6 + a_4 b_5 T_1^7 T_2^6 + 2 a_4 b_3 T_1^8 T_2^6 + a_4 b_5 T_1^2 T_2^7 - 4 a_4 b_5 T_1^3 T_2^7 + a_4 b_3 T_1^4 T_2^7 + \\
 & a_2 b_5 T_1^4 T_2^7 + a_4 b_5 T_1^4 T_2^7 + 2 c_{19} T_1^4 T_2^7 + 2 c_{34} T_1^4 T_2^7 + 2 c_{49} T_1^4 T_2^7 + 2 c_{64} T_1^4 T_2^7 - 2 a_4 b_3 T_1^5 T_2^7 + \\
 & 4 a_4 b_5 T_1^5 T_2^7 + 4 c_{19} T_1^5 T_2^7 + 4 c_{34} T_1^5 T_2^7 + 4 c_{49} T_1^5 T_2^7 + 4 c_{64} T_1^5 T_2^7 - a_4 b_3 T_1^6 T_2^7 - a_2 b_5 T_1^6 T_2^7 + \\
 & 8 a_4 b_5 T_1^6 T_2^7 - 6 c_{19} T_1^6 T_2^7 - 6 c_{34} T_1^6 T_2^7 - 6 c_{49} T_1^6 T_2^7 - 6 c_{64} T_1^6 T_2^7 + 2 a_4 b_3 T_1^7 T_2^7 - 2 a_4 b_5 T_1^7 T_2^7 + \\
 & a_4 b_5 T_1^4 T_2^8 - a_4 b_5 T_1^5 T_2^8 - 2 c_{19} T_1^5 T_2^8 - 2 c_{34} T_1^5 T_2^8 - 2 c_{49} T_1^5 T_2^8 - 2 c_{64} T_1^5 T_2^8 - 2 a_4 b_5 T_1^6 T_2^8 + \\
 & 2 c_{19} T_1^6 T_2^8 + 2 c_{34} T_1^6 T_2^8 + 2 c_{49} T_1^6 T_2^8 + 2 c_{64} T_1^6 T_2^8 \Big/ \left((-1 + T_1) T_1^4 (-1 + T_2) T_2^3 (-1 + T_1 T_2) \right) \Big]
 \end{aligned}$$

$$\text{In[*]:= } \text{CKT} = \text{Factor} \left[(-1 + T_1) (-1 + T_2) (-1 + T_1 T_2) \right. \\
 \left. \frac{(\text{Cases}[\{\text{Conway}, \text{KT}\}], \text{eSeries}[0, \mathcal{E}_-] \rightarrow \mathcal{E}, \infty] /. \text{C}_{16|19|31|34|46|49|61|64|81|82|84|85} \rightarrow 0)}{(-b_3 + b_5 + b_3 T_1 - b_5 T_2) (-a_2 + a_2 T_1 - a_4 T_1 - a_4 T_2 + 2 a_4 T_1 T_2)} \right]$$

Out[*]=

$$\left\{ -\frac{1}{T_1^7 T_2^6} \right. \\
 \left(T_1^2 - 2 T_1^3 + T_1^4 - 2 T_1 T_2 + 2 T_1^2 T_2 + 2 T_1^5 T_2 - 2 T_1^6 T_2 + T_2^2 + 2 T_1 T_2^2 - 2 T_1^2 T_2^2 - 2 T_1^4 T_2^2 - 2 T_1^6 T_2^2 + 2 T_1^7 T_2^2 + \right. \\
 T_1^8 T_2^2 - 2 T_2^3 + T_1^4 T_2^3 + T_1^5 T_2^3 - 2 T_1^9 T_2^3 + T_2^4 - 2 T_1^2 T_2^4 + T_1^3 T_2^4 + 2 T_1^4 T_2^4 + 2 T_1^6 T_2^4 + T_1^7 T_2^4 - 2 T_1^8 T_2^4 + T_1^{10} T_2^4 - \\
 2 T_1 T_2^5 + T_1^3 T_2^5 - 4 T_1^5 T_2^5 - 4 T_1^6 T_2^5 + T_1^8 T_2^5 + 2 T_1^{10} T_2^5 - 2 T_1 T_2^6 - 2 T_1^2 T_2^6 + 2 T_1^4 T_2^6 - 4 T_1^5 T_2^6 + 12 T_1^6 T_2^6 - \\
 4 T_1^7 T_2^6 + 2 T_1^{10} T_2^6 - 2 T_1^{11} T_2^6 + 2 T_1^2 T_2^7 + T_1^4 T_2^7 - 4 T_1^6 T_2^7 - 4 T_1^7 T_2^7 + T_1^9 T_2^7 + \\
 2 T_1^{11} T_2^7 + T_1^2 T_2^8 - 2 T_1^4 T_2^8 + T_1^5 T_2^8 + 2 T_1^6 T_2^8 + 2 T_1^8 T_2^8 + T_1^9 T_2^8 - 2 T_1^{10} T_2^8 + T_1^{12} T_2^8 - 2 T_1^3 T_2^9 + \\
 T_1^7 T_2^9 + T_1^8 T_2^9 - 2 T_1^{12} T_2^9 + T_1^4 T_2^{10} + 2 T_1^5 T_2^{10} - 2 T_1^6 T_2^{10} - 2 T_1^8 T_2^{10} - 2 T_1^{10} T_2^{10} + 2 T_1^{11} T_2^{10} + \\
 T_1^{12} T_2^{10} - 2 T_1^6 T_2^{11} + 2 T_1^7 T_2^{11} + 2 T_1^{10} T_2^{11} - 2 T_1^{11} T_2^{11} + T_1^8 T_2^{12} - 2 T_1^9 T_2^{12} + T_1^{10} T_2^{12} \Big), \\
 \left. \frac{1}{T_1^4 T_2^3} \left(T_1 + T_1^2 + T_2 - 2 T_1 T_2 - 2 T_1^2 T_2 - 2 T_1^3 T_2 + T_1^4 T_2 + T_2^2 - 2 T_1 T_2^2 + 2 T_1^2 T_2^2 + 2 T_1^3 T_2^2 - \right. \right. \\
 \left. \left. 2 T_1^4 T_2^2 + T_1^5 T_2^2 - 2 T_1 T_2^3 + 2 T_1^2 T_2^3 + 2 T_1^4 T_2^3 - 2 T_1^5 T_2^3 + T_1 T_2^4 - 2 T_1^2 T_2^4 + 2 T_1^3 T_2^4 + \right. \right. \\
 \left. \left. 2 T_1^4 T_2^4 - 2 T_1^5 T_2^4 + T_1^6 T_2^4 + T_1^2 T_2^5 - 2 T_1^3 T_2^5 - 2 T_1^4 T_2^5 - 2 T_1^5 T_2^5 + T_1^6 T_2^5 + T_1^4 T_2^6 + T_1^5 T_2^6 \right) \right\}$$

$$\text{In[*]:= } \text{Factor}[\text{CKT} /. T_1 \rightarrow 1]$$

Out[*]=

$$\left\{ \frac{2 (-1 + T_2)^2 (1 + T_2^4)}{T_2^3}, \frac{2 (-1 + T_2)^2 (1 + T_2^4)}{T_2^3} \right\}$$

$$\text{In[*]:= } \text{Factor}[\text{CKT} /. T_2 \rightarrow 1]$$

Out[*]=

$$\left\{ \frac{2 (-1 + T_1)^2 (1 + T_1^4)}{T_1^4}, \frac{2 (-1 + T_1)^2 (1 + T_1^4)}{T_1^4} \right\}$$

$$\text{In[*]} := \text{Factor} \left[\frac{(\text{CKT} /. \{T_1 \rightarrow T_2, T_2 \rightarrow T_1\})}{\text{CKT}} \right]$$

Out[*]=

$$\left\{ \frac{T_1}{T_2}, \frac{T_1}{T_2} \right\}$$

$$\text{In[*]} := \text{nTAB1} = \text{Factor} \left[\frac{(-1 + T_1) (-1 + T_2) (-1 + T_1 T_2) (\text{Cases}[\text{tab1}, \text{eSeries}[\theta, \varepsilon_-] \rightarrow \varepsilon, \infty] /. \text{c16}[19|31|34|46|49|61|64|81|82|84|85 \rightarrow \theta])}{(-b_3 + b_5 + b_3 T_1 - b_5 T_2) (-a_2 + a_2 T_1 - a_4 T_1 - a_4 T_2 + 2 a_4 T_1 T_2)} \right]$$

Out[*]=

$$\left\{ - \frac{T_2 (-1 + T_1 - T_1^2 + T_2 - T_1^2 T_2 + 2 T_1^3 T_2 - T_2^2 - T_1 T_2^2 + T_1^2 T_2^2 - 2 T_1^3 T_2^2 + 2 T_1 T_2^3 - 2 T_1^2 T_2^3 + 2 T_1^3 T_2^3)}{(1 - T_1 + T_1^2) (1 - T_2 + T_2^2) (1 - T_1 T_2 + T_1^2 T_2^2)}, \right. \\ \left. - \frac{(-1 + T_1 T_2) (1 + T_1 T_2)}{T_1 (1 - 3 T_1 T_2 + T_1^2 T_2^2)}, \right. \\ \left. - \left((T_2 (-1 + T_1 - T_1^2 + T_1^3 - T_1^4 + T_2 - T_1^4 T_2 + 2 T_1^5 T_2 - T_2^2 - 2 T_1^2 T_2^2 + 2 T_1^3 T_2^2 - T_1^4 T_2^2 + T_1^5 T_2^2 - 3 T_1^6 T_2^2 + T_2^3 + 2 T_1^2 T_2^3 - 2 T_1^4 T_2^3 + 2 T_1^5 T_2^3 - T_1^6 T_2^3 + 4 T_1^7 T_2^3 - T_2^4 - T_1 T_2^4 - T_1^2 T_2^4 - 2 T_1^3 T_2^4 + 2 T_1^4 T_2^4 - 2 T_1^5 T_2^4 + T_1^6 T_2^4 - 4 T_1^7 T_2^4 + 2 T_1 T_2^5 + T_1^2 T_2^5 + 2 T_1^3 T_2^5 - 2 T_1^4 T_2^5 + 2 T_1^5 T_2^5 - T_1^6 T_2^5 + 4 T_1^7 T_2^5 - 3 T_1^8 T_2^5 - T_1^3 T_2^6 + T_1^4 T_2^6 - T_1^5 T_2^6 + T_1^6 T_2^6 - 4 T_1^7 T_2^6 + 4 T_1^8 T_2^6 - 4 T_1^9 T_2^6 + 4 T_1^{10} T_2^6 - 4 T_1^{11} T_2^6 + 4 T_1^{12} T_2^6) \right) / \\ \left((1 - T_1 + T_1^2 - T_1^3 + T_1^4) (1 - T_2 + T_2^2 - T_2^3 + T_2^4) (1 - T_1 T_2 + T_1^2 T_2^2 - T_1^3 T_2^3 + T_1^4 T_2^4) \right), \\ \left. - \left((-7 + 17 T_1 - 7 T_1^2 + 17 T_2 - 44 T_1 T_2 + 26 T_1^2 T_2 - 3 T_1^3 T_2 - 7 T_2^2 + 26 T_1 T_2^2 - 24 T_1^2 T_2^2 - 14 T_1^3 T_2^2 + 9 T_1^4 T_2^2 - 3 T_1 T_2^3 - 14 T_1^2 T_2^3 + 56 T_1^3 T_2^3 - 23 T_1^4 T_2^3 + 9 T_1^5 T_2^3 - 23 T_1^6 T_2^3 + 9 T_1^7 T_2^3) \right) / \right. \\ \left. \left((-2 + T_1) T_1 (-1 + 2 T_1) (-2 + T_2) (-1 + 2 T_2) (-2 + T_1 T_2) (-1 + 2 T_1 T_2) \right), \right. \\ \left. - \left((T_2 (-1 + T_1 - T_1^2 + T_1^3 - T_1^4 + T_1^5 - T_1^6 + T_2 - T_1^6 T_2 + 2 T_1^7 T_2 - T_2^2 - 2 T_1^2 T_2^2 + 2 T_1^3 T_2^2 - 2 T_1^4 T_2^2 + 2 T_1^5 T_2^2 - T_1^6 T_2^2 + T_1^7 T_2^2 - 3 T_1^8 T_2^2 + T_2^3 + 2 T_1^2 T_2^3 - 2 T_1^4 T_2^3 + 2 T_1^5 T_2^3 - T_1^6 T_2^3 + 4 T_1^7 T_2^3 - T_2^4 - 2 T_1^2 T_2^4 - 3 T_1^4 T_2^4 + 3 T_1^5 T_2^4 - T_1^6 T_2^4 + 2 T_1^7 T_2^4 - 3 T_1^8 T_2^4 + T_1^9 T_2^4 - 5 T_1^{10} T_2^4 + T_2^5 + 2 T_1^2 T_2^5 + 3 T_1^4 T_2^5 - 3 T_1^6 T_2^5 + 2 T_1^7 T_2^5 - 2 T_1^8 T_2^5 + 4 T_1^9 T_2^5 - T_1^{10} T_2^5 + 6 T_1^{11} T_2^5 - T_2^6 - T_1 T_2^6 - T_1^2 T_2^6 - 2 T_1^3 T_2^6 - T_1^4 T_2^6 - 3 T_1^5 T_2^6 + 3 T_1^6 T_2^6 - 2 T_1^7 T_2^6 + 2 T_1^8 T_2^6 - 4 T_1^9 T_2^6 + T_1^{10} T_2^6 - 6 T_1^{11} T_2^6 + 2 T_1 T_2^7 + T_1^2 T_2^7 + 2 T_1^3 T_2^7 + 2 T_1^4 T_2^7 + 2 T_1^5 T_2^7 - 2 T_1^6 T_2^7 + 2 T_1^7 T_2^7 - 2 T_1^8 T_2^7 + 4 T_1^9 T_2^7 - T_1^{10} T_2^7 + 6 T_1^{11} T_2^7 - 3 T_1^2 T_2^8 - T_1^3 T_2^8 - 3 T_1^4 T_2^8 - 2 T_1^5 T_2^8 + 2 T_1^6 T_2^8 - 2 T_1^7 T_2^8 + 2 T_1^8 T_2^8 - 4 T_1^9 T_2^8 + T_1^{10} T_2^8 - 6 T_1^{11} T_2^8 + 4 T_1^3 T_2^9 + T_1^4 T_2^9 + 4 T_1^5 T_2^9 - 4 T_1^6 T_2^9 + 4 T_1^7 T_2^9 - 4 T_1^8 T_2^9 + 4 T_1^9 T_2^9 - T_1^{10} T_2^9 + 6 T_1^{11} T_2^9 - 5 T_1^4 T_2^{10} - T_1^5 T_2^{10} + T_1^6 T_2^{10} - T_1^7 T_2^{10} + T_1^8 T_2^{10} - T_1^9 T_2^{10} + T_1^{10} T_2^{10} - 6 T_1^{11} T_2^{10} + 6 T_1^5 T_2^{11} - 6 T_1^6 T_2^{11} + 6 T_1^7 T_2^{11} - 6 T_1^8 T_2^{11} + 6 T_1^9 T_2^{11} - 6 T_1^{10} T_2^{11} + 6 T_1^{11} T_2^{11}) \right) / \\ \left((1 - T_1 + T_1^2 - T_1^3 + T_1^4 - T_1^5 + T_1^6) (1 - T_2 + T_2^2 - T_2^3 + T_2^4 - T_2^5 + T_2^6) (1 - T_1 T_2 + T_1^2 T_2^2 - T_1^3 T_2^3 + T_1^4 T_2^4 - T_1^5 T_2^5 + T_1^6 T_2^6) \right), \\ \left. - \left((-18 + 40 T_1 - 18 T_1^2 + 40 T_2 - 111 T_1 T_2 + 99 T_1^2 T_2 - 23 T_1^3 T_2 - 18 T_2^2 + 99 T_1 T_2^2 - 132 T_1^2 T_2^2 - 27 T_1^3 T_2^2 + 36 T_1^4 T_2^2 - 23 T_1 T_2^3 - 27 T_1^2 T_2^3 + 183 T_1^3 T_2^3 - 86 T_1^4 T_2^3 + 36 T_1^5 T_2^3 - 86 T_1^6 T_2^3 + 36 T_1^7 T_2^3) \right) / \right. \\ \left. (T_1 (3 - 7 T_1 + 3 T_1^2) (3 - 7 T_2 + 3 T_2^2) (3 - 7 T_1 T_2 + 3 T_1^2 T_2^2)) \right), \\ \left. - \left((T_2 (-1 + T_1 - T_1^2 + T_1^3 - T_1^4 + T_1^5 - T_1^6 + T_1^7 - T_1^8 + T_2 - T_1^8 T_2 + 2 T_1^9 T_2 - T_2^2 - 2 T_1^2 T_2^2 + 2 T_1^3 T_2^2 - 2 T_1^4 T_2^2 + 2 T_1^5 T_2^2 - 2 T_1^6 T_2^2 + 2 T_1^7 T_2^2 - T_1^8 T_2^2 + T_1^9 T_2^2 - 3 T_1^{10} T_2^2 + T_2^3 + 2 T_1^2 T_2^3 - 2 T_1^4 T_2^3 + 2 T_1^5 T_2^3 - T_1^6 T_2^3 + 4 T_1^7 T_2^3 - T_2^4 - 2 T_1^2 T_2^4 - 3 T_1^4 T_2^4 + 3 T_1^5 T_2^4 - 3 T_1^6 T_2^4 + 3 T_1^7 T_2^4 - T_1^8 T_2^4 + 2 T_1^9 T_2^4 - 3 T_1^{10} T_2^4 + T_1^{11} T_2^4 - 5 T_1^{12} T_2^4 + T_2^5 + 2 T_1^2 T_2^5 + 3 T_1^4 T_2^5 - 3 T_1^6 T_2^5 + 2 T_1^7 T_2^5 - 2 T_1^8 T_2^5 + 4 T_1^9 T_2^5 - T_1^{10} T_2^5 + 6 T_1^{11} T_2^5 - T_1^{12} T_2^5 - T_2^6 - 2 T_1^2 T_2^6 - 3 T_1^4 T_2^6 - 4 T_1^6 T_2^6 + 4 T_1^7 T_2^6 - T_1^8 T_2^6 + 3 T_1^9 T_2^6 - 3 T_1^{10} T_2^6 + 2 T_1^{11} T_2^6 - 5 T_1^{12} T_2^6 + T_1^{13} T_2^6 - 7 T_1^{14} T_2^6 + T_2^7 + 2 T_1^2 T_2^7 + 3 T_1^4 T_2^7 + 4 T_1^6 T_2^7 - 4 T_1^8 T_2^7 + 2 T_1^9 T_2^7 - 3 T_1^{10} T_2^7 + 4 T_1^{11} T_2^7 - 2 T_1^{12} T_2^7 + 6 T_1^{13} T_2^7 - T_1^{14} T_2^7 + 8 T_1^{15} T_2^7 - T_2^8 - T_1 T_2^8 - T_1^2 T_2^8 - 2 T_1^3 T_2^8 - T_1^4 T_2^8 - 3 T_1^5 T_2^8 - T_1^6 T_2^8 - 4 T_1^7 T_2^8 + 6 T_1^8 T_2^8 - 4 T_1^9 T_2^8 + 4 T_1^{10} T_2^8 - 4 T_1^{11} T_2^8 + 4 T_1^{12} T_2^8 - 4 T_1^{13} T_2^8 + 4 T_1^{14} T_2^8 - 4 T_1^{15} T_2^8) \right) / \\ \left((1 - T_1 + T_1^2 - T_1^3 + T_1^4 - T_1^5 + T_1^6) (1 - T_2 + T_2^2 - T_2^3 + T_2^4 - T_2^5 + T_2^6) (1 - T_1 T_2 + T_1^2 T_2^2 - T_1^3 T_2^3 + T_1^4 T_2^4 - T_1^5 T_2^5 + T_1^6 T_2^6) \right), \right.$$

$$\begin{aligned}
 & 4 T_1^8 T_2^8 - 2 T_1^9 T_2^8 + 3 T_1^{10} T_2^8 - 4 T_1^{11} T_2^8 + 2 T_1^{12} T_2^8 - 6 T_1^{13} T_2^8 + T_1^{14} T_2^8 - 8 T_1^{15} T_2^8 + 2 T_1 T_2^9 + T_1^2 T_2^9 + \\
 & 2 T_1^3 T_2^9 + 2 T_1^4 T_2^9 + 2 T_1^5 T_2^9 + 3 T_1^6 T_2^9 + 2 T_1^7 T_2^9 - 2 T_1^8 T_2^9 + 2 T_1^9 T_2^9 - 3 T_1^{10} T_2^9 + 4 T_1^{11} T_2^9 - 2 T_1^{12} T_2^9 + \\
 & 6 T_1^{13} T_2^9 - T_1^{14} T_2^9 + 8 T_1^{15} T_2^9 - 3 T_1^2 T_2^{10} - T_1^3 T_2^{10} - 3 T_1^4 T_2^{10} - 2 T_1^5 T_2^{10} - 3 T_1^6 T_2^{10} - 3 T_1^7 T_2^{10} + \\
 & 3 T_1^8 T_2^{10} - 3 T_1^9 T_2^{10} + 3 T_1^{10} T_2^{10} - 4 T_1^{11} T_2^{10} + 2 T_1^{12} T_2^{10} - 6 T_1^{13} T_2^{10} + T_1^{14} T_2^{10} - 8 T_1^{15} T_2^{10} + 4 T_1^3 T_2^{11} + \\
 & T_1^4 T_2^{11} + 4 T_1^5 T_2^{11} + 2 T_1^6 T_2^{11} + 4 T_1^7 T_2^{11} - 4 T_1^8 T_2^{11} + 4 T_1^9 T_2^{11} - 4 T_1^{10} T_2^{11} + 4 T_1^{11} T_2^{11} - 2 T_1^{12} T_2^{11} + \\
 & 6 T_1^{13} T_2^{11} - T_1^{14} T_2^{11} + 8 T_1^{15} T_2^{11} - 5 T_1^4 T_2^{12} - T_1^5 T_2^{12} - 5 T_1^6 T_2^{12} - 2 T_1^7 T_2^{12} + 2 T_1^8 T_2^{12} - 2 T_1^9 T_2^{12} + \\
 & 2 T_1^{10} T_2^{12} - 2 T_1^{11} T_2^{12} + 2 T_1^{12} T_2^{12} - 6 T_1^{13} T_2^{12} + T_1^{14} T_2^{12} - 8 T_1^{15} T_2^{12} + 6 T_1^5 T_2^{13} + T_1^6 T_2^{13} + 6 T_1^7 T_2^{13} - \\
 & 6 T_1^8 T_2^{13} + 6 T_1^9 T_2^{13} - 6 T_1^{10} T_2^{13} + 6 T_1^{11} T_2^{13} - 6 T_1^{12} T_2^{13} + 6 T_1^{13} T_2^{13} - T_1^{14} T_2^{13} + 8 T_1^{15} T_2^{13} - 7 T_1^6 T_2^{14} - \\
 & T_1^7 T_2^{14} + T_1^8 T_2^{14} - T_1^9 T_2^{14} + T_1^{10} T_2^{14} - T_1^{11} T_2^{14} + T_1^{12} T_2^{14} - T_1^{13} T_2^{14} + T_1^{14} T_2^{14} - 8 T_1^{15} T_2^{14} + 8 T_1^7 T_2^{15} - \\
 & 8 T_1^8 T_2^{15} + 8 T_1^9 T_2^{15} - 8 T_1^{10} T_2^{15} + 8 T_1^{11} T_2^{15} - 8 T_1^{12} T_2^{15} + 8 T_1^{13} T_2^{15} - 8 T_1^{14} T_2^{15} + 8 T_1^{15} T_2^{15} \Big) / \\
 & \left((1 - T_1 + T_1^2) (1 - T_1^3 + T_1^6) (1 - T_2 + T_2^2) (1 - T_1 T_2 + T_1^2 T_2^2) (1 - T_2^3 + T_2^6) (1 - T_1^3 T_2^3 + T_1^6 T_2^6) \right), \\
 & - \left((2 (-14 + 29 T_1 - 14 T_1^2 + 29 T_2 - 102 T_1 T_2 + 132 T_1^2 T_2 - 43 T_1^3 T_2 - 14 T_2^2 + 132 T_1 T_2^2 - 210 T_1^2 T_2^2 - \right. \\
 & \quad \left. 12 T_1^3 T_2^2 + 50 T_1^4 T_2^2 - 43 T_1 T_2^3 - 12 T_1^2 T_2^3 + 222 T_1^3 T_2^3 - 115 T_1^4 T_2^3 + 50 T_1^2 T_2^4 - 115 T_1^3 T_2^4 + 50 T_1^4 T_2^4) \right) / \\
 & \left. (T_1 (4 - 9 T_1 + 4 T_1^2) (4 - 9 T_2 + 4 T_2^2) (4 - 9 T_1 T_2 + 4 T_1^2 T_2^2)) \right) \Big\}
 \end{aligned}$$

In[*]:= **Factor** $\left[\frac{(\text{ntab1} / . \{T_1 \rightarrow T_2, T_2 \rightarrow T_1\})}{\text{ntab1}} \right]$

Out[*]=

$$\left\{ \frac{T_1}{T_2}, \frac{T_1}{T_2}, \frac{T_1}{T_2}, \frac{T_1}{T_2}, \frac{T_1}{T_2}, \frac{T_1}{T_2}, \frac{T_1}{T_2}, \frac{T_1}{T_2}, \frac{T_1}{T_2} \right\}$$