

Pensieve Header: Solving for a PPS associator degree by degree.

Initialization

```
In[*]:= SetDirectory["C:\\drorbn\\AcademicPensieve\\People\\Kuno"];
<< FreeLie.m
<< AwCalculus.m
<< FAA.m
<< EmergentChordDiagrams.m
BeginProfile[]
```

FreeLie` implements / extends

```
{*, +, **, $SeriesShowDegree, <>, ∫, ≡, ad, Ad, adSeries, AllCyclicWords, AllLyndonWords,
AllWords, Arbitrator, AS, ASeries, AW, b, BCH, BooleanSequence, BracketForm, BS, CC, Crop,
cw, CW, CWS, CWSeries, D, Deg, DegreeScale, DerivationSeries, div, DK, DKS, DKSeries, EulerE,
Exp, Inverse, j, J, JA, LieDerivation, LieMorphism, LieSeries, LS, LW, LyndonFactorization,
Morphism, New, RandomCWSeries, Randomizer, RandomLieSeries, RC, SeriesSolve, Support,
t, tb, TopBracketForm, tr, UndeterminedCoefficients, αMap, Γ, ℓ, Δ, σ, ħ, ↦, ↪}.
```

FreeLie` is in the public domain. Dror Bar-Natan is committed

to support it within reason until July 15, 2022. This is version 150814.

AwCalculus` implements / extends {*, **, ≡, dA, dc, deg, dm, dS, dΔ, dη, dσ, El, Es, hA,

hm, hS, hΔ, hη, hσ, RandomElSeries, RandomEsSeries, tA, tha, tm, tS, tΔ, tη, tσ, Γ, Δ}.

AwCalculus` is in the public domain. Dror Bar-Natan is committed

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This is Profile.m of <http://www.drorbn.net/AcademicPensieve/Projects/Profile/>.

This version: April 2020. Original version: July 1994.

FreeLie` implements / extends

```
{*, +, **, $SeriesShowDegree, <>, ∫, ≡, ad, Ad, adSeries, AllCyclicWords, AllLyndonWords,
AllWords, Arbitrator, AS, ASeries, AW, b, BCH, BooleanSequence, BracketForm, BS, CC, Crop,
cw, CW, CWS, CWSeries, D, Deg, DegreeScale, DerivationSeries, div, DK, DKS, DKSeries, EulerE,
Exp, Inverse, j, J, JA, LieDerivation, LieMorphism, LieSeries, LS, LW, LyndonFactorization,
Morphism, New, RandomCWSeries, Randomizer, RandomLieSeries, RC, SeriesSolve, Support,
t, tb, TopBracketForm, tr, UndeterminedCoefficients, αMap, Γ, ℓ, Δ, σ, ħ, ↦, ↪}.
```

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AwCalculus` implements / extends {*, **, ≡, dA, dc, deg, dm, dS, dΔ, dη, dσ, El, Es, hA,

hm, hS, hΔ, hη, hσ, RandomElSeries, RandomEsSeries, tA, tha, tm, tS, tΔ, tη, tσ, Γ, Δ}.

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This is Profile.m of <http://www.drorbn.net/AcademicPensieve/Projects/Profile/>.

This version: April 2020. Original version: July 1994.

Out[*]=

ProfileRoot

```
In[*]:=  $\bar{\mathfrak{e}}[2] = \mathbb{O}_{HR, \{x,y\}, \{1\}} \left[ \mathcal{A}_0 \left[ AW_1[] + \frac{1}{24} AW_1[x, y] - \frac{1}{24} AW_1[y, x] \right] \right]$ 
```

```
Out[*]=
```

```
 $\mathbb{O}_{HR, \{x,y\}, \{1\}} \left[ \mathcal{A}_0 \left[ AW_1[] + \frac{1}{24} AW_1[x, y] - \frac{1}{24} AW_1[y, x] \right] \right]$ 
```

```
In[*]:= Pentagond[ $\bar{\mathfrak{e}}_-$ ] :=
```

```
 $IM_d[\bar{\mathfrak{e}} // s\eta_2, \bar{\mathfrak{e}} // s\sigma_{1 \rightarrow 2} // p\Delta_{y \rightarrow z} // p2s_{z \rightarrow 1}, \bar{\mathfrak{e}} // s\sigma_{1 \rightarrow 2} // p2s_{y \rightarrow 1} // p\sigma_{x \rightarrow y} // p\eta_x] -$   

 $IM_d[\bar{\mathfrak{e}} // s\sigma_{1 \rightarrow 2} // p2s_{y \rightarrow 1} // p\Delta_{x \rightarrow y}, \bar{\mathfrak{e}} // s\Delta_{1 \rightarrow 1, 2}]$ 
```

Solving to Degree 3

```
In[*]:= Select[Basis3[ $\mathbb{O}_{HR, \{x,y\}, \{1\}}$ ], FreeQ[#,  $\mathcal{A}_c[1]$ ] &]
```

```
Out[*]=
```

```
{ $\mathbb{O}_{HR, \{x,y\}, \{1\}} [\mathcal{A}_0 [AW_1[x, x, x]]]$ ,  $\mathbb{O}_{HR, \{x,y\}, \{1\}} [\mathcal{A}_0 [AW_1[x, x, y]]]$ ,  

 $\mathbb{O}_{HR, \{x,y\}, \{1\}} [\mathcal{A}_0 [AW_1[x, y, x]]]$ ,  $\mathbb{O}_{HR, \{x,y\}, \{1\}} [\mathcal{A}_0 [AW_1[x, y, y]]]$ ,  $\mathbb{O}_{HR, \{x,y\}, \{1\}} [\mathcal{A}_0 [AW_1[y, x, x]]]$ ,  

 $\mathbb{O}_{HR, \{x,y\}, \{1\}} [\mathcal{A}_0 [AW_1[y, x, y]]]$ ,  $\mathbb{O}_{HR, \{x,y\}, \{1\}} [\mathcal{A}_0 [AW_1[y, y, x]]]$ ,  $\mathbb{O}_{HR, \{x,y\}, \{1\}} [\mathcal{A}_0 [AW_1[y, y, y]]]$ }
```

```
In[*]:= d = 3; i = 0;
```

```
 $\bar{\mathfrak{e}}[d] = \bar{\mathfrak{e}}[d - 1] + \text{Sum}[c_{d, ++i} B, \{B, \text{Select}[\text{Basis}_d[\mathbb{O}_{HR, \{x,y\}, \{1\}}], \text{FreeQ}[\#, \mathcal{A}_c[1]] \&]\}]$ 
```

```
Out[*]=
```

```
 $\mathbb{O}_{HR, \{x,y\}, \{1\}} \left[ \mathcal{A}_0 \left[ AW_1[] + \frac{1}{24} AW_1[x, y] - \frac{1}{24} AW_1[y, x] + c_{3,1} AW_1[x, x, x] + c_{3,2} AW_1[x, x, y] + c_{3,3} AW_1[x, y, x] + \right. \right.$   

 $c_{3,4} AW_1[x, y, y] + c_{3,5} AW_1[y, x, x] + c_{3,6} AW_1[y, x, y] + c_{3,7} AW_1[y, y, x] + c_{3,8} AW_1[y, y, y] \left. \right]$ 
```

```
In[*]:= rels = Union@@ (List@@ Pentagond[ $\bar{\mathfrak{e}}[d]$ ][[1]] /. {  

 $\mathcal{A}_0[A_] \Rightarrow \text{Table}[\text{Coefficient}[A, B], \{B, \text{Basis}_d, \{x,y\} [AW_1 AW_2]\}]$ ,  

 $\mathcal{A}_c[1,2] [A_] \Rightarrow \text{Table}[\text{Coefficient}[A, B], \{B, AW_1[] AW_2[] \text{Basis}_{d-1, \{x,y\}} [AW_1 AW_2]\}]$   

})
```

```
Out[*]=
```

```
{0, -4 c3,1, -3 c3,1, -c3,1, 2 c3,1, -2 c3,2 - c3,3, 2 c3,4, -c3,3 - 2 c3,5, -c3,2 - c3,3 - c3,5,  

-c3,2 - c3,3 - c3,4 - c3,5, -2 c3,4 - c3,6, -c3,3 - 2 c3,5 - c3,6, -c3,6 - 2 c3,7, c3,2 + c3,3 + c3,5 - c3,7,  

-c3,4 - c3,6 - c3,7, -c3,2 + c3,5 + c3,6 + c3,7, -c3,2 - c3,3 + c3,4 - c3,5 + 2 c3,6 + 2 c3,7, -3 c3,8, 3 c3,8}}
```

```
In[*]:= eqns = # == 0 & /@ rels
```

```
Out[*]=
```

```
{True, -4 c3,1 == 0, -3 c3,1 == 0, -c3,1 == 0, 2 c3,1 == 0, -2 c3,2 - c3,3 == 0, 2 c3,4 == 0,  

-c3,3 - 2 c3,5 == 0, -c3,2 - c3,3 - c3,5 == 0, -c3,2 - c3,3 - c3,4 - c3,5 == 0, -2 c3,4 - c3,6 == 0,  

-c3,3 - 2 c3,5 - c3,6 == 0, -c3,6 - 2 c3,7 == 0, c3,2 + c3,3 + c3,5 - c3,7 == 0, -c3,4 - c3,6 - c3,7 == 0,  

-c3,2 + c3,5 + c3,6 + c3,7 == 0, -c3,2 - c3,3 + c3,4 - c3,5 + 2 c3,6 + 2 c3,7 == 0, -3 c3,8 == 0, 3 c3,8 == 0}
```

```
In[*]:= vars = Union[Cases[eqns, cd, _,  $\infty$ ]]
```

```
Out[*]=
```

```
{c3,1, c3,2, c3,3, c3,4, c3,5, c3,6, c3,7, c3,8}}
```

In[*]:= **sol = Solve[eqns, vars] [[1]**

Solve: Equations may not give solutions for all "solve" variables. [i](#)

Out[*]=

{c_{3,1} → 0, c_{3,3} → -2 c_{3,2}, c_{3,4} → 0, c_{3,5} → c_{3,2}, c_{3,6} → 0, c_{3,7} → 0, c_{3,8} → 0}

In[*]:= **sol /. Rule → Set**

Out[*]=

{0, -2 c_{3,2}, 0, c_{3,2}, 0, 0, 0}

In[*]:= **ϕ[3]**

Out[*]=

$$\mathbb{O}_{HR, \{x,y\}, \{1\}} \left[\mathcal{A}_0 \left[AW_1[] + \frac{1}{24} AW_1[x, y] - \frac{1}{24} AW_1[y, x] + c_{3,2} AW_1[x, x, y] - 2 c_{3,2} AW_1[x, y, x] + c_{3,2} AW_1[y, x, x] \right] \right]$$

In[*]:= **c_{3,2} = 0**

Out[*]=

0

In[*]:= **ϕ[3]**

Out[*]=

$$\mathbb{O}_{HR, \{x,y\}, \{1\}} \left[\mathcal{A}_0 \left[AW_1[] + \frac{1}{24} AW_1[x, y] - \frac{1}{24} AW_1[y, x] \right] \right]$$

Solving to Degree 4

In[*]:= **d = 4; i = 0;**

ϕ[d] = ϕ[d - 1] + Sum[c_{d,++i} B, {B, Select[Basis_d[O_{HR, {x,y}, {1}], FreeQ[#, ϕ_c[1]] &]]]}

Out[*]=

$$\mathbb{O}_{HR, \{x,y\}, \{1\}} \left[\mathcal{A}_0 \left[AW_1[] + \frac{1}{24} AW_1[x, y] - \frac{1}{24} AW_1[y, x] + c_{4,1} AW_1[x, x, x, x] + c_{4,2} AW_1[x, x, x, y] + c_{4,3} AW_1[x, x, y, x] + c_{4,4} AW_1[x, x, y, y] + c_{4,5} AW_1[x, y, x, x] + c_{4,6} AW_1[x, y, x, y] + c_{4,7} AW_1[x, y, y, x] + c_{4,8} AW_1[x, y, y, y] + c_{4,9} AW_1[y, x, x, x] + c_{4,10} AW_1[y, x, x, y] + c_{4,11} AW_1[y, x, y, x] + c_{4,12} AW_1[y, x, y, y] + c_{4,13} AW_1[y, y, x, x] + c_{4,14} AW_1[y, y, x, y] + c_{4,15} AW_1[y, y, y, x] + c_{4,16} AW_1[y, y, y, y] \right] \right]$$

```
In[*]:= rels = Union @@ (List @@ Pentagon_d[ $\mathbb{Z}$ [d]] [[1]] /. {
  A_0[A_] := Table[Coefficient[A, B], {B, Basis_d,{x,y} [AW_1 AW_2]}],
  A_c[1,2][A_] := Table[Coefficient[A, B], {B, AW_1[] AW_2[] Basis_d-1,{x,y} [AW_1 AW_2]}]
})
```

Out[*]=

$$\left\{ \begin{aligned} &0, -11 c_{4,1}, -6 c_{4,1}, -4 c_{4,1}, -c_{4,1}, c_{4,1}, 3 c_{4,1}, 7 c_{4,1}, \\ &-3 c_{4,2} - c_{4,3}, -\frac{1}{576} + c_{4,2} + 2 c_{4,4}, -2 c_{4,3} - 2 c_{4,5}, -3 c_{4,2} - 2 c_{4,3} - c_{4,5}, \\ &\frac{1}{576} - 4 c_{4,4} - 2 c_{4,6}, -2 c_{4,4} - c_{4,6} - c_{4,7}, \frac{1}{576} - c_{4,2} + c_{4,3} + c_{4,5} + c_{4,6} + c_{4,7}, \\ &\frac{1}{576} + 2 c_{4,2} + 2 c_{4,4} - c_{4,5} + 2 c_{4,6} + 2 c_{4,7}, \frac{1}{576} - c_{4,2} + c_{4,4} + 3 c_{4,8}, -c_{4,3} - 2 c_{4,5} - 3 c_{4,9}, \\ &-c_{4,5} - 3 c_{4,9}, -c_{4,2} - c_{4,3} - c_{4,5} - c_{4,9}, \frac{1}{576} - 4 c_{4,2} - 3 c_{4,3} - c_{4,4} - c_{4,5} - c_{4,6} - c_{4,9}, \\ &-\frac{1}{288} - 3 c_{4,3} - 3 c_{4,5} - c_{4,6} - c_{4,7} - c_{4,9} - 2 c_{4,10}, -2 c_{4,4} - c_{4,6} - c_{4,10}, -c_{4,6} - 2 c_{4,7} - c_{4,11}, \\ &2 c_{4,2} + 3 c_{4,3} - 2 c_{4,4} - c_{4,7} - c_{4,11}, -c_{4,6} - 2 c_{4,10} - c_{4,11}, -\frac{1}{576} - c_{4,6} - 2 c_{4,7} - 2 c_{4,10} - c_{4,11}, \\ &\frac{1}{576} - c_{4,3} - 3 c_{4,5} - 5 c_{4,9} - c_{4,10} - c_{4,11}, -3 c_{4,8} - c_{4,12}, \frac{1}{576} - 2 c_{4,11} - 4 c_{4,13}, \\ &-c_{4,7} - c_{4,11} - 2 c_{4,13}, c_{4,3} + 2 c_{4,5} - c_{4,6} + 2 c_{4,9} - c_{4,11} - 2 c_{4,13}, -c_{4,10} - c_{4,11} - 2 c_{4,13}, \\ &2 c_{4,2} + 2 c_{4,3} + 3 c_{4,5} - c_{4,7} + 2 c_{4,9} - c_{4,13}, -c_{4,4} - c_{4,6} - c_{4,7} - c_{4,10} - c_{4,11} - c_{4,13}, \\ &-c_{4,2} + 2 c_{4,9} + c_{4,10} + c_{4,13}, -4 c_{4,2} - c_{4,3} + c_{4,4} - 2 c_{4,5} + 2 c_{4,6} + c_{4,7} - 4 c_{4,9} + 4 c_{4,10} + 2 c_{4,11} + 2 c_{4,13}, \\ &-\frac{1}{576} - 2 c_{4,3} + c_{4,5} + c_{4,7} + 2 c_{4,9} + 3 c_{4,11} + 2 c_{4,13}, \\ &\frac{1}{288} - c_{4,6} - 2 c_{4,7} - c_{4,9} - c_{4,10} - c_{4,11} - 3 c_{4,12} - 2 c_{4,14}, -2 c_{4,12} - 2 c_{4,14}, -3 c_{4,8} - 2 c_{4,12} - c_{4,14}, \\ &-\frac{1}{576} - c_{4,4} - c_{4,6} - c_{4,7} - 4 c_{4,8} - c_{4,9} - 2 c_{4,12} - c_{4,14}, -c_{4,3} + 2 c_{4,4} + 2 c_{4,6} + 3 c_{4,8} + c_{4,10} + c_{4,12} - c_{4,14}, \\ &-\frac{1}{288} - c_{4,2} + c_{4,10} + 2 c_{4,12} + c_{4,14}, -2 c_{4,4} - c_{4,5} - c_{4,6} + 2 c_{4,8} - c_{4,10} - c_{4,11} + 3 c_{4,12} + 2 c_{4,14}, \\ &c_{4,4} - c_{4,5} + 2 c_{4,6} + 4 c_{4,7} - 3 c_{4,8} + c_{4,10} + 2 c_{4,11} - c_{4,12} + c_{4,13} - c_{4,14} - 4 c_{4,15}, \\ &-\frac{1}{576} - c_{4,7} - c_{4,9} - c_{4,11} - c_{4,12} - c_{4,13} - 3 c_{4,14} - 3 c_{4,15}, \\ &-c_{4,12} - 2 c_{4,14} - 3 c_{4,15}, -c_{4,14} - 3 c_{4,15}, -c_{4,8} - c_{4,12} - c_{4,14} - c_{4,15}, \\ &\frac{1}{576} - c_{4,2} + c_{4,13} + c_{4,14} + 2 c_{4,15}, -c_{4,3} + c_{4,10} + 2 c_{4,11} + 2 c_{4,13} + c_{4,14} + 2 c_{4,15}, \\ &-c_{4,5} - c_{4,6} - c_{4,10} - c_{4,11} + c_{4,12} - 2 c_{4,13} + 3 c_{4,14} + 3 c_{4,15}, \\ &-c_{4,3} - c_{4,4} + 2 c_{4,8} - c_{4,10} + 3 c_{4,12} - c_{4,13} + 3 c_{4,14} + 3 c_{4,15}, \\ &-10 c_{4,16}, -6 c_{4,16}, -4 c_{4,16}, 2 c_{4,16}, 4 c_{4,16}, 8 c_{4,16} \end{aligned} \right\}$$

In[*]:= eqns = # == 0 & /@rels

Out[*]=

$$\left\{ \begin{aligned} &\text{True, } -11 c_{4,1} == 0, -6 c_{4,1} == 0, -4 c_{4,1} == 0, -c_{4,1} == 0, c_{4,1} == 0, 3 c_{4,1} == 0, 7 c_{4,1} == 0, \\ &-3 c_{4,2} - c_{4,3} == 0, -\frac{1}{576} + c_{4,2} + 2 c_{4,4} == 0, -2 c_{4,3} - 2 c_{4,5} == 0, -3 c_{4,2} - 2 c_{4,3} - c_{4,5} == 0, \\ &\frac{1}{576} - 4 c_{4,4} - 2 c_{4,6} == 0, -2 c_{4,4} - c_{4,6} - c_{4,7} == 0, \frac{1}{576} - c_{4,2} + c_{4,3} + c_{4,5} + c_{4,6} + c_{4,7} == 0, \\ &\frac{1}{576} + 2 c_{4,2} + 2 c_{4,4} - c_{4,5} + 2 c_{4,6} + 2 c_{4,7} == 0, \frac{1}{576} - c_{4,2} + c_{4,4} + 3 c_{4,8} == 0, \\ &-c_{4,3} - 2 c_{4,5} - 3 c_{4,9} == 0, -c_{4,5} - 3 c_{4,9} == 0, -c_{4,2} - c_{4,3} - c_{4,5} - c_{4,9} == 0, \\ &\frac{1}{576} - 4 c_{4,2} - 3 c_{4,3} - c_{4,4} - c_{4,5} - c_{4,6} - c_{4,9} == 0, -\frac{1}{288} - 3 c_{4,3} - 3 c_{4,5} - c_{4,6} - c_{4,7} - c_{4,9} - 2 c_{4,10} == 0, \\ &-2 c_{4,4} - c_{4,6} - c_{4,10} == 0, -c_{4,6} - 2 c_{4,7} - c_{4,11} == 0, 2 c_{4,2} + 3 c_{4,3} - 2 c_{4,4} - c_{4,7} - c_{4,11} == 0, \\ &-c_{4,6} - 2 c_{4,10} - c_{4,11} == 0, -\frac{1}{576} - c_{4,6} - 2 c_{4,7} - 2 c_{4,10} - c_{4,11} == 0, \\ &\frac{1}{576} - c_{4,3} - 3 c_{4,5} - 5 c_{4,9} - c_{4,10} - c_{4,11} == 0, -3 c_{4,8} - c_{4,12} == 0, \frac{1}{576} - 2 c_{4,11} - 4 c_{4,13} == 0, \\ &-c_{4,7} - c_{4,11} - 2 c_{4,13} == 0, c_{4,3} + 2 c_{4,5} - c_{4,6} + 2 c_{4,9} - c_{4,11} - 2 c_{4,13} == 0, \\ &-c_{4,10} - c_{4,11} - 2 c_{4,13} == 0, 2 c_{4,2} + 2 c_{4,3} + 3 c_{4,5} - c_{4,7} + 2 c_{4,9} - c_{4,13} == 0, \\ &-c_{4,4} - c_{4,6} - c_{4,7} - c_{4,10} - c_{4,11} - c_{4,13} == 0, -c_{4,2} + 2 c_{4,9} + c_{4,10} + c_{4,13} == 0, \\ &-4 c_{4,2} - c_{4,3} + c_{4,4} - 2 c_{4,5} + 2 c_{4,6} + c_{4,7} - 4 c_{4,9} + 4 c_{4,10} + 2 c_{4,11} + 2 c_{4,13} == 0, \\ &-\frac{1}{576} - 2 c_{4,3} + c_{4,5} + c_{4,7} + 2 c_{4,9} + 3 c_{4,11} + 2 c_{4,13} == 0, \\ &\frac{1}{288} - c_{4,6} - 2 c_{4,7} - c_{4,9} - c_{4,10} - c_{4,11} - 3 c_{4,12} - 2 c_{4,14} == 0, -2 c_{4,12} - 2 c_{4,14} == 0, \\ &-3 c_{4,8} - 2 c_{4,12} - c_{4,14} == 0, -\frac{1}{576} - c_{4,4} - c_{4,6} - c_{4,7} - 4 c_{4,8} - c_{4,9} - 2 c_{4,12} - c_{4,14} == 0, \\ &-c_{4,3} + 2 c_{4,4} + 2 c_{4,6} + 3 c_{4,8} + c_{4,10} + c_{4,12} - c_{4,14} == 0, -\frac{1}{288} - c_{4,2} + c_{4,10} + 2 c_{4,12} + c_{4,14} == 0, \\ &-2 c_{4,4} - c_{4,5} - c_{4,6} + 2 c_{4,8} - c_{4,10} - c_{4,11} + 3 c_{4,12} + 2 c_{4,14} == 0, \\ &c_{4,4} - c_{4,5} + 2 c_{4,6} + 4 c_{4,7} - 3 c_{4,8} + c_{4,10} + 2 c_{4,11} - c_{4,12} + c_{4,13} - c_{4,14} - 4 c_{4,15} == 0, \\ &-\frac{1}{576} - c_{4,7} - c_{4,9} - c_{4,11} - c_{4,12} - c_{4,13} - 3 c_{4,14} - 3 c_{4,15} == 0, \\ &-c_{4,12} - 2 c_{4,14} - 3 c_{4,15} == 0, -c_{4,14} - 3 c_{4,15} == 0, -c_{4,8} - c_{4,12} - c_{4,14} - c_{4,15} == 0, \\ &\frac{1}{576} - c_{4,2} + c_{4,13} + c_{4,14} + 2 c_{4,15} == 0, -c_{4,3} + c_{4,10} + 2 c_{4,11} + 2 c_{4,13} + c_{4,14} + 2 c_{4,15} == 0, \\ &-c_{4,5} - c_{4,6} - c_{4,10} - c_{4,11} + c_{4,12} - 2 c_{4,13} + 3 c_{4,14} + 3 c_{4,15} == 0, \\ &-c_{4,3} - c_{4,4} + 2 c_{4,8} - c_{4,10} + 3 c_{4,12} - c_{4,13} + 3 c_{4,14} + 3 c_{4,15} == 0, -10 c_{4,16} == 0, \\ &-6 c_{4,16} == 0, -4 c_{4,16} == 0, 2 c_{4,16} == 0, 4 c_{4,16} == 0, 8 c_{4,16} == 0 \end{aligned} \right\}$$

In[*]:= vars = Union[Cases[eqns, c_d, ∞]]

Out[*]=

$$\{c_{4,1}, c_{4,2}, c_{4,3}, c_{4,4}, c_{4,5}, c_{4,6}, c_{4,7}, c_{4,8}, c_{4,9}, c_{4,10}, c_{4,11}, c_{4,12}, c_{4,13}, c_{4,14}, c_{4,15}, c_{4,16}\}$$

In[*]:= sol = Solve[eqns, vars] [[1]]

Out[*]=

$$\left\{ c_{4,1} \rightarrow 0, c_{4,2} \rightarrow -\frac{1}{1440}, c_{4,3} \rightarrow \frac{1}{480}, c_{4,4} \rightarrow \frac{7}{5760}, c_{4,5} \rightarrow -\frac{1}{480}, \right.$$

$$c_{4,6} \rightarrow -\frac{1}{640}, c_{4,7} \rightarrow -\frac{1}{1152}, c_{4,8} \rightarrow -\frac{7}{5760}, c_{4,9} \rightarrow \frac{1}{1440}, c_{4,10} \rightarrow -\frac{1}{1152},$$

$$\left. c_{4,11} \rightarrow \frac{19}{5760}, c_{4,12} \rightarrow \frac{7}{1920}, c_{4,13} \rightarrow -\frac{7}{5760}, c_{4,14} \rightarrow -\frac{7}{1920}, c_{4,15} \rightarrow \frac{7}{5760}, c_{4,16} \rightarrow 0 \right\}$$

In[*]:= sol /. Rule -> Set

Out[*]=

$$\left\{ 0, -\frac{1}{1440}, \frac{1}{480}, \frac{7}{5760}, -\frac{1}{480}, -\frac{1}{640}, -\frac{1}{1152}, \right.$$

$$\left. -\frac{7}{5760}, \frac{1}{1440}, -\frac{1}{1152}, \frac{19}{5760}, \frac{7}{1920}, -\frac{7}{5760}, -\frac{7}{1920}, \frac{7}{5760}, 0 \right\}$$

In[*]:= $\mathfrak{A}[d]$

Out[*]=

$$\mathbb{O}_{HR, \{x, y\}, \{1\}} \left[\mathfrak{A}_0 \left[AW_1[] + \frac{1}{24} AW_1[x, y] - \frac{1}{24} AW_1[y, x] - \frac{AW_1[x, x, x, y]}{1440} + \frac{1}{480} AW_1[x, x, y, x] + \right. \right.$$

$$\frac{7 AW_1[x, x, y, y]}{5760} - \frac{1}{480} AW_1[x, y, x, x] - \frac{1}{640} AW_1[x, y, x, y] - \frac{AW_1[x, y, y, x]}{1152} -$$

$$\frac{7 AW_1[x, y, y, y]}{5760} + \frac{AW_1[y, x, x, x]}{1440} - \frac{AW_1[y, x, x, y]}{1152} + \frac{19 AW_1[y, x, y, x]}{5760} +$$

$$\left. \left. \frac{7 AW_1[y, x, y, y]}{1920} - \frac{7 AW_1[y, y, x, x]}{5760} - \frac{7 AW_1[y, y, x, y]}{1920} + \frac{7 AW_1[y, y, y, x]}{5760} \right] \right]$$

Solving to Degree 5

In[*]:= **d = 5; i = 0;**

⊗[d] = ⊗[d - 1] + Sum[c_{d,++i} B, {B, Select[Basis_d[O_{HR,{x,y},{1}}], FreeQ[#, Ⓐ_{c[1]}] &]}]

Out[*]=

$$\begin{aligned} & \mathcal{O}_{HR, \{x,y\}, \{1\}} \left[\mathcal{A}_0 \left[\right. \right. \\ & \quad \text{AW}_1[] + \frac{1}{24} \text{AW}_1[x, y] - \frac{1}{24} \text{AW}_1[y, x] - \frac{\text{AW}_1[x, x, x, y]}{1440} + \frac{1}{480} \text{AW}_1[x, x, y, x] + \frac{7 \text{AW}_1[x, x, y, y]}{5760} - \\ & \quad \frac{1}{480} \text{AW}_1[x, y, x, x] - \frac{1}{640} \text{AW}_1[x, y, x, y] - \frac{\text{AW}_1[x, y, y, x]}{1152} - \frac{7 \text{AW}_1[x, y, y, y]}{5760} + \\ & \quad \frac{\text{AW}_1[y, x, x, x]}{1440} - \frac{\text{AW}_1[y, x, x, y]}{1152} + \frac{19 \text{AW}_1[y, x, y, x]}{5760} + \frac{7 \text{AW}_1[y, x, y, y]}{1920} - \frac{7 \text{AW}_1[y, y, x, x]}{5760} - \\ & \quad \frac{7 \text{AW}_1[y, y, x, y]}{1920} + \frac{7 \text{AW}_1[y, y, y, x]}{5760} + c_{5,1} \text{AW}_1[x, x, x, x, x] + c_{5,2} \text{AW}_1[x, x, x, x, y] + \\ & \quad c_{5,3} \text{AW}_1[x, x, x, y, x] + c_{5,4} \text{AW}_1[x, x, x, y, y] + c_{5,5} \text{AW}_1[x, x, y, x, x] + \\ & \quad c_{5,6} \text{AW}_1[x, x, y, x, y] + c_{5,7} \text{AW}_1[x, x, y, y, x] + c_{5,8} \text{AW}_1[x, x, y, y, y] + \\ & \quad c_{5,9} \text{AW}_1[x, y, x, x, x] + c_{5,10} \text{AW}_1[x, y, x, x, y] + c_{5,11} \text{AW}_1[x, y, x, y, x] + \\ & \quad c_{5,12} \text{AW}_1[x, y, x, y, y] + c_{5,13} \text{AW}_1[x, y, y, x, x] + c_{5,14} \text{AW}_1[x, y, y, x, y] + \\ & \quad c_{5,15} \text{AW}_1[x, y, y, y, x] + c_{5,16} \text{AW}_1[x, y, y, y, y] + c_{5,17} \text{AW}_1[y, x, x, x, x] + \\ & \quad c_{5,18} \text{AW}_1[y, x, x, x, y] + c_{5,19} \text{AW}_1[y, x, x, y, x] + c_{5,20} \text{AW}_1[y, x, x, y, y] + \\ & \quad c_{5,21} \text{AW}_1[y, x, y, x, x] + c_{5,22} \text{AW}_1[y, x, y, x, y] + c_{5,23} \text{AW}_1[y, x, y, y, x] + \\ & \quad c_{5,24} \text{AW}_1[y, x, y, y, y] + c_{5,25} \text{AW}_1[y, y, x, x, x] + c_{5,26} \text{AW}_1[y, y, x, x, y] + \\ & \quad c_{5,27} \text{AW}_1[y, y, x, y, x] + c_{5,28} \text{AW}_1[y, y, x, y, y] + c_{5,29} \text{AW}_1[y, y, y, x, x] + \\ & \quad \left. \left. c_{5,30} \text{AW}_1[y, y, y, x, y] + c_{5,31} \text{AW}_1[y, y, y, y, x] + c_{5,32} \text{AW}_1[y, y, y, y, y] \right] \right] \end{aligned}$$

In[*]:= **Short[**

rels = Union@@(List@@Pentagon_d[⊗[d]][[1]] /. {
Ⓐ₀[A_] => Table[Coefficient[A, B], {B, Basis_{d,{x,y}}[AW₁ AW₂]}],
Ⓐ_{c[1,2]}[A_] => Table[Coefficient[A, B], {B, AW₁[] AW₂[] Basis_{d-1,{x,y}}[AW₁ AW₂]}]
}),
10]

Out[*]//Short=

$$\begin{aligned} & \{0, -26 c_{5,1}, -10 c_{5,1}, -6 c_{5,1}, -5 c_{5,1}, -c_{5,1}, 4 c_{5,1}, 14 c_{5,1}, \\ & -4 c_{5,2} - c_{5,3}, 2 c_{5,2} + 2 c_{5,4}, -3 c_{5,3} - 2 c_{5,5}, -6 c_{5,2} - 3 c_{5,3} - c_{5,5}, \\ & -3 c_{5,4} - c_{5,6} - c_{5,7}, \ll 117 \gg, -c_{5,30} - 4 c_{5,31}, -c_{5,16} - c_{5,24} - c_{5,28} - c_{5,30} - c_{5,31}, \\ & -c_{5,5} + c_{5,20} + 2 c_{5,22} + 4 c_{5,23} - 3 c_{5,24} + 2 c_{5,26} + 4 c_{5,27} - c_{5,28} + 3 c_{5,29} + 2 c_{5,30} + c_{5,31}, \\ & -c_{5,9} - c_{5,14} - c_{5,22} - c_{5,23} - c_{5,26} - 2 c_{5,27} - 3 c_{5,29} + 2 c_{5,30} + 2 c_{5,31}, -c_{5,2} + c_{5,29} + c_{5,30} + 3 c_{5,31}, \\ & -c_{5,3} - c_{5,8} + 3 c_{5,16} - c_{5,20} + 4 c_{5,24} - c_{5,26} + 4 c_{5,28} - c_{5,29} + 4 c_{5,30} + 4 c_{5,31}, \\ & -c_{5,3} + c_{5,26} + 2 c_{5,27} + 3 c_{5,29} + 2 c_{5,30} + 7 c_{5,31}, \\ & -c_{5,5} - c_{5,12} - c_{5,20} - c_{5,22} + 2 c_{5,24} - 2 c_{5,26} - c_{5,27} + 6 c_{5,28} - 3 c_{5,29} + 8 c_{5,30} + 8 c_{5,31}, \\ & -25 c_{5,32}, -10 c_{5,32}, -5 c_{5,32}, 5 c_{5,32}, 15 c_{5,32} \} \end{aligned}$$

In[*]:= **eqns = # == 0 & /@ rels;**

In[*]:= vars = Union[Cases[eqns, c_d, ∞]]

Out[*]=

{c5,1, c5,2, c5,3, c5,4, c5,5, c5,6, c5,7, c5,8, c5,9, c5,10, c5,11, c5,12, c5,13, c5,14, c5,15, c5,16, c5,17, c5,18, c5,19, c5,20, c5,21, c5,22, c5,23, c5,24, c5,25, c5,26, c5,27, c5,28, c5,29, c5,30, c5,31, c5,32}

In[*]:= sol = Solve[eqns, vars] [[1]]

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

Out[*]=

{c5,1 → 0, c5,2 → $\frac{c5,5}{6}$, c5,3 → $-\frac{2 c5,5}{3}$, c5,4 → $-\frac{c5,5}{6}$, c5,6 → $\frac{c5,5}{4}$, c5,7 → $\frac{c5,5}{4}$, c5,8 → $\frac{c5,5}{6}$, c5,9 → $-\frac{2 c5,5}{3}$, c5,10 → $\frac{c5,5}{4}$, c5,11 → $-c5,5$, c5,12 → $-\frac{2 c5,5}{3}$, c5,13 → $\frac{c5,5}{4}$, c5,14 → c5,5, c5,15 → $-\frac{2 c5,5}{3}$, c5,16 → 0, c5,17 → $\frac{c5,5}{6}$, c5,18 → $-\frac{c5,5}{6}$, c5,19 → $\frac{c5,5}{4}$, c5,20 → $\frac{c5,5}{6}$, c5,21 → $\frac{c5,5}{4}$, c5,22 → $-\frac{2 c5,5}{3}$, c5,23 → c5,5, c5,24 → 0, c5,25 → $-\frac{c5,5}{6}$, c5,26 → $\frac{c5,5}{6}$, c5,27 → $-\frac{2 c5,5}{3}$, c5,28 → 0, c5,29 → $\frac{c5,5}{6}$, c5,30 → 0, c5,31 → 0, c5,32 → 0}

In[*]:= sol /. Rule → Set

Out[*]=

{0, $\frac{c5,5}{6}$, $-\frac{2 c5,5}{3}$, $-\frac{c5,5}{6}$, $\frac{c5,5}{4}$, $\frac{c5,5}{4}$, $\frac{c5,5}{6}$, $-\frac{2 c5,5}{3}$, $\frac{c5,5}{4}$, $-c5,5$, $-\frac{2 c5,5}{3}$, $\frac{c5,5}{4}$, c5,5, $-\frac{2 c5,5}{3}$, 0, $\frac{c5,5}{6}$, $-\frac{c5,5}{6}$, $\frac{c5,5}{4}$, $\frac{c5,5}{6}$, $\frac{c5,5}{4}$, $-\frac{2 c5,5}{3}$, c5,5, 0, $-\frac{c5,5}{6}$, $\frac{c5,5}{6}$, $-\frac{2 c5,5}{3}$, 0, $\frac{c5,5}{6}$, 0, 0, 0}

In[*]:= c5,5 = 0

Out[*]=

0

In[*]:= $\mathcal{A}[d]$

Out[*]=

$\mathcal{O}_{HR, \{x, y\}, \{1\}} \left[\mathcal{A}_0 \left[AW_1[] + \frac{1}{24} AW_1[x, y] - \frac{1}{24} AW_1[y, x] - \frac{AW_1[x, x, x, y]}{1440} + \frac{1}{480} AW_1[x, x, y, x] + \frac{7 AW_1[x, x, y, y]}{5760} - \frac{1}{480} AW_1[x, y, x, x] - \frac{1}{640} AW_1[x, y, x, y] - \frac{AW_1[x, y, y, x]}{1152} - \frac{7 AW_1[x, y, y, y]}{5760} + \frac{AW_1[y, x, x, x]}{1440} - \frac{AW_1[y, x, x, y]}{1152} + \frac{19 AW_1[y, x, y, x]}{5760} + \frac{7 AW_1[y, x, y, y]}{1920} - \frac{7 AW_1[y, y, x, x]}{5760} - \frac{7 AW_1[y, y, x, y]}{1920} + \frac{7 AW_1[y, y, y, x]}{5760} \right] \right]$

Solving to Degree 6

In[*]:= **d = 6; i = 0;**

Ⓞ[d] = Ⓞ[d - 1] + Sum[c_{d,++i} B, {B, Select[Basis_d[O_{HR}, {x,y}, {1}], FreeQ[#, Ⓞ_c[1]] &]}]

Out[*]=

$$\begin{aligned}
 & \mathcal{O}_{HR, \{x,y\}, \{1\}} \left[\mathcal{A}_0 \left[AW_1[] + \frac{1}{24} AW_1[x, y] - \frac{1}{24} AW_1[y, x] - \frac{AW_1[x, x, x, y]}{1440} + \frac{1}{480} AW_1[x, x, y, x] + \right. \right. \\
 & \quad \frac{7 AW_1[x, x, y, y]}{5760} - \frac{1}{480} AW_1[x, y, x, x] - \frac{1}{640} AW_1[x, y, x, y] - \frac{AW_1[x, y, y, x]}{1152} - \\
 & \quad \frac{7 AW_1[x, y, y, y]}{5760} + \frac{AW_1[y, x, x, x]}{1440} - \frac{AW_1[y, x, x, y]}{1152} + \frac{19 AW_1[y, x, y, x]}{5760} + \frac{7 AW_1[y, x, y, y]}{1920} - \\
 & \quad \frac{7 AW_1[y, y, x, x]}{5760} - \frac{7 AW_1[y, y, x, y]}{1920} + \frac{7 AW_1[y, y, y, x]}{5760} + c_{6,1} AW_1[x, x, x, x, x, x] + \\
 & \quad c_{6,2} AW_1[x, x, x, x, x, y] + c_{6,3} AW_1[x, x, x, x, y, x] + c_{6,4} AW_1[x, x, x, x, y, y] + \\
 & \quad c_{6,5} AW_1[x, x, x, y, x, x] + c_{6,6} AW_1[x, x, x, y, x, y] + c_{6,7} AW_1[x, x, x, y, y, x] + \\
 & \quad c_{6,8} AW_1[x, x, x, y, y, y] + c_{6,9} AW_1[x, x, y, x, x, x] + c_{6,10} AW_1[x, x, y, x, x, y] + \\
 & \quad c_{6,11} AW_1[x, x, y, x, y, x] + c_{6,12} AW_1[x, x, y, x, y, y] + c_{6,13} AW_1[x, x, y, y, x, x] + \\
 & \quad c_{6,14} AW_1[x, x, y, y, x, y] + c_{6,15} AW_1[x, x, y, y, y, x] + c_{6,16} AW_1[x, x, y, y, y, y] + \\
 & \quad c_{6,17} AW_1[x, y, x, x, x, x] + c_{6,18} AW_1[x, y, x, x, x, y] + c_{6,19} AW_1[x, y, x, x, y, x] + \\
 & \quad c_{6,20} AW_1[x, y, x, x, y, y] + c_{6,21} AW_1[x, y, x, y, x, x] + c_{6,22} AW_1[x, y, x, y, x, y] + \\
 & \quad c_{6,23} AW_1[x, y, x, y, y, x] + c_{6,24} AW_1[x, y, x, y, y, y] + c_{6,25} AW_1[x, y, y, x, x, x] + \\
 & \quad c_{6,26} AW_1[x, y, y, x, x, y] + c_{6,27} AW_1[x, y, y, x, y, x] + c_{6,28} AW_1[x, y, y, x, y, y] + \\
 & \quad c_{6,29} AW_1[x, y, y, y, x, x] + c_{6,30} AW_1[x, y, y, y, x, y] + c_{6,31} AW_1[x, y, y, y, y, x] + \\
 & \quad c_{6,32} AW_1[x, y, y, y, y, y] + c_{6,33} AW_1[y, x, x, x, x, x] + c_{6,34} AW_1[y, x, x, x, x, y] + \\
 & \quad c_{6,35} AW_1[y, x, x, x, y, x] + c_{6,36} AW_1[y, x, x, x, y, y] + c_{6,37} AW_1[y, x, x, y, x, x] + \\
 & \quad c_{6,38} AW_1[y, x, x, y, x, y] + c_{6,39} AW_1[y, x, x, y, y, x] + c_{6,40} AW_1[y, x, x, y, y, y] + \\
 & \quad c_{6,41} AW_1[y, x, y, x, x, x] + c_{6,42} AW_1[y, x, y, x, x, y] + c_{6,43} AW_1[y, x, y, x, y, x] + \\
 & \quad c_{6,44} AW_1[y, x, y, x, y, y] + c_{6,45} AW_1[y, x, y, y, x, x] + c_{6,46} AW_1[y, x, y, y, x, y] + \\
 & \quad c_{6,47} AW_1[y, x, y, y, y, x] + c_{6,48} AW_1[y, x, y, y, y, y] + c_{6,49} AW_1[y, y, x, x, x, x] + \\
 & \quad c_{6,50} AW_1[y, y, x, x, x, y] + c_{6,51} AW_1[y, y, x, x, y, x] + c_{6,52} AW_1[y, y, x, x, y, y] + \\
 & \quad c_{6,53} AW_1[y, y, x, y, x, x] + c_{6,54} AW_1[y, y, x, y, x, y] + c_{6,55} AW_1[y, y, x, y, y, x] + \\
 & \quad c_{6,56} AW_1[y, y, x, y, y, y] + c_{6,57} AW_1[y, y, y, x, x, x] + c_{6,58} AW_1[y, y, y, x, x, y] + \\
 & \quad c_{6,59} AW_1[y, y, y, x, y, x] + c_{6,60} AW_1[y, y, y, x, y, y] + c_{6,61} AW_1[y, y, y, y, x, x] + \\
 & \quad c_{6,62} AW_1[y, y, y, y, x, y] + c_{6,63} AW_1[y, y, y, y, y, x] + c_{6,64} AW_1[y, y, y, y, y, y] \left. \right]
 \end{aligned}$$

```
In[*]:= Short [
  reIs = Union @@ (List @@ Pentagond[ $\mathbb{Z}$ [d]] [[1]] /. {
     $\mathcal{A}_0[A\_]$   $\Rightarrow$  Table[Coefficient[A, B], {B, Basisd, {x,y}[AW1 AW2] }],
     $\mathcal{A}_{C[1,2]}[A\_]$   $\Rightarrow$  Table[Coefficient[A, B], {B, AW1[[]] AW2[[]] Basisd-1, {x,y}[AW1 AW2] }},
  ]),
  10]
```

```
Out[*]//Short=
{0, -57 c6,1, -27 c6,1, -20 c6,1, -15 c6,1, -6 c6,1, -c6,1,
  5 c6,1, 18 c6,1, 23 c6,1, 38 c6,1, -5 c6,2 - c6,3,  $\frac{1}{17280} + 3 c_{6,2} + 2 c_{6,4}$ ,
  -4 c6,3 - 2 c6,5, <<331>>,  $\frac{1}{11520} - c_{6,3} + c_{6,58} + 2 c_{6,59} + 4 c_{6,61} + 3 c_{6,62} + 14 c_{6,63}$ ,
  -  $\frac{1}{11520} - c_{6,5} + c_{6,52} + 2 c_{6,54} + 4 c_{6,55} - 3 c_{6,56} + 3 c_{6,58} + 6 c_{6,59} - c_{6,60} + 6 c_{6,61} + 7 c_{6,62} + 14 c_{6,63}$ ,
   $\frac{1}{11520} - c_{6,9} - c_{6,28} - c_{6,44} - c_{6,46} - c_{6,52} - 2 c_{6,54} - c_{6,55} + 2 c_{6,56} - 3 c_{6,58} - 3 c_{6,59} +$ 
  8 c6,60 - 6 c6,61 + 13 c6,62 + 15 c6,63, -c6,5 - c6,24 - c6,40 - c6,44 + 3 c6,48 - 2 c6,52 -
  c6,54 + 8 c6,56 - 3 c6,58 - c6,59 + 12 c6,60 - 4 c6,61 + 15 c6,62 + 15 c6,63, -56 c6,64,
  -26 c6,64, -20 c6,64, -15 c6,64, -6 c6,64, 6 c6,64, 19 c6,64, 24 c6,64, 39 c6,64}
```

```
In[*]:= eqns = # == 0 & /@ reIs;
```

```
In[*]:= vars = Union[Cases[eqns, Cd, _,  $\infty$ ]]
```

```
Out[*]=
{C6,1, C6,2, C6,3, C6,4, C6,5, C6,6, C6,7, C6,8, C6,9, C6,10, C6,11, C6,12, C6,13, C6,14, C6,15, C6,16, C6,17,
  C6,18, C6,19, C6,20, C6,21, C6,22, C6,23, C6,24, C6,25, C6,26, C6,27, C6,28, C6,29, C6,30, C6,31, C6,32, C6,33,
  C6,34, C6,35, C6,36, C6,37, C6,38, C6,39, C6,40, C6,41, C6,42, C6,43, C6,44, C6,45, C6,46, C6,47, C6,48, C6,49,
  C6,50, C6,51, C6,52, C6,53, C6,54, C6,55, C6,56, C6,57, C6,58, C6,59, C6,60, C6,61, C6,62, C6,63, C6,64}
```

In[*]:= sol = Solve[eqns, vars] [[1]]

Out[*]=

$$\left\{ c_{6,1} \rightarrow 0, c_{6,2} \rightarrow \frac{1}{60480}, c_{6,3} \rightarrow -\frac{1}{12096}, c_{6,4} \rightarrow -\frac{13}{241920}, c_{6,5} \rightarrow \frac{1}{6048}, c_{6,6} \rightarrow \frac{19}{145152}, \right.$$

$$c_{6,7} \rightarrow \frac{61}{725760}, c_{6,8} \rightarrow \frac{83}{967680}, c_{6,9} \rightarrow -\frac{1}{6048}, c_{6,10} \rightarrow -\frac{17}{241920}, c_{6,11} \rightarrow -\frac{61}{241920},$$

$$c_{6,12} \rightarrow -\frac{89}{414720}, c_{6,13} \rightarrow 0, c_{6,14} \rightarrow \frac{71}{967680}, c_{6,15} \rightarrow -\frac{337}{2903040}, c_{6,16} \rightarrow -\frac{31}{483840},$$

$$c_{6,17} \rightarrow \frac{1}{12096}, c_{6,18} \rightarrow \frac{13}{725760}, c_{6,19} \rightarrow \frac{1}{11520}, c_{6,20} \rightarrow \frac{37}{580608}, c_{6,21} \rightarrow \frac{1}{6048}, c_{6,22} \rightarrow \frac{79}{967680},$$

$$c_{6,23} \rightarrow \frac{71}{322560}, c_{6,24} \rightarrow \frac{73}{483840}, c_{6,25} \rightarrow -\frac{1}{18144}, c_{6,26} \rightarrow -\frac{53}{967680}, c_{6,27} \rightarrow -\frac{23}{193536},$$

$$c_{6,28} \rightarrow -\frac{11}{161280}, c_{6,29} \rightarrow \frac{19}{290304}, c_{6,30} \rightarrow -\frac{1}{193536}, c_{6,31} \rightarrow \frac{7}{138240}, c_{6,32} \rightarrow \frac{31}{967680},$$

$$c_{6,33} \rightarrow -\frac{1}{60480}, c_{6,34} \rightarrow \frac{1}{34560}, c_{6,35} \rightarrow -\frac{1}{725760}, c_{6,36} \rightarrow -\frac{1}{967680}, c_{6,37} \rightarrow \frac{19}{120960},$$

$$c_{6,38} \rightarrow \frac{583}{2903040}, c_{6,39} \rightarrow \frac{53}{967680}, c_{6,40} \rightarrow \frac{17}{161280}, c_{6,41} \rightarrow -\frac{103}{181440}, c_{6,42} \rightarrow -\frac{289}{2903040},$$

$$c_{6,43} \rightarrow -\frac{55}{193536}, c_{6,44} \rightarrow -\frac{17}{53760}, c_{6,45} \rightarrow -\frac{11}{483840}, c_{6,46} \rightarrow \frac{7}{46080}, c_{6,47} \rightarrow -\frac{191}{967680},$$

$$c_{6,48} \rightarrow -\frac{31}{193536}, c_{6,49} \rightarrow \frac{13}{241920}, c_{6,50} \rightarrow \frac{1}{17920}, c_{6,51} \rightarrow -\frac{19}{1451520}, c_{6,52} \rightarrow 0, c_{6,53} \rightarrow \frac{89}{414720},$$

$$c_{6,54} \rightarrow \frac{53}{322560}, c_{6,55} \rightarrow \frac{71}{322560}, c_{6,56} \rightarrow \frac{31}{96768}, c_{6,57} \rightarrow -\frac{83}{967680}, c_{6,58} \rightarrow -\frac{53}{967680},$$

$$c_{6,59} \rightarrow -\frac{13}{64512}, c_{6,60} \rightarrow -\frac{31}{96768}, c_{6,61} \rightarrow \frac{31}{483840}, c_{6,62} \rightarrow \frac{31}{193536}, c_{6,63} \rightarrow -\frac{31}{967680}, c_{6,64} \rightarrow 0 \left. \right\}$$

In[*]:= sol /. Rule -> Set

Out[*]=

$$\left\{ 0, \frac{1}{60480}, -\frac{1}{12096}, -\frac{13}{241920}, \frac{1}{6048}, \frac{19}{145152}, \frac{61}{725760}, \frac{83}{967680}, -\frac{1}{6048}, -\frac{17}{241920}, \right.$$

$$-\frac{61}{241920}, -\frac{89}{414720}, 0, \frac{71}{967680}, -\frac{337}{2903040}, -\frac{31}{483840}, \frac{1}{12096}, \frac{13}{725760}, \frac{1}{11520},$$

$$\frac{37}{580608}, \frac{1}{6048}, \frac{79}{967680}, \frac{71}{322560}, \frac{73}{483840}, -\frac{1}{18144}, -\frac{53}{967680}, -\frac{23}{193536}, -\frac{11}{161280},$$

$$\frac{19}{290304}, -\frac{1}{193536}, \frac{7}{138240}, \frac{31}{967680}, -\frac{1}{60480}, \frac{1}{34560}, -\frac{1}{725760}, -\frac{1}{967680}, \frac{19}{120960},$$

$$\frac{583}{2903040}, \frac{53}{967680}, \frac{17}{161280}, \frac{29}{181440}, \frac{289}{2903040}, \frac{55}{193536}, \frac{17}{53760}, -\frac{11}{483840},$$

$$\frac{7}{46080}, -\frac{191}{967680}, -\frac{31}{193536}, -\frac{13}{241920}, \frac{1}{17920}, -\frac{19}{1451520}, 0, \frac{89}{414720}, \frac{53}{322560}, \frac{71}{322560},$$

$$\frac{31}{96768}, -\frac{83}{967680}, -\frac{53}{967680}, \frac{13}{64512}, -\frac{31}{96768}, \frac{31}{483840}, \frac{31}{193536}, -\frac{31}{967680}, 0 \left. \right\}$$

In[*]:= $\mathcal{A}[d]$

Out[*]=

$$\mathcal{O}_{HR, \{x, y\}, \{1\}} \left[\mathcal{A}_0 \left[\mathcal{A}_1 \left[\frac{1}{24} \mathcal{A}_1[x, y] - \frac{1}{24} \mathcal{A}_1[y, x] - \frac{\mathcal{A}_1[x, x, x, y]}{1440} + \frac{1}{480} \mathcal{A}_1[x, x, y, x] + \right. \right. \right.$$

$$\begin{aligned}
 & \frac{7 AW_1[x, x, y, y]}{5760} - \frac{1}{480} AW_1[x, y, x, x] - \frac{1}{640} AW_1[x, y, x, y] - \frac{AW_1[x, y, y, x]}{1152} - \\
 & \frac{7 AW_1[x, y, y, y]}{5760} + \frac{AW_1[y, x, x, x]}{1440} - \frac{AW_1[y, x, x, y]}{1152} + \frac{19 AW_1[y, x, y, x]}{5760} + \\
 & \frac{7 AW_1[y, x, y, y]}{1920} - \frac{7 AW_1[y, y, x, x]}{5760} - \frac{7 AW_1[y, y, x, y]}{1920} + \frac{7 AW_1[y, y, y, x]}{5760} + \\
 & \frac{AW_1[x, x, x, x, x, y]}{60480} - \frac{AW_1[x, x, x, x, y, x]}{12096} - \frac{13 AW_1[x, x, x, x, y, y]}{241920} + \\
 & \frac{AW_1[x, x, x, y, x, x]}{6048} + \frac{19 AW_1[x, x, x, y, x, y]}{145152} + \frac{61 AW_1[x, x, x, y, y, x]}{725760} + \\
 & \frac{83 AW_1[x, x, x, y, y, y]}{967680} - \frac{AW_1[x, x, y, x, x, x]}{6048} - \frac{17 AW_1[x, x, y, x, x, y]}{241920} - \\
 & \frac{61 AW_1[x, x, y, x, y, x]}{241920} - \frac{89 AW_1[x, x, y, x, y, y]}{414720} + \frac{71 AW_1[x, x, y, y, x, y]}{967680} - \\
 & \frac{337 AW_1[x, x, y, y, y, x]}{2903040} - \frac{31 AW_1[x, x, y, y, y, y]}{483840} + \frac{AW_1[x, y, x, x, x, x]}{12096} + \\
 & \frac{13 AW_1[x, y, x, x, x, y]}{725760} + \frac{AW_1[x, y, x, x, y, x]}{11520} + \frac{37 AW_1[x, y, x, x, y, y]}{580608} + \\
 & \frac{AW_1[x, y, x, y, x, x]}{6048} + \frac{79 AW_1[x, y, x, y, x, y]}{967680} + \frac{71 AW_1[x, y, x, y, y, x]}{322560} + \\
 & \frac{73 AW_1[x, y, x, y, y, y]}{483840} - \frac{AW_1[x, y, y, x, x, x]}{18144} - \frac{53 AW_1[x, y, y, x, x, y]}{967680} - \\
 & \frac{23 AW_1[x, y, y, x, y, x]}{193536} - \frac{11 AW_1[x, y, y, x, y, y]}{161280} + \frac{19 AW_1[x, y, y, y, x, x]}{290304} - \\
 & \frac{AW_1[x, y, y, y, x, y]}{193536} + \frac{7 AW_1[x, y, y, y, y, x]}{138240} + \frac{31 AW_1[x, y, y, y, y, y]}{967680} - \\
 & \frac{AW_1[y, x, x, x, x, x]}{60480} + \frac{AW_1[y, x, x, x, x, y]}{34560} - \frac{97 AW_1[y, x, x, x, y, x]}{725760} - \\
 & \frac{103 AW_1[y, x, x, x, y, y]}{967680} + \frac{19 AW_1[y, x, x, y, x, x]}{120960} + \frac{583 AW_1[y, x, x, y, x, y]}{2903040} + \\
 & \frac{53 AW_1[y, x, x, y, y, x]}{967680} + \frac{17 AW_1[y, x, x, y, y, y]}{161280} - \frac{29 AW_1[y, x, y, x, x, x]}{181440} - \\
 & \frac{289 AW_1[y, x, y, x, x, y]}{2903040} - \frac{55 AW_1[y, x, y, x, y, x]}{193536} - \frac{17 AW_1[y, x, y, x, y, y]}{53760} - \\
 & \frac{11 AW_1[y, x, y, y, x, x]}{483840} + \frac{7 AW_1[y, x, y, y, x, y]}{46080} - \frac{191 AW_1[y, x, y, y, y, x]}{967680} - \\
 & \frac{31 AW_1[y, x, y, y, y, y]}{193536} + \frac{13 AW_1[y, y, x, x, x, x]}{241920} + \frac{AW_1[y, y, x, x, x, y]}{17920} - \\
 & \frac{19 AW_1[y, y, x, x, y, x]}{1451520} + \frac{89 AW_1[y, y, x, y, x, x]}{414720} + \frac{53 AW_1[y, y, x, y, x, y]}{322560} + \\
 & \frac{71 AW_1[y, y, x, y, y, x]}{322560} + \frac{31 AW_1[y, y, x, y, y, y]}{96768} - \frac{83 AW_1[y, y, y, x, x, x]}{967680} - \\
 & \frac{53 AW_1[y, y, y, x, x, y]}{967680} - \frac{13 AW_1[y, y, y, x, y, x]}{64512} - \frac{31 AW_1[y, y, y, x, y, y]}{96768} +
 \end{aligned}$$

$$\left[\frac{31 AW_1[y, y, y, y, x, x]}{483840} + \frac{31 AW_1[y, y, y, y, x, y]}{193536} - \frac{31 AW_1[y, y, y, y, y, x]}{967680} \right]$$

In[*]:= [PrintProfile\[\]](#)

Out[*]=

ProfileRoot is root. Profiled time: 14.532

```
( 5) 0/ 0 above EMBasis
( 12) 0/ 11.470 above EMIM
( 12) 0.031/ 0.219 above EMp2s
( 8) 0/ 0.031 above EMpΔ
( 4) 0.015/ 0.015 above EMpσ
( 4) 0.047/ 2.765 above EMSΔ
( 12) 0/ 0.032 above EMSσ
FAD: called 220 times, time in 5.942/5.942
( 12) 0.047/ 0.047 under EMp2s
( 16) 0.109/ 0.109 under EMSΔ
( 192) 5.786/ 5.786 under 0
FAAm: called 608 times, time in 3.03/3.03
( 320) 1.265/ 1.265 under EMHR
( 64) 0.203/ 0.203 under EMsm
( 32) 0.703/ 0.703 under EMSΔ
( 192) 0.859/ 0.859 under 0
FAΔ: called 28 times, time in 1.36/1.36
( 28) 1.360/ 1.360 under EMSΔ
0: called 52 times, time in 1.279/10.284
( 48) 1.248/ 10.020 under EMsm
( 4) 0.031/ 0.266 under EMSΔ
( 52) 0.031/ 1.331 above EMCF
( 72) 0.437/ 1.029 above EMHR
( 192) 0.859/ 0.859 above FAAm
( 192) 5.786/ 5.786 above FAD
EMHR: called 160 times, time in 1.064/2.329
( 88) 0.627/ 1.300 under EMCF
( 72) 0.437/ 1.029 under 0
( 320) 1.265/ 1.265 above FAAm
FAAσ: called 228 times, time in 0.934/0.934
( 40) 0.217/ 0.217 under EMsm
( 8) 0.280/ 0.280 under EMSΔ
( 180) 0.437/ 0.437 under EMSσ
FAEM: called 32 times, time in 0.518/0.518
( 32) 0.518/ 0.518 under EMEM
FAFA: called 40 times, time in 0.172/0.172
( 24) 0.141/ 0.141 under EMp2s
( 12) 0.031/ 0.031 under EMpΔ
( 4) 0/ 0 under EMpσ
EMsm: called 24 times, time in 0.062/10.5
( 24) 0.062/ 10.500 under EMIM
```

```
( 64) 0.203/ 0.203 above FAAm
( 40) 0.217/ 0.217 above FAAσ
( 48) 1.248/ 10.020 above 0
EMsΔ: called 4 times, time in 0.047/2.765
( 4) 0.047/ 2.765 under ProfileRoot
( 32) 0.703/ 0.703 above FAAm
( 8) 0.280/ 0.280 above FAAσ
( 16) 0.109/ 0.109 above FA⊔
( 28) 1.360/ 1.360 above FAΔ
( 4) 0.031/ 0.266 above 0
EMsσ: called 36 times, time in 0.031/0.468
( 24) 0.031/ 0.436 under EMIM
( 12) 0/ 0.032 under ProfileRoot
( 180) 0.437/ 0.437 above FAAσ
EMCF: called 64 times, time in 0.031/1.331
( 12) 0/ 0 under EMp2s
( 52) 0.031/ 1.331 under 0
( 88) 0.627/ 1.300 above EMHR
EMp2s: called 12 times, time in 0.031/0.219
( 12) 0.031/ 0.219 under ProfileRoot
( 12) 0/ 0 above EMCF
( 24) 0.141/ 0.141 above FAFA
( 12) 0.047/ 0.047 above FA⊔
EMEM: called 12 times, time in 0.016/0.534
( 12) 0.016/ 0.534 under EMIM
( 32) 0.518/ 0.518 above FAEM
EMpσ: called 4 times, time in 0.015/0.015
( 4) 0.015/ 0.015 under ProfileRoot
( 4) 0/ 0 above FAFA
EMpΔ: called 8 times, time in 0./0.031
( 8) 0/ 0.031 under ProfileRoot
( 12) 0.031/ 0.031 above FAFA
EMIM: called 12 times, time in 0./11.47
( 12) 0/ 11.470 under ProfileRoot
( 12) 0.016/ 0.534 above EMEM
( 24) 0.062/ 10.500 above EMsm
( 24) 0.031/ 0.436 above EMsσ
EMBasis: called 5 times, time in 0./0.
( 5) 0/ 0 under ProfileRoot
```

Solving to Degree 7

```
In[ ]:= d = 7; i = 0;
ϕ[d] = ϕ[d - 1] + Sum[cd,++i B, {B, Select[Basisd[OHR, {x,y}, {1}], FreeQ[#, ϑc[1]] &]}]
Out[ ]:=
OHR, {x,y}, {1} [ ϑ0 [
```

$$\begin{aligned}
 & AW_1[] + \frac{1}{24} AW_1[x, y] - \frac{1}{24} AW_1[y, x] - \frac{AW_1[x, x, x, y]}{1440} + \frac{1}{480} AW_1[x, x, y, x] + \frac{7 AW_1[x, x, y, y]}{5760} - \\
 & \frac{1}{480} AW_1[x, y, x, x] - \frac{1}{640} AW_1[x, y, x, y] - \frac{AW_1[x, y, y, x]}{1152} - \frac{7 AW_1[x, y, y, y]}{5760} + \\
 & \frac{AW_1[y, x, x, x]}{1440} - \frac{AW_1[y, x, x, y]}{1152} + \frac{19 AW_1[y, x, y, x]}{5760} + \frac{7 AW_1[y, x, y, y]}{1920} - \frac{7 AW_1[y, y, x, x]}{5760} - \\
 & \frac{7 AW_1[y, y, x, y]}{1920} + \frac{7 AW_1[y, y, y, x]}{5760} + \frac{AW_1[x, x, x, x, x, y]}{60480} - \frac{AW_1[x, x, x, x, y, x]}{12096} - \\
 & \frac{13 AW_1[x, x, x, x, y, y]}{241920} + \frac{AW_1[x, x, x, y, x, x]}{6048} + \frac{19 AW_1[x, x, x, y, x, y]}{145152} + \\
 & \frac{61 AW_1[x, x, x, y, y, x]}{725760} + \frac{83 AW_1[x, x, x, y, y, y]}{967680} - \frac{AW_1[x, x, y, x, x, x]}{6048} - \\
 & \frac{17 AW_1[x, x, y, x, x, y]}{241920} - \frac{61 AW_1[x, x, y, x, y, x]}{241920} - \frac{89 AW_1[x, x, y, x, y, y]}{414720} + \\
 & \frac{71 AW_1[x, x, y, y, x, y]}{967680} - \frac{337 AW_1[x, x, y, y, y, x]}{2903040} - \frac{31 AW_1[x, x, y, y, y, y]}{483840} + \\
 & \frac{AW_1[x, y, x, x, x, x]}{12096} + \frac{13 AW_1[x, y, x, x, x, y]}{725760} + \frac{AW_1[x, y, x, x, y, x]}{11520} + \\
 & \frac{37 AW_1[x, y, x, x, y, y]}{580608} + \frac{AW_1[x, y, x, y, x, x]}{6048} + \frac{79 AW_1[x, y, x, y, x, y]}{967680} + \\
 & \frac{71 AW_1[x, y, x, y, y, x]}{322560} + \frac{73 AW_1[x, y, x, y, y, y]}{483840} - \frac{AW_1[x, y, y, x, x, x]}{18144} - \\
 & \frac{53 AW_1[x, y, y, x, x, y]}{967680} - \frac{23 AW_1[x, y, y, x, y, x]}{193536} - \frac{11 AW_1[x, y, y, x, y, y]}{161280} + \\
 & \frac{19 AW_1[x, y, y, y, x, x]}{290304} - \frac{AW_1[x, y, y, y, x, y]}{193536} + \frac{7 AW_1[x, y, y, y, y, x]}{138240} + \\
 & \frac{31 AW_1[x, y, y, y, y, y]}{967680} - \frac{AW_1[y, x, x, x, x, x]}{60480} + \frac{AW_1[y, x, x, x, x, y]}{34560} - \\
 & \frac{97 AW_1[y, x, x, x, y, x]}{725760} - \frac{103 AW_1[y, x, x, x, y, y]}{967680} + \frac{19 AW_1[y, x, x, y, x, x]}{120960} + \\
 & \frac{583 AW_1[y, x, x, y, x, y]}{2903040} + \frac{53 AW_1[y, x, x, y, y, x]}{967680} + \frac{17 AW_1[y, x, x, y, y, y]}{161280} - \\
 & \frac{29 AW_1[y, x, y, x, x, x]}{181440} - \frac{289 AW_1[y, x, y, x, x, y]}{2903040} - \frac{55 AW_1[y, x, y, x, y, x]}{193536} - \\
 & \frac{17 AW_1[y, x, y, x, y, y]}{53760} - \frac{11 AW_1[y, x, y, y, x, x]}{483840} + \frac{7 AW_1[y, x, y, y, x, y]}{46080} - \\
 & \frac{191 AW_1[y, x, y, y, y, x]}{967680} - \frac{31 AW_1[y, x, y, y, y, y]}{193536} + \frac{13 AW_1[y, y, x, x, x, x]}{241920} + \\
 & \frac{AW_1[y, y, x, x, x, y]}{17920} - \frac{19 AW_1[y, y, x, x, y, x]}{1451520} + \frac{89 AW_1[y, y, x, y, x, x]}{414720} + \\
 & \frac{53 AW_1[y, y, x, y, x, y]}{322560} + \frac{71 AW_1[y, y, x, y, y, x]}{322560} + \frac{31 AW_1[y, y, x, y, y, y]}{96768} - \\
 & \frac{83 AW_1[y, y, y, x, x, x]}{967680} - \frac{53 AW_1[y, y, y, x, x, y]}{967680} - \frac{13 AW_1[y, y, y, x, y, x]}{64512} -
 \end{aligned}$$

$$\begin{aligned}
 & \frac{31 AW_1 [y, y, y, x, y, y]}{96768} + \frac{31 AW_1 [y, y, y, y, x, x]}{483840} + \frac{31 AW_1 [y, y, y, y, x, y]}{193536} - \\
 & \frac{31 AW_1 [y, y, y, y, y, x]}{967680} + c_{7,1} AW_1 [x, x, x, x, x, x] + c_{7,2} AW_1 [x, x, x, x, x, y] + \\
 & c_{7,3} AW_1 [x, x, x, x, y, x] + c_{7,4} AW_1 [x, x, x, x, y, y] + c_{7,5} AW_1 [x, x, x, y, x, x] + \\
 & c_{7,6} AW_1 [x, x, x, y, x, y] + c_{7,7} AW_1 [x, x, x, y, y, x] + c_{7,8} AW_1 [x, x, x, y, y, y] + \\
 & c_{7,9} AW_1 [x, x, x, y, x, x] + c_{7,10} AW_1 [x, x, x, y, x, y] + c_{7,11} AW_1 [x, x, x, y, x, y] + \\
 & c_{7,12} AW_1 [x, x, x, y, x, y] + c_{7,13} AW_1 [x, x, x, y, y, x] + c_{7,14} AW_1 [x, x, x, y, y, x] + \\
 & c_{7,15} AW_1 [x, x, x, y, y, y] + c_{7,16} AW_1 [x, x, x, y, y, y] + c_{7,17} AW_1 [x, x, y, x, x, x] + \\
 & c_{7,18} AW_1 [x, x, y, x, x, y] + c_{7,19} AW_1 [x, x, y, x, x, y] + c_{7,20} AW_1 [x, x, y, x, x, y] + \\
 & c_{7,21} AW_1 [x, x, y, x, y, x] + c_{7,22} AW_1 [x, x, y, x, y, x] + c_{7,23} AW_1 [x, x, y, x, y, x] + \\
 & c_{7,24} AW_1 [x, x, y, x, y, y] + c_{7,25} AW_1 [x, x, y, y, x, x] + c_{7,26} AW_1 [x, x, y, y, x, x] + \\
 & c_{7,27} AW_1 [x, x, y, y, x, y] + c_{7,28} AW_1 [x, x, y, y, x, y] + c_{7,29} AW_1 [x, x, y, y, y, x] + \\
 & c_{7,30} AW_1 [x, x, y, y, y, x] + c_{7,31} AW_1 [x, x, y, y, y, y] + c_{7,32} AW_1 [x, x, y, y, y, y] + \\
 & c_{7,33} AW_1 [x, y, x, x, x, x] + c_{7,34} AW_1 [x, y, x, x, x, y] + c_{7,35} AW_1 [x, y, x, x, x, y] + \\
 & c_{7,36} AW_1 [x, y, x, x, x, y] + c_{7,37} AW_1 [x, y, x, x, y, x] + c_{7,38} AW_1 [x, y, x, x, y, x] + \\
 & c_{7,39} AW_1 [x, y, x, x, y, y] + c_{7,40} AW_1 [x, y, x, x, y, y] + c_{7,41} AW_1 [x, y, x, y, x, x] + \\
 & c_{7,42} AW_1 [x, y, x, y, x, x] + c_{7,43} AW_1 [x, y, x, y, x, y] + c_{7,44} AW_1 [x, y, x, y, x, y] + \\
 & c_{7,45} AW_1 [x, y, x, y, y, x] + c_{7,46} AW_1 [x, y, x, y, y, x] + c_{7,47} AW_1 [x, y, x, y, y, x] + \\
 & c_{7,48} AW_1 [x, y, x, y, y, y] + c_{7,49} AW_1 [x, y, y, x, x, x] + c_{7,50} AW_1 [x, y, y, x, x, x] + \\
 & c_{7,51} AW_1 [x, y, y, x, x, y] + c_{7,52} AW_1 [x, y, y, x, x, y] + c_{7,53} AW_1 [x, y, y, x, y, x] + \\
 & c_{7,54} AW_1 [x, y, y, x, y, x] + c_{7,55} AW_1 [x, y, y, x, y, y] + c_{7,56} AW_1 [x, y, y, x, y, y] + \\
 & c_{7,57} AW_1 [x, y, y, y, x, x] + c_{7,58} AW_1 [x, y, y, y, x, x] + c_{7,59} AW_1 [x, y, y, y, x, y] + \\
 & c_{7,60} AW_1 [x, y, y, y, x, y] + c_{7,61} AW_1 [x, y, y, y, y, x] + c_{7,62} AW_1 [x, y, y, y, y, x] + \\
 & c_{7,63} AW_1 [x, y, y, y, y, x] + c_{7,64} AW_1 [x, y, y, y, y, y] + c_{7,65} AW_1 [y, x, x, x, x, x] + \\
 & c_{7,66} AW_1 [y, x, x, x, x, y] + c_{7,67} AW_1 [y, x, x, x, x, y] + c_{7,68} AW_1 [y, x, x, x, x, y] + \\
 & c_{7,69} AW_1 [y, x, x, x, y, x] + c_{7,70} AW_1 [y, x, x, x, y, x] + c_{7,71} AW_1 [y, x, x, x, y, x] + \\
 & c_{7,72} AW_1 [y, x, x, x, y, y] + c_{7,73} AW_1 [y, x, x, y, x, x] + c_{7,74} AW_1 [y, x, x, y, x, x] + \\
 & c_{7,75} AW_1 [y, x, x, y, x, y] + c_{7,76} AW_1 [y, x, x, y, x, y] + c_{7,77} AW_1 [y, x, x, y, y, x] + \\
 & c_{7,78} AW_1 [y, x, x, y, y, x] + c_{7,79} AW_1 [y, x, x, y, y, y] + c_{7,80} AW_1 [y, x, x, y, y, y] + \\
 & c_{7,81} AW_1 [y, x, y, x, x, x] + c_{7,82} AW_1 [y, x, y, x, x, y] + c_{7,83} AW_1 [y, x, y, x, x, y] + \\
 & c_{7,84} AW_1 [y, x, y, x, x, y] + c_{7,85} AW_1 [y, x, y, x, y, x] + c_{7,86} AW_1 [y, x, y, x, y, x] + \\
 & c_{7,87} AW_1 [y, x, y, x, y, x] + c_{7,88} AW_1 [y, x, y, x, y, y] + c_{7,89} AW_1 [y, x, y, y, x, x] + \\
 & c_{7,90} AW_1 [y, x, y, y, x, x] + c_{7,91} AW_1 [y, x, y, y, x, y] + c_{7,92} AW_1 [y, x, y, y, x, y] + \\
 & c_{7,93} AW_1 [y, x, y, y, y, x] + c_{7,94} AW_1 [y, x, y, y, y, x] + c_{7,95} AW_1 [y, x, y, y, y, x] + \\
 & c_{7,96} AW_1 [y, x, y, y, y, y] + c_{7,97} AW_1 [y, y, x, x, x, x] + c_{7,98} AW_1 [y, y, x, x, x, x] + \\
 & c_{7,99} AW_1 [y, y, x, x, x, y] + c_{7,100} AW_1 [y, y, x, x, x, y] + c_{7,101} AW_1 [y, y, x, x, y, x] + \\
 & c_{7,102} AW_1 [y, y, x, x, y, x] + c_{7,103} AW_1 [y, y, x, x, y, y] + c_{7,104} AW_1 [y, y, x, x, y, y] + \\
 & c_{7,105} AW_1 [y, y, x, y, x, x] + c_{7,106} AW_1 [y, y, x, y, x, x] + c_{7,107} AW_1 [y, y, x, y, x, x] + \\
 & c_{7,108} AW_1 [y, y, x, y, x, y] + c_{7,109} AW_1 [y, y, x, y, y, x] + c_{7,110} AW_1 [y, y, x, y, y, x] + \\
 & c_{7,111} AW_1 [y, y, x, y, y, y] + c_{7,112} AW_1 [y, y, x, y, y, y] + c_{7,113} AW_1 [y, y, y, x, x, x] + \\
 & c_{7,114} AW_1 [y, y, y, x, x, x] + c_{7,115} AW_1 [y, y, y, x, x, y] + c_{7,116} AW_1 [y, y, y, x, x, y] + \\
 & c_{7,117} AW_1 [y, y, y, x, y, x] + c_{7,118} AW_1 [y, y, y, x, y, x] + c_{7,119} AW_1 [y, y, y, x, y, x] + \\
 & c_{7,120} AW_1 [y, y, y, x, y, y] + c_{7,121} AW_1 [y, y, y, y, x, x] + c_{7,122} AW_1 [y, y, y, y, x, x] + \\
 & c_{7,123} AW_1 [y, y, y, y, x, y] + c_{7,124} AW_1 [y, y, y, y, x, y] + c_{7,125} AW_1 [y, y, y, y, y, x] +
 \end{aligned}$$

$$c_{7,126} AW_1[y, y, y, y, y, x, y] + c_{7,127} AW_1[y, y, y, y, y, y, x] + c_{7,128} AW_1[y, y, y, y, y, y, y] \Big] \Big]$$

```
In[*]:= Short[
  reIs = Union@@ (List@@Pentagon_d[ $\mathbb{Z}$ [d]][[1]] /. {
     $\mathcal{A}_0[A_]$   $\Rightarrow$  Table[Coefficient[A, B], {B, Basis_d,{x,y}[AW_1 AW_2]}],
     $\mathcal{A}_c[1,2][A_]$   $\Rightarrow$  Table[Coefficient[A, B], {B, AW_1[] AW_2[] Basis_{d-1},{x,y}[AW_1 AW_2]}]
  }
),
  10]
```

```
Out[*]//Short=
{0, -120 c_{7,1}, -78 c_{7,1}, -35 c_{7,1}, -21 c_{7,1}, -7 c_{7,1}, -c_{7,1}, 6 c_{7,1}, 34 c_{7,1}, 76 c_{7,1}, -6 c_{7,2} - c_{7,3},
  4 c_{7,2} + 2 c_{7,4}, <<807>>, -c_{7,5} - c_{7,48} - c_{7,80} - c_{7,88} + 4 c_{7,96} - 2 c_{7,104} - c_{7,108} + 10 c_{7,112} -
  3 c_{7,116} - c_{7,118} + 15 c_{7,120} - 4 c_{7,122} - c_{7,123} + 20 c_{7,124} - 5 c_{7,125} + 24 c_{7,126} + 24 c_{7,127},
  -c_{7,5} + c_{7,116} + 2 c_{7,118} + 4 c_{7,119} - 3 c_{7,120} + 4 c_{7,122} + 8 c_{7,123} - c_{7,124} + 10 c_{7,125} + 14 c_{7,126} + 38 c_{7,127},
  -c_{7,9} - c_{7,56} - c_{7,88} - c_{7,92} - c_{7,104} - 2 c_{7,108} - c_{7,110} + 3 c_{7,112} - 3 c_{7,116} - 3 c_{7,118} -
  c_{7,119} + 12 c_{7,120} - 6 c_{7,122} - 4 c_{7,123} + 23 c_{7,124} - 10 c_{7,125} + 34 c_{7,126} + 39 c_{7,127},
  -119 c_{7,128}, -77 c_{7,128}, -35 c_{7,128}, -21 c_{7,128}, -7 c_{7,128}, 7 c_{7,128}, 35 c_{7,128}, 77 c_{7,128}}
```

```
In[*]:= eqns = # == 0 & /@ reIs;
```

```
In[*]:= vars = Union[Cases[eqns, c_{d,_},  $\infty$ ]]
```

```
Out[*]=
{c_{7,1}, c_{7,2}, c_{7,3}, c_{7,4}, c_{7,5}, c_{7,6}, c_{7,7}, c_{7,8}, c_{7,9}, c_{7,10}, c_{7,11}, c_{7,12}, c_{7,13}, c_{7,14}, c_{7,15}, c_{7,16},
  c_{7,17}, c_{7,18}, c_{7,19}, c_{7,20}, c_{7,21}, c_{7,22}, c_{7,23}, c_{7,24}, c_{7,25}, c_{7,26}, c_{7,27}, c_{7,28}, c_{7,29}, c_{7,30}, c_{7,31},
  c_{7,32}, c_{7,33}, c_{7,34}, c_{7,35}, c_{7,36}, c_{7,37}, c_{7,38}, c_{7,39}, c_{7,40}, c_{7,41}, c_{7,42}, c_{7,43}, c_{7,44}, c_{7,45}, c_{7,46},
  c_{7,47}, c_{7,48}, c_{7,49}, c_{7,50}, c_{7,51}, c_{7,52}, c_{7,53}, c_{7,54}, c_{7,55}, c_{7,56}, c_{7,57}, c_{7,58}, c_{7,59}, c_{7,60},
  c_{7,61}, c_{7,62}, c_{7,63}, c_{7,64}, c_{7,65}, c_{7,66}, c_{7,67}, c_{7,68}, c_{7,69}, c_{7,70}, c_{7,71}, c_{7,72}, c_{7,73}, c_{7,74},
  c_{7,75}, c_{7,76}, c_{7,77}, c_{7,78}, c_{7,79}, c_{7,80}, c_{7,81}, c_{7,82}, c_{7,83}, c_{7,84}, c_{7,85}, c_{7,86}, c_{7,87}, c_{7,88},
  c_{7,89}, c_{7,90}, c_{7,91}, c_{7,92}, c_{7,93}, c_{7,94}, c_{7,95}, c_{7,96}, c_{7,97}, c_{7,98}, c_{7,99}, c_{7,100}, c_{7,101}, c_{7,102},
  c_{7,103}, c_{7,104}, c_{7,105}, c_{7,106}, c_{7,107}, c_{7,108}, c_{7,109}, c_{7,110}, c_{7,111}, c_{7,112}, c_{7,113}, c_{7,114}, c_{7,115},
  c_{7,116}, c_{7,117}, c_{7,118}, c_{7,119}, c_{7,120}, c_{7,121}, c_{7,122}, c_{7,123}, c_{7,124}, c_{7,125}, c_{7,126}, c_{7,127}, c_{7,128}}
```

```
In[*]:= sol = Solve[eqns, vars][[1]]
```

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

Out[]=

$$\left\{ \begin{aligned}
 & c_{7,1} \rightarrow 0, c_{7,2} \rightarrow -\frac{c_{7,9}}{20}, c_{7,3} \rightarrow \frac{3c_{7,9}}{10}, c_{7,4} \rightarrow \frac{c_{7,9}}{10}, c_{7,5} \rightarrow -\frac{3c_{7,9}}{4}, c_{7,6} \rightarrow -\frac{c_{7,9}}{4}, c_{7,7} \rightarrow -\frac{c_{7,9}}{4}, \\
 & c_{7,8} \rightarrow -\frac{3c_{7,9}}{20}, c_{7,10} \rightarrow \frac{c_{7,9}}{10}, c_{7,11} \rightarrow \frac{4c_{7,9}}{5}, c_{7,12} \rightarrow \frac{141c_{7,9}}{320}, c_{7,13} \rightarrow \frac{c_{7,9}}{10}, c_{7,14} \rightarrow -\frac{9c_{7,9}}{32}, \\
 & c_{7,15} \rightarrow \frac{141c_{7,9}}{320}, c_{7,16} \rightarrow \frac{c_{7,9}}{10}, c_{7,17} \rightarrow -\frac{3c_{7,9}}{4}, c_{7,18} \rightarrow \frac{c_{7,9}}{10}, c_{7,19} \rightarrow -\frac{3c_{7,9}}{5}, c_{7,20} \rightarrow -\frac{9c_{7,9}}{32}, \\
 & c_{7,21} \rightarrow -\frac{3c_{7,9}}{5}, c_{7,22} \rightarrow \frac{99c_{7,9}}{320}, c_{7,23} \rightarrow -\frac{171c_{7,9}}{160}, c_{7,24} \rightarrow -\frac{c_{7,9}}{4}, c_{7,25} \rightarrow \frac{c_{7,9}}{10}, c_{7,26} \rightarrow \frac{9c_{7,9}}{80}, \\
 & c_{7,27} \rightarrow \frac{99c_{7,9}}{320}, c_{7,28} \rightarrow \frac{c_{7,9}}{10}, c_{7,29} \rightarrow -\frac{9c_{7,9}}{32}, c_{7,30} \rightarrow \frac{c_{7,9}}{10}, c_{7,31} \rightarrow -\frac{c_{7,9}}{4}, c_{7,32} \rightarrow -\frac{c_{7,9}}{20}, \\
 & c_{7,33} \rightarrow \frac{3c_{7,9}}{10}, c_{7,34} \rightarrow -\frac{c_{7,9}}{4}, c_{7,35} \rightarrow \frac{4c_{7,9}}{5}, c_{7,36} \rightarrow \frac{141c_{7,9}}{320}, c_{7,37} \rightarrow -\frac{3c_{7,9}}{5}, c_{7,38} \rightarrow -\frac{171c_{7,9}}{160}, \\
 & c_{7,39} \rightarrow \frac{99c_{7,9}}{320}, c_{7,40} \rightarrow -\frac{c_{7,9}}{4}, c_{7,41} \rightarrow \frac{4c_{7,9}}{5}, c_{7,42} \rightarrow \frac{99c_{7,9}}{320}, c_{7,43} \rightarrow \frac{9c_{7,9}}{10}, c_{7,44} \rightarrow \frac{4c_{7,9}}{5}, \\
 & c_{7,45} \rightarrow \frac{99c_{7,9}}{320}, c_{7,46} \rightarrow -\frac{3c_{7,9}}{5}, c_{7,47} \rightarrow \frac{4c_{7,9}}{5}, c_{7,48} \rightarrow \frac{3c_{7,9}}{10}, c_{7,49} \rightarrow -\frac{c_{7,9}}{4}, c_{7,50} \rightarrow -\frac{9c_{7,9}}{32}, \\
 & c_{7,51} \rightarrow \frac{99c_{7,9}}{320}, c_{7,52} \rightarrow \frac{c_{7,9}}{10}, c_{7,53} \rightarrow -\frac{171c_{7,9}}{160}, c_{7,54} \rightarrow -\frac{3c_{7,9}}{5}, c_{7,55} \rightarrow -\frac{3c_{7,9}}{5}, \\
 & c_{7,56} \rightarrow -\frac{3c_{7,9}}{4}, c_{7,57} \rightarrow \frac{141c_{7,9}}{320}, c_{7,58} \rightarrow \frac{c_{7,9}}{10}, c_{7,59} \rightarrow \frac{4c_{7,9}}{5}, c_{7,60} \rightarrow c_{7,9}, c_{7,61} \rightarrow -\frac{c_{7,9}}{4}, \\
 & c_{7,62} \rightarrow -\frac{3c_{7,9}}{4}, c_{7,63} \rightarrow \frac{3c_{7,9}}{10}, c_{7,64} \rightarrow 0, c_{7,65} \rightarrow -\frac{c_{7,9}}{20}, c_{7,66} \rightarrow \frac{c_{7,9}}{10}, c_{7,67} \rightarrow -\frac{c_{7,9}}{4}, \\
 & c_{7,68} \rightarrow -\frac{3c_{7,9}}{20}, c_{7,69} \rightarrow \frac{c_{7,9}}{10}, c_{7,70} \rightarrow \frac{141c_{7,9}}{320}, c_{7,71} \rightarrow -\frac{9c_{7,9}}{32}, c_{7,72} \rightarrow \frac{c_{7,9}}{10}, c_{7,73} \rightarrow \frac{c_{7,9}}{10}, \\
 & c_{7,74} \rightarrow -\frac{9c_{7,9}}{32}, c_{7,75} \rightarrow \frac{99c_{7,9}}{320}, c_{7,76} \rightarrow -\frac{c_{7,9}}{4}, c_{7,77} \rightarrow \frac{9c_{7,9}}{80}, c_{7,78} \rightarrow \frac{c_{7,9}}{10}, c_{7,79} \rightarrow \frac{c_{7,9}}{10}, \\
 & c_{7,80} \rightarrow -\frac{c_{7,9}}{20}, c_{7,81} \rightarrow -\frac{c_{7,9}}{4}, c_{7,82} \rightarrow \frac{141c_{7,9}}{320}, c_{7,83} \rightarrow -\frac{171c_{7,9}}{160}, c_{7,84} \rightarrow -\frac{c_{7,9}}{4}, c_{7,85} \rightarrow \frac{99c_{7,9}}{320}, \\
 & c_{7,86} \rightarrow \frac{4c_{7,9}}{5}, c_{7,87} \rightarrow -\frac{3c_{7,9}}{5}, c_{7,88} \rightarrow \frac{3c_{7,9}}{10}, c_{7,89} \rightarrow -\frac{9c_{7,9}}{32}, c_{7,90} \rightarrow \frac{c_{7,9}}{10}, c_{7,91} \rightarrow -\frac{3c_{7,9}}{5}, \\
 & c_{7,92} \rightarrow -\frac{3c_{7,9}}{4}, c_{7,93} \rightarrow \frac{c_{7,9}}{10}, c_{7,94} \rightarrow c_{7,9}, c_{7,95} \rightarrow -\frac{3c_{7,9}}{4}, c_{7,96} \rightarrow 0, c_{7,97} \rightarrow \frac{c_{7,9}}{10}, \\
 & c_{7,98} \rightarrow -\frac{3c_{7,9}}{20}, c_{7,99} \rightarrow \frac{141c_{7,9}}{320}, c_{7,100} \rightarrow \frac{c_{7,9}}{10}, c_{7,101} \rightarrow -\frac{9c_{7,9}}{32}, c_{7,102} \rightarrow -\frac{c_{7,9}}{4}, c_{7,103} \rightarrow \frac{c_{7,9}}{10}, \\
 & c_{7,104} \rightarrow -\frac{c_{7,9}}{20}, c_{7,105} \rightarrow \frac{141c_{7,9}}{320}, c_{7,106} \rightarrow -\frac{c_{7,9}}{4}, c_{7,107} \rightarrow \frac{4c_{7,9}}{5}, c_{7,108} \rightarrow \frac{3c_{7,9}}{10}, c_{7,109} \rightarrow \frac{c_{7,9}}{10}, \\
 & c_{7,110} \rightarrow -\frac{3c_{7,9}}{4}, c_{7,111} \rightarrow c_{7,9}, c_{7,112} \rightarrow 0, c_{7,113} \rightarrow -\frac{3c_{7,9}}{20}, c_{7,114} \rightarrow \frac{c_{7,9}}{10}, c_{7,115} \rightarrow -\frac{c_{7,9}}{4}, \\
 & c_{7,116} \rightarrow -\frac{c_{7,9}}{20}, c_{7,117} \rightarrow -\frac{c_{7,9}}{4}, c_{7,118} \rightarrow \frac{3c_{7,9}}{10}, c_{7,119} \rightarrow -\frac{3c_{7,9}}{4}, c_{7,120} \rightarrow 0, c_{7,121} \rightarrow \frac{c_{7,9}}{10}, \\
 & c_{7,122} \rightarrow -\frac{c_{7,9}}{20}, c_{7,123} \rightarrow \frac{3c_{7,9}}{10}, c_{7,124} \rightarrow 0, c_{7,125} \rightarrow -\frac{c_{7,9}}{20}, c_{7,126} \rightarrow 0, c_{7,127} \rightarrow 0, c_{7,128} \rightarrow 0 \}
 \end{aligned} \right.$$

In[*]:= sol /. Rule -> Set

Out[*]=

$$\left\{ 0, -\frac{c_{7,9}}{20}, \frac{3 c_{7,9}}{10}, \frac{c_{7,9}}{10}, -\frac{3 c_{7,9}}{4}, -\frac{c_{7,9}}{4}, -\frac{c_{7,9}}{4}, -\frac{3 c_{7,9}}{20}, \frac{c_{7,9}}{10}, \frac{4 c_{7,9}}{5}, \frac{141 c_{7,9}}{320}, \frac{c_{7,9}}{10}, -\frac{9 c_{7,9}}{32}, \frac{141 c_{7,9}}{320}, \frac{c_{7,9}}{10}, -\frac{3 c_{7,9}}{4}, \frac{c_{7,9}}{10}, -\frac{3 c_{7,9}}{5}, -\frac{9 c_{7,9}}{32}, -\frac{3 c_{7,9}}{5}, \frac{99 c_{7,9}}{320}, -\frac{171 c_{7,9}}{160}, -\frac{c_{7,9}}{4}, \frac{c_{7,9}}{10}, \frac{9 c_{7,9}}{80}, \frac{99 c_{7,9}}{320}, \frac{c_{7,9}}{10}, -\frac{9 c_{7,9}}{32}, \frac{c_{7,9}}{10}, -\frac{c_{7,9}}{4}, -\frac{c_{7,9}}{20}, \frac{3 c_{7,9}}{10}, -\frac{c_{7,9}}{4}, \frac{4 c_{7,9}}{5}, \frac{141 c_{7,9}}{320}, -\frac{3 c_{7,9}}{5}, -\frac{171 c_{7,9}}{160}, \frac{99 c_{7,9}}{320}, -\frac{c_{7,9}}{4}, \frac{4 c_{7,9}}{5}, \frac{99 c_{7,9}}{320}, \frac{9 c_{7,9}}{10}, \frac{4 c_{7,9}}{5}, \frac{99 c_{7,9}}{320}, -\frac{3 c_{7,9}}{5}, \frac{4 c_{7,9}}{5}, \frac{3 c_{7,9}}{10}, -\frac{c_{7,9}}{4}, -\frac{9 c_{7,9}}{32}, \frac{99 c_{7,9}}{320}, \frac{c_{7,9}}{10}, -\frac{171 c_{7,9}}{160}, -\frac{3 c_{7,9}}{5}, -\frac{3 c_{7,9}}{5}, -\frac{3 c_{7,9}}{4}, \frac{141 c_{7,9}}{320}, \frac{c_{7,9}}{10}, \frac{4 c_{7,9}}{5}, \frac{c_{7,9}}{10}, -\frac{c_{7,9}}{20}, \frac{c_{7,9}}{10}, -\frac{c_{7,9}}{4}, -\frac{3 c_{7,9}}{4}, \frac{3 c_{7,9}}{10}, 0, -\frac{c_{7,9}}{20}, \frac{c_{7,9}}{10}, -\frac{c_{7,9}}{4}, -\frac{3 c_{7,9}}{20}, \frac{c_{7,9}}{10}, \frac{141 c_{7,9}}{320}, -\frac{9 c_{7,9}}{32}, \frac{c_{7,9}}{10}, \frac{c_{7,9}}{10}, -\frac{9 c_{7,9}}{32}, \frac{99 c_{7,9}}{320}, -\frac{c_{7,9}}{4}, \frac{9 c_{7,9}}{80}, \frac{c_{7,9}}{10}, \frac{c_{7,9}}{10}, -\frac{c_{7,9}}{20}, -\frac{c_{7,9}}{4}, \frac{141 c_{7,9}}{320}, -\frac{171 c_{7,9}}{160}, -\frac{c_{7,9}}{4}, \frac{99 c_{7,9}}{320}, \frac{4 c_{7,9}}{5}, -\frac{3 c_{7,9}}{5}, \frac{3 c_{7,9}}{10}, -\frac{9 c_{7,9}}{32}, \frac{c_{7,9}}{10}, -\frac{3 c_{7,9}}{5}, -\frac{3 c_{7,9}}{4}, \frac{c_{7,9}}{10}, -\frac{c_{7,9}}{20}, \frac{141 c_{7,9}}{320}, \frac{c_{7,9}}{10}, -\frac{9 c_{7,9}}{32}, -\frac{c_{7,9}}{4}, \frac{c_{7,9}}{10}, -\frac{c_{7,9}}{20}, \frac{141 c_{7,9}}{320}, -\frac{c_{7,9}}{4}, \frac{4 c_{7,9}}{5}, \frac{3 c_{7,9}}{10}, \frac{c_{7,9}}{10}, -\frac{3 c_{7,9}}{4}, \frac{3 c_{7,9}}{10}, 0, -\frac{3 c_{7,9}}{20}, \frac{c_{7,9}}{10}, -\frac{c_{7,9}}{4}, \frac{c_{7,9}}{20}, -\frac{c_{7,9}}{20}, -\frac{c_{7,9}}{4}, \frac{3 c_{7,9}}{10}, -\frac{3 c_{7,9}}{4}, 0, \frac{c_{7,9}}{10}, -\frac{c_{7,9}}{20}, \frac{3 c_{7,9}}{10}, 0, -\frac{c_{7,9}}{20}, 0, 0, 0 \}$$

In[*]:= c7,9 = 0

Out[*]=

$$0$$

In[*]:= Phi[d]

Out[*]=

$$\begin{aligned} & \circ_{HR, \{x, y\}, \{1\}} \left[\mathcal{A}_0 \left[AW_1[] + \frac{1}{24} AW_1[x, y] - \frac{1}{24} AW_1[y, x] - \frac{AW_1[x, x, x, y]}{1440} + \frac{1}{480} AW_1[x, x, y, x] + \right. \right. \\ & \frac{7 AW_1[x, x, y, y]}{5760} - \frac{1}{480} AW_1[x, y, x, x] - \frac{1}{640} AW_1[x, y, x, y] - \frac{AW_1[x, y, y, x]}{1152} - \\ & \frac{7 AW_1[x, y, y, y]}{5760} + \frac{AW_1[y, x, x, x]}{1440} - \frac{AW_1[y, x, x, y]}{1152} + \frac{19 AW_1[y, x, y, x]}{5760} + \\ & \frac{7 AW_1[y, x, y, y]}{1920} - \frac{7 AW_1[y, y, x, x]}{5760} - \frac{7 AW_1[y, y, x, y]}{1920} + \frac{7 AW_1[y, y, y, x]}{5760} + \\ & \frac{AW_1[x, x, x, x, x, y]}{60480} - \frac{AW_1[x, x, x, x, y, x]}{12096} - \frac{13 AW_1[x, x, x, x, y, y]}{241920} + \\ & \frac{AW_1[x, x, x, y, x, x]}{6048} + \frac{19 AW_1[x, x, x, y, x, y]}{145152} + \frac{61 AW_1[x, x, x, y, y, x]}{725760} + \\ & \left. \frac{83 AW_1[x, x, x, y, y, y]}{967680} - \frac{AW_1[x, x, y, x, x, x]}{6048} - \frac{17 AW_1[x, x, y, x, x, y]}{241920} \right] \end{aligned}$$

$$\begin{aligned}
 & \frac{61 AW_1[x, x, y, x, y, x]}{241920} - \frac{89 AW_1[x, x, y, x, y, y]}{414720} + \frac{71 AW_1[x, x, y, y, x, y]}{967680} - \\
 & \frac{337 AW_1[x, x, y, y, y, x]}{2903040} - \frac{31 AW_1[x, x, y, y, y, y]}{483840} + \frac{AW_1[x, y, x, x, x, x]}{12096} + \\
 & \frac{13 AW_1[x, y, x, x, x, y]}{725760} + \frac{AW_1[x, y, x, x, y, x]}{11520} + \frac{37 AW_1[x, y, x, x, y, y]}{580608} + \\
 & \frac{AW_1[x, y, x, y, x, x]}{6048} + \frac{79 AW_1[x, y, x, y, x, y]}{967680} + \frac{71 AW_1[x, y, x, y, y, x]}{322560} + \\
 & \frac{73 AW_1[x, y, x, y, y, y]}{483840} - \frac{AW_1[x, y, y, x, x, x]}{18144} - \frac{53 AW_1[x, y, y, x, x, y]}{967680} - \\
 & \frac{23 AW_1[x, y, y, x, y, x]}{193536} - \frac{11 AW_1[x, y, y, x, y, y]}{161280} + \frac{19 AW_1[x, y, y, y, x, x]}{290304} - \\
 & \frac{AW_1[x, y, y, y, x, y]}{193536} + \frac{7 AW_1[x, y, y, y, y, x]}{138240} + \frac{31 AW_1[x, y, y, y, y, y]}{967680} - \\
 & \frac{AW_1[y, x, x, x, x, x]}{60480} + \frac{AW_1[y, x, x, x, x, y]}{34560} - \frac{97 AW_1[y, x, x, x, y, x]}{725760} - \\
 & \frac{103 AW_1[y, x, x, x, y, y]}{967680} + \frac{19 AW_1[y, x, x, y, x, x]}{120960} + \frac{583 AW_1[y, x, x, y, x, y]}{2903040} + \\
 & \frac{53 AW_1[y, x, x, y, y, x]}{967680} + \frac{17 AW_1[y, x, x, y, y, y]}{161280} - \frac{29 AW_1[y, x, y, x, x, x]}{181440} - \\
 & \frac{289 AW_1[y, x, y, x, x, y]}{2903040} - \frac{55 AW_1[y, x, y, x, y, x]}{193536} - \frac{17 AW_1[y, x, y, x, y, y]}{53760} - \\
 & \frac{11 AW_1[y, x, y, y, x, x]}{483840} + \frac{7 AW_1[y, x, y, y, x, y]}{46080} - \frac{191 AW_1[y, x, y, y, y, x]}{967680} - \\
 & \frac{31 AW_1[y, x, y, y, y, y]}{193536} + \frac{13 AW_1[y, y, x, x, x, x]}{241920} + \frac{AW_1[y, y, x, x, x, y]}{17920} - \\
 & \frac{19 AW_1[y, y, x, x, y, x]}{1451520} + \frac{89 AW_1[y, y, x, y, x, x]}{414720} + \frac{53 AW_1[y, y, x, y, x, y]}{322560} + \\
 & \frac{71 AW_1[y, y, x, y, y, x]}{322560} + \frac{31 AW_1[y, y, x, y, y, y]}{96768} - \frac{83 AW_1[y, y, y, x, x, x]}{967680} - \\
 & \frac{53 AW_1[y, y, y, x, x, y]}{967680} - \frac{13 AW_1[y, y, y, x, y, x]}{64512} - \frac{31 AW_1[y, y, y, x, y, y]}{96768} + \\
 & \frac{31 AW_1[y, y, y, y, x, x]}{483840} + \frac{31 AW_1[y, y, y, y, x, y]}{193536} - \frac{31 AW_1[y, y, y, y, y, x]}{967680} \Big]]
 \end{aligned}$$

In[*]:= [PrintProfile\[\]](#)

Out[*]=

ProfileRoot is root. Profiled time: 43.751

- (6) 0.016/ 0.016 above EMBasis
- (15) 0.062/ 31.548 above EMIM
- (15) 0.046/ 0.798 above EMP2s
- (10) 0/ 0.046 above EMPΔ
- (5) 0.015/ 0.015 above EMPσ
- (5) 0.565/ 11.280 above EMSΔ
- (15) 0/ 0.048 above EMSσ

FA \mathbb{D} : called 275 times, time in 15.363/15.363
 (15) 0.202/ 0.202 under EMp2s
 (20) 0.281/ 0.281 under EMs Δ
 (240) 14.880/ 14.880 under \emptyset
 FAAm: called 764 times, time in 11.035/11.035
 (404) 4.551/ 4.551 under EMHR
 (80) 0.578/ 0.578 under EMsm
 (40) 3.014/ 3.014 under EMs Δ
 (240) 2.892/ 2.892 under \emptyset
 FA Δ : called 35 times, time in 5.359/5.359
 (35) 5.359/ 5.359 under EMs Δ
 EMHR: called 202 times, time in 3.203/7.754
 (110) 1.814/ 3.833 under EMCF
 (92) 1.389/ 3.921 under \emptyset
 (404) 4.551/ 4.551 above FAAm
 \emptyset : called 65 times, time in 2.918/28.458
 (60) 2.731/ 27.395 under EMsm
 (5) 0.187/ 1.063 under EMs Δ
 (65) 0.046/ 3.847 above EMCF
 (92) 1.389/ 3.921 above EMHR
 (240) 2.892/ 2.892 above FAAm
 (240) 14.880/ 14.880 above FA \mathbb{D}
 FAA σ : called 285 times, time in 2.807/2.807
 (50) 0.467/ 0.467 under EMsm
 (10) 0.998/ 0.998 under EMs Δ
 (225) 1.342/ 1.342 under EMs σ
 FAEM: called 40 times, time in 1.487/1.487
 (40) 1.487/ 1.487 under EMEM
 EMs Δ : called 5 times, time in 0.565/11.28
 (5) 0.565/ 11.280 under ProfileRoot
 (40) 3.014/ 3.014 above FAAm
 (10) 0.998/ 0.998 above FAA σ
 (20) 0.281/ 0.281 above FA \mathbb{D}
 (35) 5.359/ 5.359 above FA Δ
 (5) 0.187/ 1.063 above \emptyset
 FAFA: called 50 times, time in 0.564/0.564
 (30) 0.518/ 0.518 under EMp2s
 (15) 0.046/ 0.046 under EMp Δ
 (5) 0/ 0 under EMp σ
 EMsm: called 30 times, time in 0.171/28.611
 (30) 0.171/ 28.611 under EMIM
 (80) 0.578/ 0.578 above FAAm
 (50) 0.467/ 0.467 above FAA σ
 (60) 2.731/ 27.395 above \emptyset
 EMIM: called 15 times, time in 0.062/31.548
 (15) 0.062/ 31.548 under ProfileRoot
 (15) 0.047/ 1.534 above EMEM

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( 30) 0.171/ 28.611 above EMsm
( 30) 0.047/ 1.341 above EMsσ
EMsσ: called 45 times, time in 0.047/1.389
( 30) 0.047/ 1.341 under EMIM
( 15) 0/ 0.048 under ProfileRoot
( 225) 1.342/ 1.342 above FAAσ
EMEM: called 15 times, time in 0.047/1.534
( 15) 0.047/ 1.534 under EMIM
( 40) 1.487/ 1.487 above FAEM
EMCF: called 80 times, time in 0.046/3.879
( 15) 0/ 0.032 under Emp2s
( 65) 0.046/ 3.847 under 0
( 110) 1.814/ 3.833 above EMHR
Emp2s: called 15 times, time in 0.046/0.798
( 15) 0.046/ 0.798 under ProfileRoot
( 15) 0/ 0.032 above EMCF
( 30) 0.518/ 0.518 above FAFA
( 15) 0.202/ 0.202 above FAID
EMBasis: called 6 times, time in 0.016/0.016
( 6) 0.016/ 0.016 under ProfileRoot
Empσ: called 5 times, time in 0.015/0.015
( 5) 0.015/ 0.015 under ProfileRoot
( 5) 0/ 0 above FAFA
EmpΔ: called 10 times, time in 0./0.046
( 10) 0/ 0.046 under ProfileRoot
( 15) 0.046/ 0.046 above FAFA
```

Solving to Degree 8

In[]:= **d = 8; i = 0;**

ϕ[d] = ϕ[d - 1] + Sum[c_{d,++i} B, {B, Select[Basis_d[O_{HR,{x,y},{1}}], FreeQ[#, ϕ_c[1]] &]}]

Out[]:=

$$\begin{aligned}
 & O_{HR, \{x, y\}, \{1\}} \left[\mathcal{A}_0 \left[\right. \right. \\
 & AW_1[] + \frac{1}{24} AW_1[x, y] - \frac{1}{24} AW_1[y, x] - \frac{AW_1[x, x, x, y]}{1440} + \frac{1}{480} AW_1[x, x, y, x] + \frac{7 AW_1[x, x, y, y]}{5760} - \\
 & \frac{1}{480} AW_1[x, y, x, x] - \frac{1}{640} AW_1[x, y, x, y] - \frac{AW_1[x, y, y, x]}{1152} - \frac{7 AW_1[x, y, y, y]}{5760} + \\
 & \frac{AW_1[y, x, x, x]}{1440} - \frac{AW_1[y, x, x, y]}{1152} + \frac{19 AW_1[y, x, y, x]}{5760} + \frac{7 AW_1[y, x, y, y]}{1920} - \frac{7 AW_1[y, y, x, x]}{5760} - \\
 & \frac{7 AW_1[y, y, x, y]}{1920} + \frac{7 AW_1[y, y, y, x]}{5760} + \frac{AW_1[x, x, x, x, x, y]}{60480} - \frac{AW_1[x, x, x, x, y, x]}{12096} - \\
 & \frac{13 AW_1[x, x, x, x, y, y]}{241920} + \frac{AW_1[x, x, x, y, x, x]}{6048} + \frac{19 AW_1[x, x, x, y, x, y]}{145152} + \\
 & \frac{61 AW_1[x, x, x, y, y, x]}{725760} + \frac{83 AW_1[x, x, x, y, y, y]}{967680} - \frac{AW_1[x, x, y, x, x, x]}{6048} - \\
 & \left. \left. \right. \right]
 \end{aligned}$$

$$\begin{aligned}
 & \frac{17 AW_1[x, x, y, x, x, y]}{241920} - \frac{61 AW_1[x, x, y, x, y, x]}{241920} - \frac{89 AW_1[x, x, y, x, y, y]}{414720} + \\
 & \frac{71 AW_1[x, x, y, y, x, y]}{967680} - \frac{337 AW_1[x, x, y, y, y, x]}{2903040} - \frac{31 AW_1[x, x, y, y, y, y]}{483840} + \\
 & \frac{AW_1[x, y, x, x, x, x]}{12096} + \frac{13 AW_1[x, y, x, x, x, y]}{725760} + \frac{AW_1[x, y, x, x, y, x]}{11520} + \\
 & \frac{37 AW_1[x, y, x, x, y, y]}{580608} + \frac{AW_1[x, y, x, y, x, x]}{6048} + \frac{79 AW_1[x, y, x, y, x, y]}{967680} + \\
 & \frac{71 AW_1[x, y, x, y, y, x]}{322560} + \frac{73 AW_1[x, y, x, y, y, y]}{483840} - \frac{AW_1[x, y, y, x, x, x]}{18144} - \\
 & \frac{53 AW_1[x, y, y, x, x, y]}{967680} - \frac{23 AW_1[x, y, y, x, y, x]}{193536} - \frac{11 AW_1[x, y, y, x, y, y]}{161280} + \\
 & \frac{19 AW_1[x, y, y, y, x, x]}{290304} - \frac{AW_1[x, y, y, y, x, y]}{193536} + \frac{7 AW_1[x, y, y, y, y, x]}{138240} + \\
 & \frac{31 AW_1[x, y, y, y, y, y]}{967680} - \frac{AW_1[y, x, x, x, x, x]}{60480} + \frac{AW_1[y, x, x, x, x, y]}{34560} - \\
 & \frac{97 AW_1[y, x, x, x, y, x]}{725760} - \frac{103 AW_1[y, x, x, x, y, y]}{967680} + \frac{19 AW_1[y, x, x, y, x, x]}{120960} + \\
 & \frac{583 AW_1[y, x, x, y, x, y]}{2903040} + \frac{53 AW_1[y, x, x, y, y, x]}{967680} + \frac{17 AW_1[y, x, x, y, y, y]}{161280} - \\
 & \frac{29 AW_1[y, x, y, x, x, x]}{181440} - \frac{289 AW_1[y, x, y, x, x, y]}{2903040} - \frac{55 AW_1[y, x, y, x, y, x]}{193536} - \\
 & \frac{17 AW_1[y, x, y, x, y, y]}{53760} - \frac{11 AW_1[y, x, y, y, x, x]}{483840} + \frac{7 AW_1[y, x, y, y, x, y]}{46080} - \\
 & \frac{191 AW_1[y, x, y, y, y, x]}{967680} - \frac{31 AW_1[y, x, y, y, y, y]}{193536} + \frac{13 AW_1[y, y, x, x, x, x]}{241920} + \\
 & \frac{AW_1[y, y, x, x, x, y]}{17920} - \frac{19 AW_1[y, y, x, x, y, x]}{1451520} + \frac{89 AW_1[y, y, x, y, x, x]}{414720} + \\
 & \frac{53 AW_1[y, y, x, y, x, y]}{322560} + \frac{71 AW_1[y, y, x, y, y, x]}{322560} + \frac{31 AW_1[y, y, x, y, y, y]}{96768} - \\
 & \frac{83 AW_1[y, y, y, x, x, x]}{967680} - \frac{53 AW_1[y, y, y, x, x, y]}{967680} - \frac{13 AW_1[y, y, y, x, y, x]}{64512} - \\
 & \frac{31 AW_1[y, y, y, x, y, y]}{96768} + \frac{31 AW_1[y, y, y, y, x, x]}{483840} + \frac{31 AW_1[y, y, y, y, x, y]}{193536} - \\
 & \frac{31 AW_1[y, y, y, y, y, x]}{967680} + c_{8,1} AW_1[x, x, x, x, x, x, x, x] + c_{8,2} AW_1[x, x, x, x, x, x, x, y] + \\
 & c_{8,3} AW_1[x, x, x, x, x, x, y, x] + c_{8,4} AW_1[x, x, x, x, x, x, y, y] + \\
 & c_{8,5} AW_1[x, x, x, x, x, y, x, x] + c_{8,6} AW_1[x, x, x, x, x, y, x, y] + \\
 & c_{8,7} AW_1[x, x, x, x, x, y, y, x] + c_{8,8} AW_1[x, x, x, x, x, y, y, y] + \\
 & c_{8,9} AW_1[x, x, x, x, y, x, x, x] + c_{8,10} AW_1[x, x, x, x, y, x, x, y] + \\
 & c_{8,11} AW_1[x, x, x, x, y, x, y, x] + c_{8,12} AW_1[x, x, x, x, y, x, y, y] + \\
 & c_{8,13} AW_1[x, x, x, x, y, y, x, x] + c_{8,14} AW_1[x, x, x, x, y, y, x, y] + \\
 & c_{8,15} AW_1[x, x, x, x, y, y, y, x] + c_{8,16} AW_1[x, x, x, x, y, y, y, y] + \\
 & c_{8,17} AW_1[x, x, x, y, x, x, x, x] + c_{8,18} AW_1[x, x, x, y, x, x, x, y] +
 \end{aligned}$$

$$\begin{aligned}
& C_{8,19} AW_1[x, x, x, y, x, x, y, x] + C_{8,20} AW_1[x, x, x, y, x, x, y, y] + \\
& C_{8,21} AW_1[x, x, x, y, x, y, x, x] + C_{8,22} AW_1[x, x, x, y, x, y, x, y] + \\
& C_{8,23} AW_1[x, x, x, y, x, y, y, x] + C_{8,24} AW_1[x, x, x, y, x, y, y, y] + \\
& C_{8,25} AW_1[x, x, x, y, y, x, x, x] + C_{8,26} AW_1[x, x, x, y, y, x, x, y] + \\
& C_{8,27} AW_1[x, x, x, y, y, x, y, x] + C_{8,28} AW_1[x, x, x, y, y, x, y, y] + \\
& C_{8,29} AW_1[x, x, x, y, y, y, x, x] + C_{8,30} AW_1[x, x, x, y, y, y, x, y] + \\
& C_{8,31} AW_1[x, x, x, y, y, y, y, x] + C_{8,32} AW_1[x, x, x, y, y, y, y, y] + \\
& C_{8,33} AW_1[x, x, y, x, x, x, x, x] + C_{8,34} AW_1[x, x, y, x, x, x, x, y] + \\
& C_{8,35} AW_1[x, x, y, x, x, x, y, x] + C_{8,36} AW_1[x, x, y, x, x, x, y, y] + \\
& C_{8,37} AW_1[x, x, y, x, x, y, x, x] + C_{8,38} AW_1[x, x, y, x, x, y, x, y] + \\
& C_{8,39} AW_1[x, x, y, x, x, y, y, x] + C_{8,40} AW_1[x, x, y, x, x, y, y, y] + \\
& C_{8,41} AW_1[x, x, y, x, y, x, x, x] + C_{8,42} AW_1[x, x, y, x, y, x, x, y] + \\
& C_{8,43} AW_1[x, x, y, x, y, x, y, x] + C_{8,44} AW_1[x, x, y, x, y, x, y, y] + \\
& C_{8,45} AW_1[x, x, y, x, y, y, x, x] + C_{8,46} AW_1[x, x, y, x, y, y, x, y] + \\
& C_{8,47} AW_1[x, x, y, x, y, y, y, x] + C_{8,48} AW_1[x, x, y, x, y, y, y, y] + \\
& C_{8,49} AW_1[x, x, y, y, x, x, x, x] + C_{8,50} AW_1[x, x, y, y, x, x, x, y] + \\
& C_{8,51} AW_1[x, x, y, y, x, x, y, x] + C_{8,52} AW_1[x, x, y, y, x, x, y, y] + \\
& C_{8,53} AW_1[x, x, y, y, x, y, x, x] + C_{8,54} AW_1[x, x, y, y, x, y, x, y] + \\
& C_{8,55} AW_1[x, x, y, y, x, y, y, x] + C_{8,56} AW_1[x, x, y, y, x, y, y, y] + \\
& C_{8,57} AW_1[x, x, y, y, y, x, x, x] + C_{8,58} AW_1[x, x, y, y, y, x, x, y] + \\
& C_{8,59} AW_1[x, x, y, y, y, x, y, x] + C_{8,60} AW_1[x, x, y, y, y, x, y, y] + \\
& C_{8,61} AW_1[x, x, y, y, y, y, x, x] + C_{8,62} AW_1[x, x, y, y, y, y, x, y] + \\
& C_{8,63} AW_1[x, x, y, y, y, y, y, x] + C_{8,64} AW_1[x, x, y, y, y, y, y, y] + \\
& C_{8,65} AW_1[x, y, x, x, x, x, x, x] + C_{8,66} AW_1[x, y, x, x, x, x, x, y] + \\
& C_{8,67} AW_1[x, y, x, x, x, x, y, x] + C_{8,68} AW_1[x, y, x, x, x, x, y, y] + \\
& C_{8,69} AW_1[x, y, x, x, x, y, x, x] + C_{8,70} AW_1[x, y, x, x, x, y, x, y] + \\
& C_{8,71} AW_1[x, y, x, x, x, y, y, x] + C_{8,72} AW_1[x, y, x, x, x, y, y, y] + \\
& C_{8,73} AW_1[x, y, x, x, y, x, x, x] + C_{8,74} AW_1[x, y, x, x, y, x, x, y] + \\
& C_{8,75} AW_1[x, y, x, x, y, x, y, x] + C_{8,76} AW_1[x, y, x, x, y, x, y, y] + \\
& C_{8,77} AW_1[x, y, x, x, y, y, x, x] + C_{8,78} AW_1[x, y, x, x, y, y, x, y] + \\
& C_{8,79} AW_1[x, y, x, x, y, y, y, x] + C_{8,80} AW_1[x, y, x, x, y, y, y, y] + \\
& C_{8,81} AW_1[x, y, x, y, x, x, x, x] + C_{8,82} AW_1[x, y, x, y, x, x, x, y] + \\
& C_{8,83} AW_1[x, y, x, y, x, x, y, x] + C_{8,84} AW_1[x, y, x, y, x, x, y, y] + \\
& C_{8,85} AW_1[x, y, x, y, x, y, x, x] + C_{8,86} AW_1[x, y, x, y, x, y, x, y] + \\
& C_{8,87} AW_1[x, y, x, y, x, y, y, x] + C_{8,88} AW_1[x, y, x, y, x, y, y, y] + \\
& C_{8,89} AW_1[x, y, x, y, y, x, x, x] + C_{8,90} AW_1[x, y, x, y, y, x, x, y] + \\
& C_{8,91} AW_1[x, y, x, y, y, x, y, x] + C_{8,92} AW_1[x, y, x, y, y, x, y, y] + \\
& C_{8,93} AW_1[x, y, x, y, y, y, x, x] + C_{8,94} AW_1[x, y, x, y, y, y, x, y] + \\
& C_{8,95} AW_1[x, y, x, y, y, y, y, x] + C_{8,96} AW_1[x, y, x, y, y, y, y, y] + \\
& C_{8,97} AW_1[x, y, y, x, x, x, x, x] + C_{8,98} AW_1[x, y, y, x, x, x, x, y] + \\
& C_{8,99} AW_1[x, y, y, x, x, x, y, x] + C_{8,100} AW_1[x, y, y, x, x, x, y, y] + \\
& C_{8,101} AW_1[x, y, y, x, x, y, x, x] + C_{8,102} AW_1[x, y, y, x, x, y, x, y] + \\
& C_{8,103} AW_1[x, y, y, x, x, y, y, x] + C_{8,104} AW_1[x, y, y, x, x, y, y, y] + \\
& C_{8,105} AW_1[x, y, y, x, y, x, x, x] + C_{8,106} AW_1[x, y, y, x, y, x, x, y] + \\
& C_{8,107} AW_1[x, y, y, x, y, x, y, x] + C_{8,108} AW_1[x, y, y, x, y, x, y, y] +
\end{aligned}$$

$C_{8,109} AW_1 [X, Y, Y, X, Y, Y, X, X] + C_{8,110} AW_1 [X, Y, Y, X, Y, Y, X, Y] +$
 $C_{8,111} AW_1 [X, Y, Y, X, Y, Y, Y, X] + C_{8,112} AW_1 [X, Y, Y, X, Y, Y, Y, Y] +$
 $C_{8,113} AW_1 [X, Y, Y, Y, X, X, X, X] + C_{8,114} AW_1 [X, Y, Y, Y, X, X, X, Y] +$
 $C_{8,115} AW_1 [X, Y, Y, Y, X, X, Y, X] + C_{8,116} AW_1 [X, Y, Y, Y, X, X, Y, Y] +$
 $C_{8,117} AW_1 [X, Y, Y, Y, X, Y, X, X] + C_{8,118} AW_1 [X, Y, Y, Y, X, Y, X, Y] +$
 $C_{8,119} AW_1 [X, Y, Y, Y, X, Y, Y, X] + C_{8,120} AW_1 [X, Y, Y, Y, X, Y, Y, Y] +$
 $C_{8,121} AW_1 [X, Y, Y, Y, Y, X, X, X] + C_{8,122} AW_1 [X, Y, Y, Y, Y, X, X, Y] +$
 $C_{8,123} AW_1 [X, Y, Y, Y, Y, X, Y, X] + C_{8,124} AW_1 [X, Y, Y, Y, Y, X, Y, Y] +$
 $C_{8,125} AW_1 [X, Y, Y, Y, Y, Y, X, X] + C_{8,126} AW_1 [X, Y, Y, Y, Y, Y, X, Y] +$
 $C_{8,127} AW_1 [X, Y, Y, Y, Y, Y, Y, X] + C_{8,128} AW_1 [X, Y, Y, Y, Y, Y, Y, Y] +$
 $C_{8,129} AW_1 [Y, X, X, X, X, X, X, X] + C_{8,130} AW_1 [Y, X, X, X, X, X, X, Y] +$
 $C_{8,131} AW_1 [Y, X, X, X, X, X, Y, X] + C_{8,132} AW_1 [Y, X, X, X, X, X, Y, Y] +$
 $C_{8,133} AW_1 [Y, X, X, X, X, Y, X, X] + C_{8,134} AW_1 [Y, X, X, X, X, Y, X, Y] +$
 $C_{8,135} AW_1 [Y, X, X, X, X, Y, Y, X] + C_{8,136} AW_1 [Y, X, X, X, X, Y, Y, Y] +$
 $C_{8,137} AW_1 [Y, X, X, X, Y, X, X, X] + C_{8,138} AW_1 [Y, X, X, X, Y, X, X, Y] +$
 $C_{8,139} AW_1 [Y, X, X, X, Y, X, Y, X] + C_{8,140} AW_1 [Y, X, X, X, Y, X, Y, Y] +$
 $C_{8,141} AW_1 [Y, X, X, X, Y, Y, X, X] + C_{8,142} AW_1 [Y, X, X, X, Y, Y, X, Y] +$
 $C_{8,143} AW_1 [Y, X, X, X, Y, Y, Y, X] + C_{8,144} AW_1 [Y, X, X, X, Y, Y, Y, Y] +$
 $C_{8,145} AW_1 [Y, X, X, Y, X, X, X, X] + C_{8,146} AW_1 [Y, X, X, Y, X, X, X, Y] +$
 $C_{8,147} AW_1 [Y, X, X, Y, X, X, Y, X] + C_{8,148} AW_1 [Y, X, X, Y, X, X, Y, Y] +$
 $C_{8,149} AW_1 [Y, X, X, Y, X, Y, X, X] + C_{8,150} AW_1 [Y, X, X, Y, X, Y, X, Y] +$
 $C_{8,151} AW_1 [Y, X, X, Y, X, Y, Y, X] + C_{8,152} AW_1 [Y, X, X, Y, X, Y, Y, Y] +$
 $C_{8,153} AW_1 [Y, X, X, Y, Y, X, X, X] + C_{8,154} AW_1 [Y, X, X, Y, Y, X, X, Y] +$
 $C_{8,155} AW_1 [Y, X, X, Y, Y, X, Y, X] + C_{8,156} AW_1 [Y, X, X, Y, Y, X, Y, Y] +$
 $C_{8,157} AW_1 [Y, X, X, Y, Y, Y, X, X] + C_{8,158} AW_1 [Y, X, X, Y, Y, Y, X, Y] +$
 $C_{8,159} AW_1 [Y, X, X, Y, Y, Y, Y, X] + C_{8,160} AW_1 [Y, X, X, Y, Y, Y, Y, Y] +$
 $C_{8,161} AW_1 [Y, X, Y, X, X, X, X, X] + C_{8,162} AW_1 [Y, X, Y, X, X, X, X, Y] +$
 $C_{8,163} AW_1 [Y, X, Y, X, X, X, Y, X] + C_{8,164} AW_1 [Y, X, Y, X, X, X, Y, Y] +$
 $C_{8,165} AW_1 [Y, X, Y, X, X, Y, X, X] + C_{8,166} AW_1 [Y, X, Y, X, X, Y, X, Y] +$
 $C_{8,167} AW_1 [Y, X, Y, X, X, Y, Y, X] + C_{8,168} AW_1 [Y, X, Y, X, X, Y, Y, Y] +$
 $C_{8,169} AW_1 [Y, X, Y, X, Y, X, X, X] + C_{8,170} AW_1 [Y, X, Y, X, Y, X, X, Y] +$
 $C_{8,171} AW_1 [Y, X, Y, X, Y, X, Y, X] + C_{8,172} AW_1 [Y, X, Y, X, Y, X, Y, Y] +$
 $C_{8,173} AW_1 [Y, X, Y, X, Y, Y, X, X] + C_{8,174} AW_1 [Y, X, Y, X, Y, Y, X, Y] +$
 $C_{8,175} AW_1 [Y, X, Y, X, Y, Y, Y, X] + C_{8,176} AW_1 [Y, X, Y, X, Y, Y, Y, Y] +$
 $C_{8,177} AW_1 [Y, X, Y, Y, X, X, X, X] + C_{8,178} AW_1 [Y, X, Y, Y, X, X, X, Y] +$
 $C_{8,179} AW_1 [Y, X, Y, Y, X, X, Y, X] + C_{8,180} AW_1 [Y, X, Y, Y, X, X, Y, Y] +$
 $C_{8,181} AW_1 [Y, X, Y, Y, X, Y, X, X] + C_{8,182} AW_1 [Y, X, Y, Y, X, Y, X, Y] +$
 $C_{8,183} AW_1 [Y, X, Y, Y, X, Y, Y, X] + C_{8,184} AW_1 [Y, X, Y, Y, X, Y, Y, Y] +$
 $C_{8,185} AW_1 [Y, X, Y, Y, Y, X, X, X] + C_{8,186} AW_1 [Y, X, Y, Y, Y, X, X, Y] +$
 $C_{8,187} AW_1 [Y, X, Y, Y, Y, X, Y, X] + C_{8,188} AW_1 [Y, X, Y, Y, Y, X, Y, Y] +$
 $C_{8,189} AW_1 [Y, X, Y, Y, Y, Y, X, X] + C_{8,190} AW_1 [Y, X, Y, Y, Y, Y, X, Y] +$
 $C_{8,191} AW_1 [Y, X, Y, Y, Y, Y, Y, X] + C_{8,192} AW_1 [Y, X, Y, Y, Y, Y, Y, Y] +$
 $C_{8,193} AW_1 [Y, Y, X, X, X, X, X, X] + C_{8,194} AW_1 [Y, Y, X, X, X, X, X, Y] +$
 $C_{8,195} AW_1 [Y, Y, X, X, X, X, Y, X] + C_{8,196} AW_1 [Y, Y, X, X, X, X, Y, Y] +$
 $C_{8,197} AW_1 [Y, Y, X, X, X, Y, X, X] + C_{8,198} AW_1 [Y, Y, X, X, X, Y, X, Y] +$

$$\begin{aligned}
 & C_{8,199} AW_1[y, y, x, x, x, y, y, x] + C_{8,200} AW_1[y, y, x, x, x, y, y, y] + \\
 & C_{8,201} AW_1[y, y, x, x, y, x, x, x] + C_{8,202} AW_1[y, y, x, x, y, x, x, y] + \\
 & C_{8,203} AW_1[y, y, x, x, y, x, y, x] + C_{8,204} AW_1[y, y, x, x, y, x, y, y] + \\
 & C_{8,205} AW_1[y, y, x, x, y, y, x, x] + C_{8,206} AW_1[y, y, x, x, y, y, x, y] + \\
 & C_{8,207} AW_1[y, y, x, x, y, y, y, x] + C_{8,208} AW_1[y, y, x, x, y, y, y, y] + \\
 & C_{8,209} AW_1[y, y, x, y, x, x, x, x] + C_{8,210} AW_1[y, y, x, y, x, x, x, y] + \\
 & C_{8,211} AW_1[y, y, x, y, x, x, y, x] + C_{8,212} AW_1[y, y, x, y, x, x, y, y] + \\
 & C_{8,213} AW_1[y, y, x, y, x, y, x, x] + C_{8,214} AW_1[y, y, x, y, x, y, x, y] + \\
 & C_{8,215} AW_1[y, y, x, y, x, y, y, x] + C_{8,216} AW_1[y, y, x, y, x, y, y, y] + \\
 & C_{8,217} AW_1[y, y, x, y, y, x, x, x] + C_{8,218} AW_1[y, y, x, y, y, x, x, y] + \\
 & C_{8,219} AW_1[y, y, x, y, y, x, y, x] + C_{8,220} AW_1[y, y, x, y, y, x, y, y] + \\
 & C_{8,221} AW_1[y, y, x, y, y, y, x, x] + C_{8,222} AW_1[y, y, x, y, y, y, x, y] + \\
 & C_{8,223} AW_1[y, y, x, y, y, y, y, x] + C_{8,224} AW_1[y, y, x, y, y, y, y, y] + \\
 & C_{8,225} AW_1[y, y, y, x, x, x, x, x] + C_{8,226} AW_1[y, y, y, x, x, x, x, y] + \\
 & C_{8,227} AW_1[y, y, y, x, x, x, y, x] + C_{8,228} AW_1[y, y, y, x, x, x, y, y] + \\
 & C_{8,229} AW_1[y, y, y, x, x, y, x, x] + C_{8,230} AW_1[y, y, y, x, x, y, x, y] + \\
 & C_{8,231} AW_1[y, y, y, x, x, y, y, x] + C_{8,232} AW_1[y, y, y, x, x, y, y, y] + \\
 & C_{8,233} AW_1[y, y, y, x, y, x, x, x] + C_{8,234} AW_1[y, y, y, x, y, x, x, y] + \\
 & C_{8,235} AW_1[y, y, y, x, y, x, y, x] + C_{8,236} AW_1[y, y, y, x, y, x, y, y] + \\
 & C_{8,237} AW_1[y, y, y, x, y, y, x, x] + C_{8,238} AW_1[y, y, y, x, y, y, x, y] + \\
 & C_{8,239} AW_1[y, y, y, x, y, y, y, x] + C_{8,240} AW_1[y, y, y, x, y, y, y, y] + \\
 & C_{8,241} AW_1[y, y, y, y, x, x, x, x] + C_{8,242} AW_1[y, y, y, y, x, x, x, y] + \\
 & C_{8,243} AW_1[y, y, y, y, x, x, y, x] + C_{8,244} AW_1[y, y, y, y, x, x, y, y] + \\
 & C_{8,245} AW_1[y, y, y, y, x, y, x, x] + C_{8,246} AW_1[y, y, y, y, x, y, x, y] + \\
 & C_{8,247} AW_1[y, y, y, y, x, y, y, x] + C_{8,248} AW_1[y, y, y, y, x, y, y, y] + \\
 & C_{8,249} AW_1[y, y, y, y, y, x, x, x] + C_{8,250} AW_1[y, y, y, y, y, x, x, y] + \\
 & C_{8,251} AW_1[y, y, y, y, y, x, y, x] + C_{8,252} AW_1[y, y, y, y, y, x, y, y] + \\
 & C_{8,253} AW_1[y, y, y, y, y, y, x, x] + C_{8,254} AW_1[y, y, y, y, y, y, x, y] + \\
 & C_{8,255} AW_1[y, y, y, y, y, y, y, x] + C_{8,256} AW_1[y, y, y, y, y, y, y, y] \Big]
 \end{aligned}$$

```

In[*]:= Short[
  reIs = Union@@(List@@Pentagon_d[ $\mathfrak{a}$ ][d]][[1]] /. {
     $\mathfrak{A}_0[A_] \Rightarrow$  Table[Coefficient[A, B], {B, Basis_d,{x,y}[AW_1 AW_2]}},
     $\mathfrak{A}_c[1,2][A_] \Rightarrow$  Table[Coefficient[A, B], {B, AW_1[] AW_2[] Basis_{d-1},{x,y}[AW_1 AW_2]}},
  }),
  10]

```

Out[*]//Short=

$$\left\{ 0, -247 c_{8,1}, -191 c_{8,1}, -70 c_{8,1}, -56 c_{8,1}, -51 c_{8,1}, -28 c_{8,1}, \right.$$

$$\left. -8 c_{8,1}, -c_{8,1}, 7 c_{8,1}, 47 c_{8,1}, 117 c_{8,1}, 131 c_{8,1}, 187 c_{8,1}, \ll 1903 \gg, \right.$$

$$\frac{1}{290304} - c_{8,9} - c_{8,112} - c_{8,176} - c_{8,184} - c_{8,208} - 2 c_{8,216} - c_{8,220} + 4 c_{8,224} - 3 c_{8,232} -$$

$$3 c_{8,236} - c_{8,238} + 15 c_{8,240} - 6 c_{8,244} - 4 c_{8,246} - c_{8,247} + 30 c_{8,248} - 10 c_{8,250} - 5 c_{8,251} +$$

$$49 c_{8,252} - 15 c_{8,253} + 68 c_{8,254} + 77 c_{8,255}, -246 c_{8,256}, -190 c_{8,256}, -70 c_{8,256}, -56 c_{8,256},$$

$$\left. -50 c_{8,256}, -28 c_{8,256}, -8 c_{8,256}, 8 c_{8,256}, 48 c_{8,256}, 118 c_{8,256}, 132 c_{8,256}, 188 c_{8,256} \right\}$$

In[*]:= eqns = # == 0 & /@ rels;

In[*]:= vars = Union[Cases[eqns, c_d, ∞]]

Out[*]=

{c_{8,1}, c_{8,2}, c_{8,3}, c_{8,4}, c_{8,5}, c_{8,6}, c_{8,7}, c_{8,8}, c_{8,9}, c_{8,10}, c_{8,11}, c_{8,12}, c_{8,13}, c_{8,14}, c_{8,15}, c_{8,16},
 c_{8,17}, c_{8,18}, c_{8,19}, c_{8,20}, c_{8,21}, c_{8,22}, c_{8,23}, c_{8,24}, c_{8,25}, c_{8,26}, c_{8,27}, c_{8,28}, c_{8,29}, c_{8,30},
 c_{8,31}, c_{8,32}, c_{8,33}, c_{8,34}, c_{8,35}, c_{8,36}, c_{8,37}, c_{8,38}, c_{8,39}, c_{8,40}, c_{8,41}, c_{8,42}, c_{8,43}, c_{8,44},
 c_{8,45}, c_{8,46}, c_{8,47}, c_{8,48}, c_{8,49}, c_{8,50}, c_{8,51}, c_{8,52}, c_{8,53}, c_{8,54}, c_{8,55}, c_{8,56}, c_{8,57}, c_{8,58},
 c_{8,59}, c_{8,60}, c_{8,61}, c_{8,62}, c_{8,63}, c_{8,64}, c_{8,65}, c_{8,66}, c_{8,67}, c_{8,68}, c_{8,69}, c_{8,70}, c_{8,71}, c_{8,72},
 c_{8,73}, c_{8,74}, c_{8,75}, c_{8,76}, c_{8,77}, c_{8,78}, c_{8,79}, c_{8,80}, c_{8,81}, c_{8,82}, c_{8,83}, c_{8,84}, c_{8,85}, c_{8,86},
 c_{8,87}, c_{8,88}, c_{8,89}, c_{8,90}, c_{8,91}, c_{8,92}, c_{8,93}, c_{8,94}, c_{8,95}, c_{8,96}, c_{8,97}, c_{8,98}, c_{8,99}, c_{8,100},
 c_{8,101}, c_{8,102}, c_{8,103}, c_{8,104}, c_{8,105}, c_{8,106}, c_{8,107}, c_{8,108}, c_{8,109}, c_{8,110}, c_{8,111}, c_{8,112}, c_{8,113},
 c_{8,114}, c_{8,115}, c_{8,116}, c_{8,117}, c_{8,118}, c_{8,119}, c_{8,120}, c_{8,121}, c_{8,122}, c_{8,123}, c_{8,124}, c_{8,125}, c_{8,126},
 c_{8,127}, c_{8,128}, c_{8,129}, c_{8,130}, c_{8,131}, c_{8,132}, c_{8,133}, c_{8,134}, c_{8,135}, c_{8,136}, c_{8,137}, c_{8,138}, c_{8,139},
 c_{8,140}, c_{8,141}, c_{8,142}, c_{8,143}, c_{8,144}, c_{8,145}, c_{8,146}, c_{8,147}, c_{8,148}, c_{8,149}, c_{8,150}, c_{8,151}, c_{8,152},
 c_{8,153}, c_{8,154}, c_{8,155}, c_{8,156}, c_{8,157}, c_{8,158}, c_{8,159}, c_{8,160}, c_{8,161}, c_{8,162}, c_{8,163}, c_{8,164}, c_{8,165},
 c_{8,166}, c_{8,167}, c_{8,168}, c_{8,169}, c_{8,170}, c_{8,171}, c_{8,172}, c_{8,173}, c_{8,174}, c_{8,175}, c_{8,176}, c_{8,177}, c_{8,178},
 c_{8,179}, c_{8,180}, c_{8,181}, c_{8,182}, c_{8,183}, c_{8,184}, c_{8,185}, c_{8,186}, c_{8,187}, c_{8,188}, c_{8,189}, c_{8,190}, c_{8,191},
 c_{8,192}, c_{8,193}, c_{8,194}, c_{8,195}, c_{8,196}, c_{8,197}, c_{8,198}, c_{8,199}, c_{8,200}, c_{8,201}, c_{8,202}, c_{8,203}, c_{8,204},
 c_{8,205}, c_{8,206}, c_{8,207}, c_{8,208}, c_{8,209}, c_{8,210}, c_{8,211}, c_{8,212}, c_{8,213}, c_{8,214}, c_{8,215}, c_{8,216}, c_{8,217},
 c_{8,218}, c_{8,219}, c_{8,220}, c_{8,221}, c_{8,222}, c_{8,223}, c_{8,224}, c_{8,225}, c_{8,226}, c_{8,227}, c_{8,228}, c_{8,229}, c_{8,230},
 c_{8,231}, c_{8,232}, c_{8,233}, c_{8,234}, c_{8,235}, c_{8,236}, c_{8,237}, c_{8,238}, c_{8,239}, c_{8,240}, c_{8,241}, c_{8,242}, c_{8,243},
 c_{8,244}, c_{8,245}, c_{8,246}, c_{8,247}, c_{8,248}, c_{8,249}, c_{8,250}, c_{8,251}, c_{8,252}, c_{8,253}, c_{8,254}, c_{8,255}, c_{8,256}}

In[*]:= sol = Solve[eqns, vars][[1]]

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

Out[*]=

{c_{8,1} → 0, c_{8,2} → - $\frac{1}{2419200}$, c_{8,3} → $\frac{1}{345600}$, c_{8,4} → $\frac{19}{9676800}$, c_{8,5} → - $\frac{1}{115200}$,
 c_{8,7} → - $\frac{19}{1612800}$ - c_{8,6}, c_{8,8} → - $\frac{271}{58060800}$, c_{8,9} → $\frac{1}{69120}$, c_{8,10} → - $\frac{457}{58060800}$ - $\frac{5c_{8,6}}{2}$,
 c_{8,11} → $\frac{457}{29030400}$, c_{8,12} → $\frac{587}{69672960}$ - $\frac{3c_{8,6}}{4}$, c_{8,13} → $\frac{179}{8294400}$ + $\frac{5c_{8,6}}{2}$, c_{8,14} → $\frac{223}{174182400}$,
 c_{8,15} → $\frac{1583}{116121600}$ + $\frac{3c_{8,6}}{4}$, c_{8,16} → $\frac{2893}{464486400}$, c_{8,17} → - $\frac{1}{69120}$, c_{8,18} → - $\frac{73}{9676800}$,
 c_{8,19} → $\frac{1571}{29030400}$ + 10 c_{8,6}, c_{8,20} → $\frac{1619}{116121600}$ + $\frac{15c_{8,6}}{4}$, c_{8,21} → - $\frac{71}{829440}$ - 10 c_{8,6},
 c_{8,22} → - $\frac{79}{1935360}$ - $\frac{9c_{8,6}}{2}$, c_{8,23} → - $\frac{3617}{174182400}$, c_{8,24} → - $\frac{83}{7962624}$ + $\frac{3c_{8,6}}{4}$, c_{8,25} → - $\frac{1}{4147200}$,
 c_{8,26} → $\frac{109}{58060800}$, c_{8,27} → $\frac{1391}{43545600}$ + $\frac{9c_{8,6}}{2}$, c_{8,28} → - $\frac{35237}{1393459200}$ - $\frac{15c_{8,6}}{4}$,
 c_{8,29} → - $\frac{109}{3317760}$ - $\frac{15c_{8,6}}{4}$, c_{8,30} → $\frac{32899}{1393459200}$ + $\frac{15c_{8,6}}{4}$, c_{8,31} → - $\frac{5951}{464486400}$ - $\frac{3c_{8,6}}{4}$,
 c_{8,32} → - $\frac{2399}{464486400}$, c_{8,33} → $\frac{1}{115200}$, c_{8,34} → $\frac{1093}{58060800}$ + $\frac{5c_{8,6}}{2}$, c_{8,35} → - $\frac{1529}{29030400}$ - 10 c_{8,6},

$$\begin{aligned}
 c_{8,36} &\rightarrow -\frac{4813}{348\,364\,800} - \frac{15 c_{8,6}}{4}, c_{8,37} \rightarrow -\frac{1}{460\,800}, c_{8,38} \rightarrow \frac{1517}{38\,707\,200} + \frac{27 c_{8,6}}{4}, \\
 c_{8,39} &\rightarrow -\frac{919}{23\,224\,320} - \frac{27 c_{8,6}}{4}, c_{8,40} \rightarrow \frac{2311}{1\,393\,459\,200}, c_{8,41} \rightarrow \frac{361}{4\,147\,200} + 10 c_{8,6}, \\
 c_{8,42} &\rightarrow \frac{113}{11\,612\,160}, c_{8,43} \rightarrow \frac{1429}{58\,060\,800}, c_{8,44} \rightarrow \frac{25\,189}{464\,486\,400} + \frac{9 c_{8,6}}{2}, c_{8,45} \rightarrow \frac{323}{5\,529\,600} + \frac{27 c_{8,6}}{4}, \\
 c_{8,46} &\rightarrow -\frac{22\,231}{464\,486\,400} - \frac{27 c_{8,6}}{4}, c_{8,47} \rightarrow \frac{4297}{199\,065\,600}, c_{8,48} \rightarrow \frac{10\,963}{1\,393\,459\,200} - c_{8,6}, \\
 c_{8,49} &\rightarrow -\frac{179}{8\,294\,400} - \frac{5 c_{8,6}}{2}, c_{8,50} \rightarrow -\frac{467}{87\,091\,200}, c_{8,51} \rightarrow \frac{1}{1\,382\,400}, c_{8,52} \rightarrow -\frac{419}{464\,486\,400}, \\
 c_{8,53} &\rightarrow -\frac{337}{5\,529\,600} - \frac{27 c_{8,6}}{4}, c_{8,54} \rightarrow -\frac{31}{2\,457\,600}, c_{8,55} \rightarrow \frac{3349}{92\,897\,280} + \frac{27 c_{8,6}}{4}, \\
 c_{8,56} &\rightarrow \frac{83}{17\,203\,200} + \frac{5 c_{8,6}}{2}, c_{8,57} \rightarrow \frac{559}{16\,588\,800} + \frac{15 c_{8,6}}{4}, c_{8,58} \rightarrow \frac{1027}{278\,691\,840}, \\
 c_{8,59} &\rightarrow -\frac{24\,697}{1\,393\,459\,200} - \frac{9 c_{8,6}}{2}, c_{8,60} \rightarrow \frac{19\,619}{1\,393\,459\,200}, c_{8,61} \rightarrow -\frac{49}{66\,355\,200}, \\
 c_{8,62} &\rightarrow -\frac{3697}{154\,828\,800} - \frac{5 c_{8,6}}{2}, c_{8,63} \rightarrow \frac{1951}{154\,828\,800} + c_{8,6}, c_{8,64} \rightarrow \frac{127}{51\,609\,600}, c_{8,65} \rightarrow -\frac{1}{345\,600}, \\
 c_{8,66} &\rightarrow -\frac{31}{4\,838\,400} - c_{8,6}, c_{8,67} \rightarrow -\frac{163}{29\,030\,400}, c_{8,68} \rightarrow \frac{29}{16\,588\,800} + \frac{3 c_{8,6}}{4}, c_{8,69} \rightarrow \frac{53}{829\,440} + 10 c_{8,6}, \\
 c_{8,70} &\rightarrow -\frac{391}{174\,182\,400}, c_{8,71} \rightarrow \frac{1993}{87\,091\,200} + \frac{9 c_{8,6}}{2}, c_{8,72} \rightarrow -\frac{13\,781}{1\,393\,459\,200} - \frac{3 c_{8,6}}{4}, \\
 c_{8,73} &\rightarrow -\frac{259}{4\,147\,200} - 10 c_{8,6}, c_{8,74} \rightarrow -\frac{4559}{116\,121\,600} - \frac{27 c_{8,6}}{4}, c_{8,75} \rightarrow \frac{19}{2\,764\,800}, \\
 c_{8,76} &\rightarrow \frac{4679}{1\,393\,459\,200}, c_{8,77} \rightarrow \frac{1}{552\,960}, c_{8,78} \rightarrow \frac{133}{2\,457\,600} + \frac{27 c_{8,6}}{4}, c_{8,79} \rightarrow -\frac{43\,369}{1\,393\,459\,200} - \frac{9 c_{8,6}}{2}, \\
 c_{8,80} &\rightarrow \frac{12\,323}{1\,393\,459\,200} + c_{8,6}, c_{8,81} \rightarrow -\frac{17}{1\,382\,400}, c_{8,82} \rightarrow \frac{661}{24\,883\,200} + \frac{9 c_{8,6}}{2}, c_{8,83} \rightarrow -\frac{599}{29\,030\,400}, \\
 c_{8,84} &\rightarrow -\frac{12\,637}{278\,691\,840} - \frac{9 c_{8,6}}{2}, c_{8,85} \rightarrow -\frac{1}{92\,160}, c_{8,86} \rightarrow -\frac{2339}{464\,486\,400}, c_{8,87} \rightarrow -\frac{1807}{92\,897\,280}, \\
 c_{8,88} &\rightarrow -\frac{5687}{464\,486\,400}, c_{8,89} \rightarrow -\frac{101}{2\,764\,800} - \frac{9 c_{8,6}}{2}, c_{8,90} \rightarrow \frac{677}{464\,486\,400}, c_{8,91} \rightarrow -\frac{1609}{154\,828\,800}, \\
 c_{8,92} &\rightarrow -\frac{5257}{66\,355\,200} - 10 c_{8,6}, c_{8,93} \rightarrow \frac{541}{22\,118\,400} + \frac{9 c_{8,6}}{2}, c_{8,94} \rightarrow \frac{33\,893}{464\,486\,400} + 10 c_{8,6}, \\
 c_{8,95} &\rightarrow -\frac{6931}{464\,486\,400}, c_{8,96} \rightarrow -\frac{3881}{464\,486\,400}, c_{8,97} \rightarrow \frac{23}{2\,073\,600} + c_{8,6}, c_{8,98} \rightarrow \frac{53}{29\,030\,400}, \\
 c_{8,99} &\rightarrow -\frac{4031}{174\,182\,400} - \frac{9 c_{8,6}}{2}, c_{8,100} \rightarrow \frac{8863}{278\,691\,840} + \frac{15 c_{8,6}}{4}, c_{8,101} \rightarrow \frac{49}{1\,105\,920} + \frac{27 c_{8,6}}{4}, \\
 c_{8,102} &\rightarrow -\frac{69\,901}{1\,393\,459\,200} - \frac{27 c_{8,6}}{4}, c_{8,103} \rightarrow \frac{59}{30\,965\,760}, c_{8,104} \rightarrow -\frac{1097}{66\,355\,200} - \frac{5 c_{8,6}}{2}, \\
 c_{8,105} &\rightarrow \frac{61}{4\,147\,200}, c_{8,106} \rightarrow \frac{77\,299}{1\,393\,459\,200} + \frac{27 c_{8,6}}{4}, c_{8,107} \rightarrow \frac{365}{18\,579\,456}, \\
 c_{8,108} &\rightarrow \frac{869}{10\,321\,920} + 10 c_{8,6}, c_{8,109} \rightarrow -\frac{101}{2\,654\,208} - \frac{27 c_{8,6}}{4}, c_{8,110} \rightarrow \frac{2213}{464\,486\,400},
 \end{aligned}$$

$$\begin{aligned}
 C_{8,111} &\rightarrow -\frac{4951}{92\,897\,280} - 10 C_{8,6}, C_{8,112} \rightarrow \frac{4927}{464\,486\,400}, C_{8,113} \rightarrow -\frac{7}{614\,400} - \frac{3 C_{8,6}}{4}, \\
 C_{8,114} &\rightarrow -\frac{13\,549}{464\,486\,400} - \frac{15 C_{8,6}}{4}, C_{8,115} \rightarrow \frac{32\,341}{1\,393\,459\,200} + \frac{9 C_{8,6}}{2}, C_{8,116} \rightarrow -\frac{8417}{1\,393\,459\,200}, \\
 C_{8,117} &\rightarrow -\frac{671}{66\,355\,200}, C_{8,118} \rightarrow -\frac{35\,459}{464\,486\,400} - 10 C_{8,6}, C_{8,119} \rightarrow \frac{5137}{92\,897\,280} + 10 C_{8,6}, \\
 C_{8,120} &\rightarrow -\frac{683}{92\,897\,280}, C_{8,121} \rightarrow \frac{557}{66\,355\,200} + \frac{3 C_{8,6}}{4}, C_{8,122} \rightarrow \frac{359}{17\,203\,200} + \frac{5 C_{8,6}}{2}, \\
 C_{8,123} &\rightarrow \frac{307}{66\,355\,200}, C_{8,124} \rightarrow -\frac{319}{464\,486\,400}, C_{8,125} \rightarrow -\frac{187}{22\,118\,400} - C_{8,6}, C_{8,126} \rightarrow \frac{13}{4\,423\,680}, \\
 C_{8,127} &\rightarrow -\frac{107}{51\,609\,600}, C_{8,128} \rightarrow -\frac{127}{154\,828\,800}, C_{8,129} \rightarrow \frac{1}{2\,419\,200}, C_{8,130} \rightarrow -\frac{1}{1\,075\,200}, \\
 C_{8,131} &\rightarrow \frac{29}{2\,419\,200} + C_{8,6}, C_{8,132} \rightarrow \frac{43}{11\,612\,160}, C_{8,133} \rightarrow -\frac{1577}{58\,060\,800} - \frac{5 C_{8,6}}{2}, \\
 C_{8,134} &\rightarrow -\frac{5413}{348\,364\,800} - \frac{3 C_{8,6}}{4}, C_{8,135} \rightarrow -\frac{823}{174\,182\,400}, C_{8,136} \rightarrow -\frac{323}{51\,609\,600}, C_{8,137} \rightarrow \frac{433}{29\,030\,400}, \\
 C_{8,138} &\rightarrow \frac{899}{23\,224\,320} + \frac{15 C_{8,6}}{4}, C_{8,139} \rightarrow -\frac{1}{76\,800} - \frac{9 C_{8,6}}{2}, C_{8,140} \rightarrow \frac{4829}{199\,065\,600} + \frac{3 C_{8,6}}{4}, \\
 C_{8,141} &\rightarrow \frac{787}{174\,182\,400}, C_{8,142} \rightarrow -\frac{36\,941}{1\,393\,459\,200} - \frac{15 C_{8,6}}{4}, C_{8,143} \rightarrow \frac{51\,803}{1\,393\,459\,200} + \frac{15 C_{8,6}}{4}, \\
 C_{8,144} &\rightarrow \frac{1411}{154\,828\,800}, C_{8,145} \rightarrow \frac{257}{58\,060\,800} + \frac{5 C_{8,6}}{2}, C_{8,146} \rightarrow -\frac{2587}{69\,672\,960} - \frac{15 C_{8,6}}{4}, \\
 C_{8,147} &\rightarrow \frac{4009}{116\,121\,600} + \frac{27 C_{8,6}}{4}, C_{8,148} \rightarrow -\frac{16\,801}{1\,393\,459\,200}, C_{8,149} \rightarrow -\frac{107}{5\,806\,080}, \\
 C_{8,150} &\rightarrow \frac{1163}{66\,355\,200} + \frac{9 C_{8,6}}{2}, C_{8,151} \rightarrow -\frac{32\,303}{464\,486\,400} - \frac{27 C_{8,6}}{4}, C_{8,152} \rightarrow -\frac{40\,237}{1\,393\,459\,200} - C_{8,6}, \\
 C_{8,153} &\rightarrow \frac{89}{87\,091\,200}, C_{8,154} \rightarrow \frac{59}{30\,965\,760}, C_{8,155} \rightarrow \frac{631}{154\,828\,800}, C_{8,156} \rightarrow \frac{10\,457}{464\,486\,400} + \frac{5 C_{8,6}}{2}, \\
 C_{8,157} &\rightarrow -\frac{2081}{278\,691\,840}, C_{8,158} \rightarrow -\frac{313}{55\,738\,368}, C_{8,159} \rightarrow -\frac{11\,243}{464\,486\,400} - \frac{5 C_{8,6}}{2}, \\
 C_{8,160} &\rightarrow -\frac{2977}{464\,486\,400}, C_{8,161} \rightarrow \frac{1}{1\,451\,520} - C_{8,6}, C_{8,162} \rightarrow \frac{181}{23\,224\,320} + \frac{3 C_{8,6}}{4}, C_{8,163} \rightarrow \frac{1439}{87\,091\,200}, \\
 C_{8,164} &\rightarrow \frac{11\,219}{1\,393\,459\,200} - \frac{3 C_{8,6}}{4}, C_{8,165} \rightarrow -\frac{5689}{116\,121\,600} - \frac{27 C_{8,6}}{4}, C_{8,166} \rightarrow -\frac{13\,361}{1\,393\,459\,200}, \\
 C_{8,167} &\rightarrow \frac{2833}{51\,609\,600} + \frac{27 C_{8,6}}{4}, C_{8,168} \rightarrow \frac{13\,843}{1\,393\,459\,200} + C_{8,6}, C_{8,169} \rightarrow \frac{8459}{174\,182\,400} + \frac{9 C_{8,6}}{2}, \\
 C_{8,170} &\rightarrow -\frac{25\,273}{1\,393\,459\,200} - \frac{9 C_{8,6}}{2}, C_{8,171} \rightarrow \frac{11\,813}{464\,486\,400}, C_{8,172} \rightarrow \frac{12\,449}{464\,486\,400}, \\
 C_{8,173} &\rightarrow \frac{5417}{464\,486\,400}, C_{8,174} \rightarrow -\frac{32\,507}{464\,486\,400} - 10 C_{8,6}, C_{8,175} \rightarrow \frac{14\,447}{154\,828\,800} + 10 C_{8,6}, \\
 C_{8,176} &\rightarrow \frac{9551}{464\,486\,400}, C_{8,177} \rightarrow -\frac{613}{174\,182\,400}, C_{8,178} \rightarrow \frac{25\,913}{1\,393\,459\,200} + \frac{15 C_{8,6}}{4}, \\
 C_{8,179} &\rightarrow -\frac{59\,807}{1\,393\,459\,200} - \frac{27 C_{8,6}}{4}, C_{8,180} \rightarrow -\frac{1093}{66\,355\,200} - \frac{5 C_{8,6}}{2}, C_{8,181} \rightarrow \frac{43\,649}{1\,393\,459\,200} + \frac{27 C_{8,6}}{4},
 \end{aligned}$$

$$\begin{aligned}
 C_{8,182} &\rightarrow \frac{23741}{464486400} + 10 C_{8,6}, C_{8,183} \rightarrow -\frac{5003}{464486400}, C_{8,184} \rightarrow -\frac{9463}{464486400}, \\
 C_{8,185} &\rightarrow -\frac{24391}{1393459200} - \frac{15 C_{8,6}}{4}, C_{8,186} \rightarrow \frac{197}{39813120}, C_{8,187} \rightarrow -\frac{389}{7372800} - 10 C_{8,6}, \\
 C_{8,188} &\rightarrow \frac{11521}{464486400}, C_{8,189} \rightarrow \frac{7793}{464486400} + \frac{5 C_{8,6}}{2}, C_{8,190} \rightarrow -\frac{6187}{464486400}, C_{8,191} \rightarrow \frac{1471}{154828800}, \\
 C_{8,192} &\rightarrow \frac{127}{22118400}, C_{8,193} \rightarrow -\frac{19}{9676800}, C_{8,194} \rightarrow -\frac{1}{1612800}, C_{8,195} \rightarrow -\frac{757}{116121600} - \frac{3 C_{8,6}}{4}, \\
 C_{8,196} &\rightarrow -\frac{49}{66355200}, C_{8,197} \rightarrow \frac{1139}{69672960} + \frac{15 C_{8,6}}{4}, C_{8,198} \rightarrow -\frac{2393}{1393459200} + \frac{3 C_{8,6}}{4}, \\
 C_{8,199} &\rightarrow -\frac{1961}{55738368} - \frac{15 C_{8,6}}{4}, C_{8,200} \rightarrow -\frac{581}{66355200}, C_{8,201} \rightarrow -\frac{1717}{116121600} - \frac{15 C_{8,6}}{4}, \\
 C_{8,202} &\rightarrow \frac{1619}{154828800}, C_{8,203} \rightarrow \frac{973}{22118400} + \frac{9 C_{8,6}}{2}, C_{8,204} \rightarrow \frac{491}{66355200} - C_{8,6}, \\
 C_{8,205} &\rightarrow \frac{221}{92897280}, C_{8,206} \rightarrow \frac{1387}{66355200} + \frac{5 C_{8,6}}{2}, C_{8,207} \rightarrow \frac{6359}{1393459200}, C_{8,208} \rightarrow \frac{127}{22118400}, \\
 C_{8,209} &\rightarrow -\frac{587}{69672960} + \frac{3 C_{8,6}}{4}, C_{8,210} \rightarrow -\frac{509}{39813120} - \frac{3 C_{8,6}}{4}, C_{8,211} \rightarrow -\frac{9241}{464486400}, \\
 C_{8,212} &\rightarrow -\frac{157}{13271040} + C_{8,6}, C_{8,213} \rightarrow -\frac{21661}{464486400} - \frac{9 C_{8,6}}{2}, C_{8,214} \rightarrow -\frac{3683}{464486400}, \\
 C_{8,215} &\rightarrow -\frac{2917}{30965760} - 10 C_{8,6}, C_{8,216} \rightarrow -\frac{17}{819200}, C_{8,217} \rightarrow \frac{31709}{1393459200} + \frac{15 C_{8,6}}{4}, \\
 C_{8,218} &\rightarrow -\frac{7667}{464486400} - \frac{5 C_{8,6}}{2}, C_{8,219} \rightarrow \frac{29893}{464486400} + 10 C_{8,6}, C_{8,220} \rightarrow -\frac{49}{7372800}, \\
 C_{8,221} &\rightarrow -\frac{2689}{278691840}, C_{8,222} \rightarrow \frac{853}{464486400}, C_{8,223} \rightarrow -\frac{7939}{464486400}, C_{8,224} \rightarrow -\frac{127}{7372800}, \\
 C_{8,225} &\rightarrow \frac{271}{58060800}, C_{8,226} \rightarrow \frac{19}{10321920}, C_{8,227} \rightarrow \frac{22289}{1393459200} + \frac{3 C_{8,6}}{4}, C_{8,228} \rightarrow \frac{679}{66355200}, \\
 C_{8,229} &\rightarrow -\frac{5839}{1393459200}, C_{8,230} \rightarrow -\frac{22609}{1393459200} - C_{8,6}, C_{8,231} \rightarrow \frac{9229}{464486400} + \frac{5 C_{8,6}}{2}, \\
 C_{8,232} &\rightarrow -\frac{49}{66355200}, C_{8,233} \rightarrow \frac{2243}{199065600} - \frac{3 C_{8,6}}{4}, C_{8,234} \rightarrow \frac{30007}{1393459200} + C_{8,6}, C_{8,235} \rightarrow \frac{10469}{464486400}, \\
 C_{8,236} &\rightarrow \frac{557}{22118400}, C_{8,237} \rightarrow -\frac{2927}{464486400} - \frac{5 C_{8,6}}{2}, C_{8,238} \rightarrow \frac{241}{92897280}, C_{8,239} \rightarrow \frac{10301}{464486400}, \\
 C_{8,240} &\rightarrow \frac{127}{4423680}, C_{8,241} \rightarrow -\frac{2893}{464486400}, C_{8,242} \rightarrow -\frac{2993}{464486400}, C_{8,243} \rightarrow -\frac{16043}{1393459200} - C_{8,6}, \\
 C_{8,244} &\rightarrow -\frac{127}{22118400}, C_{8,245} \rightarrow -\frac{10963}{1393459200} + C_{8,6}, C_{8,246} \rightarrow -\frac{6451}{464486400}, C_{8,247} \rightarrow -\frac{8027}{464486400}, \\
 C_{8,248} &\rightarrow -\frac{127}{4423680}, C_{8,249} \rightarrow \frac{2399}{464486400}, C_{8,250} \rightarrow \frac{2357}{464486400}, C_{8,251} \rightarrow \frac{643}{66355200}, \\
 C_{8,252} &\rightarrow \frac{127}{7372800}, C_{8,253} \rightarrow -\frac{127}{51609600}, C_{8,254} \rightarrow -\frac{127}{22118400}, C_{8,255} \rightarrow \frac{127}{154828800}, C_{8,256} \rightarrow 0 \}
 \end{aligned}$$

In[*]:= sol /. Rule -> Set

Out[*]=

$$\left\{ 0, -\frac{1}{2419200}, \frac{1}{345600}, \frac{19}{9676800}, -\frac{1}{115200}, -\frac{19}{1612800} - C_{8,6}, -\frac{271}{58060800}, \frac{1}{69120} \right\}$$

$$\begin{array}{r}
 \begin{array}{ccccccc}
 457 & 5 c_{8,6} & 457 & 587 & 3 c_{8,6} & 179 & 5 c_{8,6} & 223 \\
 \hline
 58\,060\,800 & 2 & 29\,030\,400 & 69\,672\,960 & 4 & 8\,294\,400 & 2 & 174\,182\,400 \\
 1583 & 3 c_{8,6} & 2893 & 1 & 73 & 1571 & & 1619 & 15 c_{8,6} \\
 \hline
 116\,121\,600 & 4 & 464\,486\,400 & 69\,120 & 9\,676\,800 & 29\,030\,400 & + 10 c_{8,6} & 116\,121\,600 & 4 \\
 71 & & 79 & 9 c_{8,6} & 3617 & 83 & 3 c_{8,6} & 1 & 109 \\
 \hline
 829\,440 & - 10 c_{8,6} & 1\,935\,360 & 2 & 174\,182\,400 & 7\,962\,624 & + 4 & 4\,147\,200 & 58\,060\,800 \\
 1391 & 9 c_{8,6} & 35\,237 & 15 c_{8,6} & 109 & 15 c_{8,6} & & 32\,899 & 15 c_{8,6} \\
 \hline
 43\,545\,600 & 2 & 1\,393\,459\,200 & 4 & 3\,317\,760 & 4 & & 1\,393\,459\,200 & 4 \\
 5951 & 3 c_{8,6} & 2399 & 1 & 1093 & 5 c_{8,6} & & 1529 & \\
 \hline
 464\,486\,400 & 4 & 464\,486\,400 & 115\,200 & 58\,060\,800 & + 2 & & 29\,030\,400 & - 10 c_{8,6} \\
 4813 & 15 c_{8,6} & 1 & 1517 & 27 c_{8,6} & 919 & & 27 c_{8,6} & 2311 \\
 \hline
 348\,364\,800 & 4 & 460\,800 & 38\,707\,200 & 4 & 23\,224\,320 & 4 & 1\,393\,459\,200 & \\
 361 & & 113 & 1429 & 25\,189 & 9 c_{8,6} & 323 & 27 c_{8,6} & \\
 \hline
 4\,147\,200 & + 10 c_{8,6} & 11\,612\,160 & 58\,060\,800 & 464\,486\,400 & + 2 & 5\,529\,600 & 4 & \\
 22\,231 & 27 c_{8,6} & 4297 & 10\,963 & & 179 & 5 c_{8,6} & 467 & \\
 \hline
 464\,486\,400 & 4 & 199\,065\,600 & 1\,393\,459\,200 & - c_{8,6} & 8\,294\,400 & 2 & 87\,091\,200 & \\
 1 & 419 & 337 & 27 c_{8,6} & 31 & 3349 & 27 c_{8,6} & & \\
 \hline
 1\,382\,400 & 464\,486\,400 & 5\,529\,600 & 4 & 2\,457\,600 & 92\,897\,280 & + 4 & & \\
 83 & 5 c_{8,6} & 559 & 15 c_{8,6} & 1027 & 24\,697 & 9 c_{8,6} & 19\,619 & \\
 \hline
 17\,203\,200 & 2 & 16\,588\,800 & 4 & 278\,691\,840 & 1\,393\,459\,200 & - 2 & 1\,393\,459\,200 & \\
 49 & & 3697 & 5 c_{8,6} & 1951 & 127 & 1 & 31 & \\
 \hline
 66\,355\,200 & 154\,828\,800 & 2 & 154\,828\,800 & + c_{8,6} & 51\,609\,600 & 345\,600 & 4\,838\,400 & - c_{8,6} \\
 163 & 29 & 3 c_{8,6} & 53 & & 391 & 1993 & 9 c_{8,6} & \\
 \hline
 29\,030\,400 & 16\,588\,800 & + 4 & 829\,440 & + 10 c_{8,6} & 174\,182\,400 & 87\,091\,200 & + 2 & \\
 13\,781 & 3 c_{8,6} & 259 & & & 4559 & 27 c_{8,6} & 19 & 4679 \\
 \hline
 1\,393\,459\,200 & 4 & 4\,147\,200 & & 116\,121\,600 & 4 & 2\,764\,800 & 1\,393\,459\,200 & \\
 1 & 133 & 27 c_{8,6} & 43\,369 & 9 c_{8,6} & 12\,323 & & 17 & \\
 \hline
 552\,960 & 2\,457\,600 & + 4 & 1\,393\,459\,200 & - 2 & 1\,393\,459\,200 & + c_{8,6} & 1\,382\,400 & \\
 661 & 9 c_{8,6} & 599 & 12\,637 & 9 c_{8,6} & 1 & 2339 & 1807 & \\
 \hline
 24\,883\,200 & 2 & 29\,030\,400 & 278\,691\,840 & 2 & 92\,160 & 464\,486\,400 & 92\,897\,280 & \\
 5687 & 101 & 9 c_{8,6} & 677 & 1609 & & 5257 & & \\
 \hline
 464\,486\,400 & 2\,764\,800 & 2 & 464\,486\,400 & 154\,828\,800 & 66\,355\,200 & - 10 c_{8,6} & & \\
 541 & 9 c_{8,6} & 33\,893 & & 6931 & 3881 & 23 & & \\
 \hline
 22\,118\,400 & 2 & 464\,486\,400 & + 10 c_{8,6} & - 464\,486\,400 & - 464\,486\,400 & 2\,073\,600 & + c_{8,6} & \\
 53 & 4031 & 9 c_{8,6} & 8863 & 15 c_{8,6} & 49 & 27 c_{8,6} & & \\
 \hline
 29\,030\,400 & 174\,182\,400 & 2 & 278\,691\,840 & + 4 & 1\,105\,920 & + 4 & & \\
 69\,901 & 27 c_{8,6} & 59 & 1097 & 5 c_{8,6} & 61 & 77\,299 & 27 c_{8,6} & \\
 \hline
 1\,393\,459\,200 & 4 & 30\,965\,760 & 66\,355\,200 & 2 & 4\,147\,200 & 1\,393\,459\,200 & + 4 & \\
 365 & 869 & & 101 & 27 c_{8,6} & 2213 & 4951 & & \\
 \hline
 18\,579\,456 & 10\,321\,920 & + 10 c_{8,6} & 2\,654\,208 & 4 & 464\,486\,400 & 92\,897\,280 & - 10 c_{8,6} & \\
 4927 & 7 & 3 c_{8,6} & 13\,549 & 15 c_{8,6} & 32\,341 & 9 c_{8,6} & 8417 & \\
 \hline
 464\,486\,400 & 614\,400 & 4 & 464\,486\,400 & 4 & 1\,393\,459\,200 & + 2 & 1\,393\,459\,200 & \\
 671 & 35\,459 & & 5137 & & 683 & 557 & 3 c_{8,6} & \\
 \hline
 66\,355\,200 & - 464\,486\,400 & - 10 c_{8,6} & 92\,897\,280 & + 10 c_{8,6} & - 92\,897\,280 & 66\,355\,200 & + 4 & \\
 \end{array}
 \end{array}$$

$$\begin{array}{r}
 \begin{array}{r} 359 \\ 17\,203\,200 \\ 127 \end{array} + \begin{array}{r} 5\ c_{8,6} \\ 2 \end{array}, \begin{array}{r} 307 \\ 66\,355\,200 \\ 1 \end{array}, \begin{array}{r} 319 \\ 464\,486\,400 \\ 29 \end{array}, \begin{array}{r} 187 \\ 22\,118\,400 \\ 43 \end{array} - \begin{array}{r} c_{8,6} \\ - \end{array}, \begin{array}{r} 13 \\ 4\,423\,680 \\ 1\,577 \end{array}, \begin{array}{r} 107 \\ 51\,609\,600 \\ 5\ c_{8,6} \end{array}, \\
 \begin{array}{r} 154\,828\,800 \\ 5\,413 \end{array}, \begin{array}{r} 2\,419\,200 \\ 3\ c_{8,6} \end{array}, \begin{array}{r} 1\,075\,200 \\ 823 \end{array}, \begin{array}{r} 2\,419\,200 \\ 323 \end{array} + \begin{array}{r} c_{8,6} \\ + \end{array}, \begin{array}{r} 11\,612\,160 \\ 433 \end{array}, \begin{array}{r} 58\,060\,800 \\ 899 \end{array}, \begin{array}{r} 2 \\ 15\ c_{8,6} \end{array}, \\
 \begin{array}{r} 348\,364\,800 \\ 1 \end{array} - \begin{array}{r} 4 \\ 9\ c_{8,6} \end{array}, \begin{array}{r} 174\,182\,400 \\ 4\,829 \end{array}, \begin{array}{r} 51\,609\,600 \\ 3\ c_{8,6} \end{array}, \begin{array}{r} 29\,030\,400 \\ 787 \end{array}, \begin{array}{r} 23\,224\,320 \\ 36\,941 \end{array} + \begin{array}{r} 4 \\ 15\ c_{8,6} \end{array}, \\
 \begin{array}{r} 76\,800 \\ 51\,803 \end{array} - \begin{array}{r} 2 \\ 15\ c_{8,6} \end{array}, \begin{array}{r} 199\,065\,600 \\ 1\,411 \end{array} + \begin{array}{r} 4 \\ 257 \end{array}, \begin{array}{r} 174\,182\,400 \\ 5\ c_{8,6} \end{array}, \begin{array}{r} 1\,393\,459\,200 \\ 2\,587 \end{array} - \begin{array}{r} 4 \\ 15\ c_{8,6} \end{array}, \\
 \begin{array}{r} 1\,393\,459\,200 \\ 4\,009 \end{array} + \begin{array}{r} 4 \\ 27\ c_{8,6} \end{array}, \begin{array}{r} 154\,828\,800 \\ 16\,801 \end{array}, \begin{array}{r} 58\,060\,800 \\ 107 \end{array} + \begin{array}{r} 2 \\ 1163 \end{array}, \begin{array}{r} 69\,672\,960 \\ 9\ c_{8,6} \end{array} - \begin{array}{r} 4 \\ 32\,303 \end{array}, \begin{array}{r} 27\ c_{8,6} \\ 27\ c_{8,6} \end{array}, \\
 \begin{array}{r} 116\,121\,600 \\ 40\,237 \end{array} + \begin{array}{r} 4 \\ 89 \end{array}, \begin{array}{r} 1\,393\,459\,200 \\ 59 \end{array}, \begin{array}{r} 5\,806\,080 \\ 631 \end{array}, \begin{array}{r} 66\,355\,200 \\ 10\,457 \end{array} + \begin{array}{r} 2 \\ 5\ c_{8,6} \end{array}, \begin{array}{r} 464\,486\,400 \\ 2081 \end{array} - \begin{array}{r} 4 \\ 278\,691\,840 \end{array}, \\
 \begin{array}{r} 1\,393\,459\,200 \\ 313 \end{array} - \begin{array}{r} c_{8,6} \\ 87\,091\,200 \end{array}, \begin{array}{r} 30\,965\,760 \\ 2\,977 \end{array}, \begin{array}{r} 154\,828\,800 \\ 1 \end{array}, \begin{array}{r} 464\,486\,400 \\ 181 \end{array} + \begin{array}{r} 2 \\ 3\ c_{8,6} \end{array}, \begin{array}{r} 278\,691\,840 \\ 4 \end{array}, \\
 \begin{array}{r} 55\,738\,368 \\ 1\,439 \end{array}, \begin{array}{r} 464\,486\,400 \\ 11\,219 \end{array} - \begin{array}{r} 2 \\ 3\ c_{8,6} \end{array}, \begin{array}{r} 464\,486\,400 \\ 5\,689 \end{array}, \begin{array}{r} 1\,451\,520 \\ 27\ c_{8,6} \end{array} - \begin{array}{r} c_{8,6} \\ 23\,224\,320 \end{array} + \begin{array}{r} 4 \\ 2833 \end{array}, \begin{array}{r} 27\ c_{8,6} \\ 27\ c_{8,6} \end{array}, \\
 \begin{array}{r} 87\,091\,200 \\ 13\,843 \end{array}, \begin{array}{r} 1\,393\,459\,200 \\ 8\,459 \end{array} - \begin{array}{r} 4 \\ 9\ c_{8,6} \end{array}, \begin{array}{r} 116\,121\,600 \\ 25\,273 \end{array} - \begin{array}{r} 4 \\ 9\ c_{8,6} \end{array}, \begin{array}{r} 1\,393\,459\,200 \\ 11\,813 \end{array}, \begin{array}{r} 51\,609\,600 \\ 12\,449 \end{array} + \begin{array}{r} 4 \\ 4 \end{array}, \\
 \begin{array}{r} 1\,393\,459\,200 \\ 5\,417 \end{array} + \begin{array}{r} c_{8,6} \\ 174\,182\,400 \end{array} + \begin{array}{r} 2 \\ 14\,447 \end{array}, \begin{array}{r} 1\,393\,459\,200 \\ 9\,551 \end{array} - \begin{array}{r} 2 \\ 613 \end{array}, \begin{array}{r} 464\,486\,400 \\ 25\,913 \end{array}, \begin{array}{r} 464\,486\,400 \\ 15\ c_{8,6} \end{array} - \begin{array}{r} 10\ c_{8,6} \\ 59\,807 \end{array}, \begin{array}{r} 154\,828\,800 \\ 27\ c_{8,6} \end{array} + \begin{array}{r} 10\ c_{8,6} \\ 1\,093 \end{array}, \begin{array}{r} 464\,486\,400 \\ 5\ c_{8,6} \end{array}, \begin{array}{r} 174\,182\,400 \\ 43\,649 \end{array}, \begin{array}{r} 27\ c_{8,6} \\ 27\ c_{8,6} \end{array}, \\
 \begin{array}{r} 1\,393\,459\,200 \\ 23\,741 \end{array} + \begin{array}{r} 4 \\ 5\,003 \end{array}, \begin{array}{r} 1\,393\,459\,200 \\ 9\,463 \end{array} - \begin{array}{r} 4 \\ 24\,391 \end{array}, \begin{array}{r} 66\,355\,200 \\ 15\ c_{8,6} \end{array} - \begin{array}{r} 2 \\ 197 \end{array}, \begin{array}{r} 1\,393\,459\,200 \\ 464\,486\,400 \end{array} + \begin{array}{r} 10\ c_{8,6} \\ 389 \end{array}, \begin{array}{r} 464\,486\,400 \\ 11\,521 \end{array}, \begin{array}{r} 464\,486\,400 \\ 7\,793 \end{array} - \begin{array}{r} 10\ c_{8,6} \\ 5\ c_{8,6} \end{array}, \begin{array}{r} 1\,393\,459\,200 \\ 6\,187 \end{array} - \begin{array}{r} 4 \\ 1\,471 \end{array}, \begin{array}{r} 39\,813\,120 \\ 1\,471 \end{array}, \\
 \begin{array}{r} 7\,372\,800 \\ 127 \end{array} - \begin{array}{r} 10\ c_{8,6} \\ 464\,486\,400 \end{array}, \begin{array}{r} 464\,486\,400 \\ 19 \end{array}, \begin{array}{r} 464\,486\,400 \\ 1 \end{array}, \begin{array}{r} 464\,486\,400 \\ 757 \end{array} + \begin{array}{r} 2 \\ 3\ c_{8,6} \end{array}, \begin{array}{r} 464\,486\,400 \\ 49 \end{array}, \begin{array}{r} 154\,828\,800 \\ 1\,139 \end{array}, \begin{array}{r} 15\ c_{8,6} \\ 15\ c_{8,6} \end{array}, \\
 \begin{array}{r} 22\,118\,400 \\ 2\,393 \end{array}, \begin{array}{r} 9\,676\,800 \\ 3\ c_{8,6} \end{array}, \begin{array}{r} 1\,612\,800 \\ 1\,961 \end{array}, \begin{array}{r} 116\,121\,600 \\ 15\ c_{8,6} \end{array} - \begin{array}{r} 4 \\ 581 \end{array}, \begin{array}{r} 66\,355\,200 \\ 1\,717 \end{array}, \begin{array}{r} 69\,672\,960 \\ 15\ c_{8,6} \end{array} + \begin{array}{r} 4 \\ 4 \end{array}, \\
 \begin{array}{r} 1\,393\,459\,200 \\ 1\,619 \end{array} + \begin{array}{r} 4 \\ 973 \end{array}, \begin{array}{r} 55\,738\,368 \\ 9\ c_{8,6} \end{array}, \begin{array}{r} 4 \\ 491 \end{array}, \begin{array}{r} 66\,355\,200 \\ 221 \end{array}, \begin{array}{r} 116\,121\,600 \\ 1\,387 \end{array}, \begin{array}{r} 4 \\ 5\ c_{8,6} \end{array}, \\
 \begin{array}{r} 154\,828\,800 \\ 6\,359 \end{array}, \begin{array}{r} 22\,118\,400 \\ 127 \end{array} + \begin{array}{r} 2 \\ 587 \end{array}, \begin{array}{r} 66\,355\,200 \\ 3\ c_{8,6} \end{array} - \begin{array}{r} c_{8,6} \\ 92\,897\,280 \end{array}, \begin{array}{r} 66\,355\,200 \\ 509 \end{array} + \begin{array}{r} 2 \\ 3\ c_{8,6} \end{array}, \begin{array}{r} 66\,355\,200 \\ 9\,241 \end{array}, \\
 \begin{array}{r} 1\,393\,459\,200 \\ 157 \end{array}, \begin{array}{r} 22\,118\,400 \\ 21\,661 \end{array}, \begin{array}{r} 69\,672\,960 \\ 9\ c_{8,6} \end{array} + \begin{array}{r} 4 \\ 3\,683 \end{array}, \begin{array}{r} 39\,813\,120 \\ 2\,917 \end{array} - \begin{array}{r} 4 \\ 17 \end{array}, \begin{array}{r} 464\,486\,400 \\ 13\,271\,040 \end{array} + \begin{array}{r} c_{8,6} \\ 464\,486\,400 \end{array} - \begin{array}{r} 2 \\ 464\,486\,400 \end{array}, \begin{array}{r} 30\,965\,760 \\ 819\,200 \end{array} - \begin{array}{r} 10\ c_{8,6} \\ 819\,200 \end{array}, \\
 \begin{array}{r} 13\,271\,040 \\ 31\,709 \end{array} + \begin{array}{r} 15\ c_{8,6} \\ 7\,667 \end{array}, \begin{array}{r} 464\,486\,400 \\ 5\ c_{8,6} \end{array}, \begin{array}{r} 29\,893 \\ 49 \end{array}, \begin{array}{r} 30\,965\,760 \\ 49 \end{array}, \begin{array}{r} 819\,200 \\ 2\,689 \end{array}, \\
 \begin{array}{r} 1\,393\,459\,200 \\ 853 \end{array} + \begin{array}{r} 4 \\ 7\,939 \end{array}, \begin{array}{r} 464\,486\,400 \\ 127 \end{array} - \begin{array}{r} 2 \\ 271 \end{array}, \begin{array}{r} 464\,486\,400 \\ 19 \end{array} + \begin{array}{r} 10\ c_{8,6} \\ 22\,289 \end{array}, \begin{array}{r} 7\,372\,800 \\ 3\ c_{8,6} \end{array}, \begin{array}{r} 278\,691\,840 \\ 3\ c_{8,6} \end{array}, \\
 \begin{array}{r} 464\,486\,400 \\ 679 \end{array}, \begin{array}{r} 464\,486\,400 \\ 5\,839 \end{array}, \begin{array}{r} 7\,372\,800 \\ 22\,609 \end{array}, \begin{array}{r} 58\,060\,800 \\ 9\,229 \end{array}, \begin{array}{r} 10\,321\,920 \\ 5\ c_{8,6} \end{array}, \begin{array}{r} 1\,393\,459\,200 \\ 49 \end{array} + \begin{array}{r} 4 \\ 4 \end{array}, \\
 \begin{array}{r} 66\,355\,200 \\ 1\,393\,459\,200 \end{array}, \begin{array}{r} 1\,393\,459\,200 \\ 1\,393\,459\,200 \end{array} - \begin{array}{r} c_{8,6} \\ 464\,486\,400 \end{array} + \begin{array}{r} 2 \\ 66\,355\,200 \end{array}, \begin{array}{r} 66\,355\,200 \\ 66\,355\,200 \end{array}
 \end{array}$$

$$\begin{aligned} & \frac{2243}{199\,065\,600} - \frac{3 c_{8,6}}{4}, \frac{30\,007}{1\,393\,459\,200} + c_{8,6}, \frac{10\,469}{464\,486\,400}, \frac{557}{22\,118\,400}, \frac{2927}{464\,486\,400} - \frac{5 c_{8,6}}{2}, \\ & \frac{241}{92\,897\,280}, \frac{10\,301}{464\,486\,400}, \frac{127}{4\,423\,680}, \frac{2893}{464\,486\,400}, \frac{2993}{464\,486\,400}, \frac{16\,043}{1\,393\,459\,200} - c_{8,6}, \\ & -\frac{127}{22\,118\,400}, -\frac{10\,963}{1\,393\,459\,200} + c_{8,6}, -\frac{6451}{464\,486\,400}, -\frac{8027}{464\,486\,400}, \frac{127}{4\,423\,680}, \frac{2399}{464\,486\,400}, \\ & \frac{2357}{464\,486\,400}, \frac{643}{66\,355\,200}, \frac{127}{7\,372\,800}, \frac{127}{51\,609\,600}, \frac{127}{22\,118\,400}, \frac{127}{154\,828\,800}, \theta \} \end{aligned}$$

$$In[*]:= c_{8,6} = -\frac{13}{3\,628\,800}$$

$$Out[*]= -\frac{13}{3\,628\,800}$$

$$In[*]:= \mathbb{d}$$

Out[*]=

$$\begin{aligned} & \mathbb{O}_{HR, \{x, y\}, \{1\}} \left[\mathcal{A}_\theta \left[\right. \right. \\ & \quad \frac{1}{24} AW_1[x, y] - \frac{1}{24} AW_1[y, x] - \frac{AW_1[x, x, x, y]}{1440} + \frac{1}{480} AW_1[x, x, y, x] + \frac{7 AW_1[x, x, y, y]}{5760} - \\ & \quad \frac{1}{480} AW_1[x, y, x, x] - \frac{1}{640} AW_1[x, y, x, y] - \frac{AW_1[x, y, y, x]}{1152} - \frac{7 AW_1[x, y, y, y]}{5760} + \\ & \quad \frac{AW_1[y, x, x, x]}{1440} - \frac{AW_1[y, x, x, y]}{1152} + \frac{19 AW_1[y, x, y, x]}{5760} + \frac{7 AW_1[y, x, y, y]}{1920} - \frac{7 AW_1[y, y, x, x]}{5760} - \\ & \quad \frac{7 AW_1[y, y, x, y]}{1920} + \frac{7 AW_1[y, y, y, x]}{5760} + \frac{60\,480}{13 AW_1[x, x, x, x, y, y]} - \frac{12\,096}{AW_1[x, x, x, y, x, x]} + \frac{19 AW_1[x, x, x, y, x, y]}{241\,920} + \\ & \quad \frac{6048}{61 AW_1[x, x, x, y, y, x]} - \frac{145\,152}{AW_1[x, x, y, x, x, x]} - \\ & \quad \frac{725\,760}{17 AW_1[x, x, y, x, x, y]} - \frac{967\,680}{61 AW_1[x, x, y, x, y, x]} - \frac{6048}{89 AW_1[x, x, y, x, y, y]} + \\ & \quad \frac{241\,920}{71 AW_1[x, x, y, y, x, y]} - \frac{241\,920}{337 AW_1[x, x, y, y, y, x]} - \frac{414\,720}{31 AW_1[x, x, y, y, y, y]} + \\ & \quad \frac{967\,680}{AW_1[x, y, x, x, x, x]} + \frac{13 AW_1[x, y, x, x, x, y]}{12\,096} + \frac{483\,840}{AW_1[x, y, x, x, y, x]} + \\ & \quad \frac{11\,520}{37 AW_1[x, y, x, x, y, y]} + \frac{725\,760}{AW_1[x, y, x, y, x, x]} + \frac{79 AW_1[x, y, x, y, x, y]}{580\,608} + \\ & \quad \frac{6048}{71 AW_1[x, y, x, y, y, x]} - \frac{967\,680}{73 AW_1[x, y, x, y, y, y]} - \frac{18\,144}{AW_1[x, y, y, x, x, x]} - \\ & \quad \frac{322\,560}{53 AW_1[x, y, y, x, x, y]} - \frac{483\,840}{23 AW_1[x, y, y, x, y, x]} - \frac{11 AW_1[x, y, y, x, y, y]}{193\,536} + \\ & \quad \frac{967\,680}{19 AW_1[x, y, y, y, x, x]} - \frac{193\,536}{AW_1[x, y, y, y, x, y]} + \frac{161\,280}{7 AW_1[x, y, y, y, y, x]} + \\ & \quad \frac{290\,304}{193\,536} + \frac{138\,240}{138\,240} \left. \right] \end{aligned}$$

$$\begin{aligned}
 & \frac{31 \text{ AW}_1[x, y, y, y, y, y]}{967680} - \frac{\text{AW}_1[y, x, x, x, x, x]}{60480} + \frac{\text{AW}_1[y, x, x, x, x, y]}{34560} - \\
 & \frac{97 \text{ AW}_1[y, x, x, x, y, x]}{725760} - \frac{103 \text{ AW}_1[y, x, x, x, y, y]}{967680} + \frac{19 \text{ AW}_1[y, x, x, y, x, x]}{120960} + \\
 & \frac{583 \text{ AW}_1[y, x, x, y, x, y]}{2903040} + \frac{53 \text{ AW}_1[y, x, x, y, y, x]}{967680} + \frac{17 \text{ AW}_1[y, x, x, y, y, y]}{161280} - \\
 & \frac{29 \text{ AW}_1[y, x, y, x, x, x]}{181440} - \frac{289 \text{ AW}_1[y, x, y, x, x, y]}{2903040} - \frac{55 \text{ AW}_1[y, x, y, x, y, x]}{193536} - \\
 & \frac{17 \text{ AW}_1[y, x, y, x, y, y]}{53760} - \frac{11 \text{ AW}_1[y, x, y, y, x, x]}{483840} + \frac{7 \text{ AW}_1[y, x, y, y, x, y]}{46080} - \\
 & \frac{191 \text{ AW}_1[y, x, y, y, y, x]}{967680} - \frac{31 \text{ AW}_1[y, x, y, y, y, y]}{193536} + \frac{13 \text{ AW}_1[y, y, x, x, x, x]}{241920} + \\
 & \frac{\text{AW}_1[y, y, x, x, x, x]}{17920} - \frac{19 \text{ AW}_1[y, y, x, x, y, x]}{1451520} + \frac{89 \text{ AW}_1[y, y, x, y, x, x]}{414720} + \\
 & \frac{53 \text{ AW}_1[y, y, x, y, x, y]}{322560} + \frac{71 \text{ AW}_1[y, y, x, y, y, x]}{322560} + \frac{31 \text{ AW}_1[y, y, x, y, y, y]}{96768} - \\
 & \frac{83 \text{ AW}_1[y, y, y, x, x, x]}{967680} - \frac{53 \text{ AW}_1[y, y, y, x, x, y]}{967680} - \frac{13 \text{ AW}_1[y, y, y, x, y, x]}{64512} - \\
 & \frac{31 \text{ AW}_1[y, y, y, x, y, y]}{96768} + \frac{31 \text{ AW}_1[y, y, y, y, x, x]}{483840} + \frac{31 \text{ AW}_1[y, y, y, y, x, y]}{193536} - \\
 & \frac{31 \text{ AW}_1[y, y, y, y, y, x]}{967680} - \frac{\text{AW}_1[x, x, x, x, x, x, x, y]}{2419200} + \frac{\text{AW}_1[x, x, x, x, x, x, y, x]}{345600} + \\
 & \frac{19 \text{ AW}_1[x, x, x, x, x, x, y, y]}{9676800} - \frac{\text{AW}_1[x, x, x, x, x, y, x, x]}{115200} - \frac{13 \text{ AW}_1[x, x, x, x, x, y, x, y]}{3628800} - \\
 & \frac{17 \text{ AW}_1[x, x, x, x, x, y, y, x]}{2073600} - \frac{271 \text{ AW}_1[x, x, x, x, x, y, y, y]}{58060800} + \\
 & \frac{\text{AW}_1[x, x, x, x, y, x, x, x]}{69120} + \frac{\text{AW}_1[x, x, x, x, y, x, x, y]}{921600} + \frac{457 \text{ AW}_1[x, x, x, x, y, x, y, x]}{29030400} + \\
 & \frac{553 \text{ AW}_1[x, x, x, x, y, x, y, y]}{49766400} + \frac{733 \text{ AW}_1[x, x, x, x, y, y, x, x]}{58060800} + \\
 & \frac{223 \text{ AW}_1[x, x, x, x, y, y, x, y]}{174182400} + \frac{1271 \text{ AW}_1[x, x, x, x, y, y, y, x]}{116121600} + \\
 & \frac{2893 \text{ AW}_1[x, x, x, x, y, y, y, y]}{464486400} - \frac{\text{AW}_1[x, x, x, y, x, x, x, x]}{69120} - \frac{73 \text{ AW}_1[x, x, x, y, x, x, x, y]}{9676800} + \\
 & \frac{59 \text{ AW}_1[x, x, x, y, x, x, y, x]}{3225600} + \frac{59 \text{ AW}_1[x, x, x, y, x, x, y, y]}{116121600} - \\
 & \frac{289 \text{ AW}_1[x, x, x, y, x, y, x, x]}{5806080} - \frac{239 \text{ AW}_1[x, x, x, y, x, y, x, y]}{9676800} - \\
 & \frac{3617 \text{ AW}_1[x, x, x, y, x, y, y, x]}{174182400} - \frac{18269 \text{ AW}_1[x, x, x, y, x, y, y, y]}{1393459200} - \\
 & \frac{\text{AW}_1[x, x, x, y, y, x, x, x]}{4147200} + \frac{109 \text{ AW}_1[x, x, x, y, y, x, x, y]}{58060800} + \frac{689 \text{ AW}_1[x, x, x, y, y, x, y, x]}{43545600} - \\
 & \frac{16517 \text{ AW}_1[x, x, x, y, y, x, y, y]}{1393459200} - \frac{451 \text{ AW}_1[x, x, x, y, y, y, x, x]}{23224320} +
 \end{aligned}$$

$$\begin{aligned}
 & \frac{14179 \text{ AW}_1[x, x, x, y, y, y, x, y]}{1393459200} - \frac{4703 \text{ AW}_1[x, x, x, y, y, y, y, x]}{464486400} - \\
 & \frac{2399 \text{ AW}_1[x, x, x, y, y, y, y, y]}{464486400} + \frac{\text{AW}_1[x, x, y, x, x, x, x, x]}{115200} + \\
 & \frac{191 \text{ AW}_1[x, x, y, x, x, x, x, y]}{19353600} - \frac{163 \text{ AW}_1[x, x, y, x, x, x, y, x]}{9676800} - \\
 & \frac{19 \text{ AW}_1[x, x, y, x, x, x, y, y]}{49766400} - \frac{\text{AW}_1[x, x, y, x, x, y, x, x]}{460800} + \frac{83 \text{ AW}_1[x, x, y, x, x, y, x, y]}{5529600} - \\
 & \frac{1787 \text{ AW}_1[x, x, y, x, x, y, y, x]}{116121600} + \frac{2311 \text{ AW}_1[x, x, y, x, x, y, y, y]}{1393459200} + \\
 & \frac{1487 \text{ AW}_1[x, x, y, x, y, x, x, x]}{29030400} + \frac{113 \text{ AW}_1[x, x, y, x, y, x, x, y]}{11612160} + \\
 & \frac{1429 \text{ AW}_1[x, x, y, x, y, x, y, x]}{58060800} + \frac{17701 \text{ AW}_1[x, x, y, x, y, x, y, y]}{464486400} + \\
 & \frac{53 \text{ AW}_1[x, x, y, x, y, y, x, x]}{1548288} - \frac{10999 \text{ AW}_1[x, x, y, x, y, y, x, y]}{464486400} + \\
 & \frac{4297 \text{ AW}_1[x, x, y, x, y, y, y, x]}{199065600} + \frac{3191 \text{ AW}_1[x, x, y, x, y, y, y, y]}{278691840} - \\
 & \frac{733 \text{ AW}_1[x, x, y, y, x, x, x, x]}{58060800} - \frac{467 \text{ AW}_1[x, x, y, y, x, x, x, y]}{87091200} + \frac{\text{AW}_1[x, x, y, y, x, x, y, x]}{1382400} - \\
 & \frac{419 \text{ AW}_1[x, x, y, y, x, x, y, y]}{464486400} - \frac{1423 \text{ AW}_1[x, x, y, y, x, y, x, x]}{38707200} - \\
 & \frac{31 \text{ AW}_1[x, x, y, y, x, y, x, y]}{2457600} + \frac{5513 \text{ AW}_1[x, x, y, y, x, y, y, x]}{464486400} - \\
 & \frac{1919 \text{ AW}_1[x, x, y, y, x, y, y, y]}{464486400} + \frac{2353 \text{ AW}_1[x, x, y, y, y, x, x, x]}{116121600} + \\
 & \frac{1027 \text{ AW}_1[x, x, y, y, y, x, x, y]}{278691840} - \frac{319 \text{ AW}_1[x, x, y, y, y, x, y, x]}{199065600} + \\
 & \frac{19619 \text{ AW}_1[x, x, y, y, y, x, y, y]}{1393459200} - \frac{49 \text{ AW}_1[x, x, y, y, y, y, x, x]}{66355200} - \\
 & \frac{6931 \text{ AW}_1[x, x, y, y, y, y, x, y]}{464486400} + \frac{4189 \text{ AW}_1[x, x, y, y, y, y, y, x]}{464486400} + \\
 & \frac{127 \text{ AW}_1[x, x, y, y, y, y, y, y]}{51609600} - \frac{\text{AW}_1[x, y, x, x, x, x, x, x]}{345600} - \frac{41 \text{ AW}_1[x, y, x, x, x, x, x, y]}{14515200} - \\
 & \frac{163 \text{ AW}_1[x, y, x, x, x, x, y, x]}{29030400} - \frac{109 \text{ AW}_1[x, y, x, x, x, x, y, y]}{116121600} + \\
 & \frac{163 \text{ AW}_1[x, y, x, x, x, y, x, x]}{58060800} - \frac{391 \text{ AW}_1[x, y, x, x, x, y, x, y]}{174182400} + \\
 & \frac{589 \text{ AW}_1[x, y, x, x, x, y, y, x]}{87091200} - \frac{10037 \text{ AW}_1[x, y, x, x, x, y, y, y]}{1393459200} - \\
 & \frac{773 \text{ AW}_1[x, y, x, x, y, x, x, x]}{29030400} - \frac{1751 \text{ AW}_1[x, y, x, x, y, x, x, y]}{116121600} + \\
 & \frac{19 \text{ AW}_1[x, y, x, x, y, x, y, x]}{2764800} + \frac{4679 \text{ AW}_1[x, y, x, x, y, x, y, y]}{1393459200} + \frac{\text{AW}_1[x, y, x, x, y, y, x, x]}{5529600} +
 \end{aligned}$$

$$\begin{array}{r}
 \frac{103 \text{ AW}_1 [x, y, x, x, y, y, x, y]}{3\,440\,640} - \frac{4181 \text{ AW}_1 [x, y, x, x, y, y, y, x]}{278\,691\,840} + \\
 \frac{7331 \text{ AW}_1 [x, y, x, x, y, y, y, y]}{1\,393\,459\,200} - \frac{17 \text{ AW}_1 [x, y, x, y, x, x, x, x]}{1\,382\,400} + \\
 \frac{1819 \text{ AW}_1 [x, y, x, y, x, x, x, y]}{174\,182\,400} - \frac{599 \text{ AW}_1 [x, y, x, y, x, x, y, x]}{29\,030\,400} - \\
 \frac{40\,721 \text{ AW}_1 [x, y, x, y, x, x, y, y]}{1\,393\,459\,200} - \frac{\text{AW}_1 [x, y, x, y, x, y, x, x]}{92\,160} - \\
 \frac{2339 \text{ AW}_1 [x, y, x, y, x, y, x, y]}{464\,486\,400} - \frac{1807 \text{ AW}_1 [x, y, x, y, x, y, y, x]}{92\,897\,280} - \\
 \frac{5687 \text{ AW}_1 [x, y, x, y, x, y, y, y]}{464\,486\,400} - \frac{79 \text{ AW}_1 [x, y, x, y, y, x, x, x]}{3\,870\,720} + \\
 \frac{677 \text{ AW}_1 [x, y, x, y, y, x, x, y]}{464\,486\,400} - \frac{1609 \text{ AW}_1 [x, y, x, y, y, x, y, x]}{154\,828\,800} - \\
 \frac{20\,159 \text{ AW}_1 [x, y, x, y, y, x, y, y]}{464\,486\,400} + \frac{1291 \text{ AW}_1 [x, y, x, y, y, y, x, x]}{154\,828\,800} + \\
 \frac{213 \text{ AW}_1 [x, y, x, y, y, y, x, y]}{5\,734\,400} - \frac{6931 \text{ AW}_1 [x, y, x, y, y, y, y, x]}{464\,486\,400} - \\
 \frac{3881 \text{ AW}_1 [x, y, x, y, y, y, y, y]}{464\,486\,400} + \frac{109 \text{ AW}_1 [x, y, y, x, x, x, x, x]}{14\,515\,200} + \\
 \frac{53 \text{ AW}_1 [x, y, y, x, x, x, x, y]}{29\,030\,400} - \frac{1223 \text{ AW}_1 [x, y, y, x, x, x, y, x]}{174\,182\,400} + \\
 \frac{5119 \text{ AW}_1 [x, y, y, x, x, x, y, y]}{278\,691\,840} + \frac{779 \text{ AW}_1 [x, y, y, x, x, y, x, x]}{38\,707\,200} - \\
 \frac{7241 \text{ AW}_1 [x, y, y, x, x, y, x, y]}{278\,691\,840} + \frac{59 \text{ AW}_1 [x, y, y, x, x, y, y, x]}{30\,965\,760} - \\
 \frac{391 \text{ AW}_1 [x, y, y, x, x, y, y, y]}{51\,609\,600} + \frac{61 \text{ AW}_1 [x, y, y, x, y, x, x, x]}{4\,147\,200} + \\
 \frac{6229 \text{ AW}_1 [x, y, y, x, y, x, x, y]}{199\,065\,600} + \frac{365 \text{ AW}_1 [x, y, y, x, y, x, y, x]}{18\,579\,456} + \\
 \frac{4493 \text{ AW}_1 [x, y, y, x, y, x, y, y]}{92\,897\,280} - \frac{6443 \text{ AW}_1 [x, y, y, x, y, y, x, x]}{464\,486\,400} + \\
 \frac{2213 \text{ AW}_1 [x, y, y, x, y, y, x, y]}{464\,486\,400} - \frac{541 \text{ AW}_1 [x, y, y, x, y, y, y, x]}{30\,965\,760} + \\
 \frac{4927 \text{ AW}_1 [x, y, y, x, y, y, y, y]}{464\,486\,400} - \frac{337 \text{ AW}_1 [x, y, y, y, x, x, x, x]}{38\,707\,200} - \\
 \frac{7309 \text{ AW}_1 [x, y, y, y, x, x, x, y]}{464\,486\,400} + \frac{1411 \text{ AW}_1 [x, y, y, y, x, x, y, x]}{141\,100} - \\
 \frac{8417 \text{ AW}_1 [x, y, y, y, x, x, y, y]}{1\,393\,459\,200} - \frac{671 \text{ AW}_1 [x, y, y, y, x, y, x, x]}{66\,355\,200} - \\
 \frac{697 \text{ AW}_1 [x, y, y, y, x, y, x, y]}{17\,203\,200} + \frac{67 \text{ AW}_1 [x, y, y, y, x, y, y, x]}{3\,440\,640} - \\
 \frac{683 \text{ AW}_1 [x, y, y, y, x, y, y, y]}{92\,897\,280} + \frac{2651 \text{ AW}_1 [x, y, y, y, y, x, x, x]}{464\,486\,400} +
 \end{array}$$

$$\begin{aligned}
 & \frac{5533 \text{ AW}_1[x, y, y, y, y, x, x, y]}{464486400} + \frac{307 \text{ AW}_1[x, y, y, y, y, x, y, x]}{66355200} - \\
 & \frac{319 \text{ AW}_1[x, y, y, y, y, x, y, y]}{464486400} - \frac{2263 \text{ AW}_1[x, y, y, y, y, y, x, x]}{464486400} + \\
 & \frac{13 \text{ AW}_1[x, y, y, y, y, y, x, y]}{4423680} - \frac{107 \text{ AW}_1[x, y, y, y, y, y, y, x]}{51609600} - \\
 & \frac{127 \text{ AW}_1[x, y, y, y, y, y, y, y]}{154828800} + \frac{\text{AW}_1[y, x, x, x, x, x, x, x]}{2419200} - \frac{\text{AW}_1[y, x, x, x, x, x, x, y]}{1075200} + \\
 & \frac{61 \text{ AW}_1[y, x, x, x, x, x, y, x]}{7257600} + \frac{43 \text{ AW}_1[y, x, x, x, x, x, y, y]}{11612160} - \\
 & \frac{151 \text{ AW}_1[y, x, x, x, x, y, x, x]}{8294400} - \frac{4477 \text{ AW}_1[y, x, x, x, x, y, x, y]}{348364800} - \\
 & \frac{823 \text{ AW}_1[y, x, x, x, x, y, y, x]}{174182400} - \frac{323 \text{ AW}_1[y, x, x, x, x, y, y, y]}{51609600} + \\
 & \frac{433 \text{ AW}_1[y, x, x, x, y, x, x, x]}{29030400} + \frac{587 \text{ AW}_1[y, x, x, x, y, x, x, y]}{23224320} + \frac{\text{AW}_1[y, x, x, x, y, x, y, x]}{322560} + \\
 & \frac{30059 \text{ AW}_1[y, x, x, x, y, x, y, y]}{1393459200} + \frac{787 \text{ AW}_1[y, x, x, x, y, y, x, x]}{174182400} - \\
 & \frac{2603 \text{ AW}_1[y, x, x, x, y, y, x, y]}{199065600} + \frac{33083 \text{ AW}_1[y, x, x, x, y, y, y, x]}{1393459200} + \\
 & \frac{1411 \text{ AW}_1[y, x, x, x, y, y, y, y]}{154828800} - \frac{263 \text{ AW}_1[y, x, x, y, x, x, x, x]}{58060800} - \\
 & \frac{1651 \text{ AW}_1[y, x, x, y, x, x, x, y]}{69672960} + \frac{1201 \text{ AW}_1[y, x, x, y, x, x, y, x]}{116121600} - \\
 & \frac{16801 \text{ AW}_1[y, x, x, y, x, x, y, y]}{1393459200} - \frac{107 \text{ AW}_1[y, x, x, y, x, y, x, x]}{5806080} + \\
 & \frac{653 \text{ AW}_1[y, x, x, y, x, y, x, y]}{464486400} - \frac{21071 \text{ AW}_1[y, x, x, y, x, y, y, x]}{464486400} - \\
 & \frac{1007 \text{ AW}_1[y, x, x, y, x, y, y, y]}{39813120} + \frac{89 \text{ AW}_1[y, x, x, y, y, x, x, x]}{87091200} + \\
 & \frac{59 \text{ AW}_1[y, x, x, y, y, x, x, y]}{30965760} + \frac{631 \text{ AW}_1[y, x, x, y, y, x, y, x]}{154828800} + \\
 & \frac{2099 \text{ AW}_1[y, x, x, y, y, x, y, y]}{154828800} - \frac{2081 \text{ AW}_1[y, x, x, y, y, y, x, x]}{278691840} - \\
 & \frac{313 \text{ AW}_1[y, x, x, y, y, y, x, y]}{55738368} - \frac{787 \text{ AW}_1[y, x, x, y, y, y, y, x]}{51609600} - \\
 & \frac{2977 \text{ AW}_1[y, x, x, y, y, y, y, y]}{464486400} + \frac{31 \text{ AW}_1[y, x, y, x, x, x, x, x]}{7257600} + \\
 & \frac{593 \text{ AW}_1[y, x, y, x, x, x, x, y]}{116121600} + \frac{1439 \text{ AW}_1[y, x, y, x, x, x, y, x]}{87091200} + \\
 & \frac{14963 \text{ AW}_1[y, x, y, x, x, x, y, y]}{1393459200} - \frac{2881 \text{ AW}_1[y, x, y, x, x, y, x, x]}{116121600} - \\
 & \frac{13361 \text{ AW}_1[y, x, y, x, x, y, x, y]}{1393459200} + \frac{317 \text{ AW}_1[y, x, y, x, x, y, y, x]}{10321920} +
 \end{aligned}$$

$$\begin{array}{r}
 \frac{8851 \text{ AW}_1 [y, x, y, x, x, y, y, y]}{1393459200} + \frac{5651 \text{ AW}_1 [y, x, y, x, y, x, x, x]}{174182400} - \\
 \frac{2809 \text{ AW}_1 [y, x, y, x, y, x, x, y]}{1393459200} + \frac{11813 \text{ AW}_1 [y, x, y, x, y, x, y, x]}{464486400} + \\
 \frac{12449 \text{ AW}_1 [y, x, y, x, y, x, y, y]}{464486400} + \frac{5417 \text{ AW}_1 [y, x, y, x, y, y, x, x]}{464486400} - \\
 \frac{1763 \text{ AW}_1 [y, x, y, x, y, y, x, y]}{51609600} + \frac{26701 \text{ AW}_1 [y, x, y, x, y, y, y, x]}{464486400} + \\
 \frac{9551 \text{ AW}_1 [y, x, y, x, y, y, y, y]}{464486400} - \frac{613 \text{ AW}_1 [y, x, y, y, x, x, x, x]}{174182400} + \\
 \frac{7193 \text{ AW}_1 [y, x, y, y, x, x, x, y]}{1393459200} - \frac{26111 \text{ AW}_1 [y, x, y, y, x, x, y, x]}{1393459200} - \\
 \frac{3491 \text{ AW}_1 [y, x, y, y, x, x, y, y]}{464486400} + \frac{9953 \text{ AW}_1 [y, x, y, y, x, y, x, x]}{1393459200} + \\
 \frac{263 \text{ AW}_1 [y, x, y, y, x, y, x, y]}{17203200} - \frac{5003 \text{ AW}_1 [y, x, y, y, x, y, y, x]}{464486400} - \\
 \frac{9463 \text{ AW}_1 [y, x, y, y, x, y, y, y]}{464486400} - \frac{5671 \text{ AW}_1 [y, x, y, y, y, x, x, x]}{1393459200} + \\
 \frac{197 \text{ AW}_1 [y, x, y, y, y, x, x, y]}{39813120} - \frac{7867 \text{ AW}_1 [y, x, y, y, y, x, y, x]}{464486400} + \\
 \frac{11521 \text{ AW}_1 [y, x, y, y, y, x, y, y]}{464486400} + \frac{173 \text{ AW}_1 [y, x, y, y, y, y, x, x]}{22118400} - \\
 \frac{6187 \text{ AW}_1 [y, x, y, y, y, y, x, y]}{464486400} + \frac{1471 \text{ AW}_1 [y, x, y, y, y, y, y, x]}{154828800} + \\
 \frac{127 \text{ AW}_1 [y, x, y, y, y, y, y, y]}{22118400} - \frac{19 \text{ AW}_1 [y, y, x, x, x, x, x, x]}{9676800} - \frac{\text{AW}_1 [y, y, x, x, x, x, x, y]}{1612800} - \\
 \frac{89 \text{ AW}_1 [y, y, x, x, x, x, y, x]}{23224320} - \frac{49 \text{ AW}_1 [y, y, x, x, x, x, y, y]}{66355200} + \frac{29 \text{ AW}_1 [y, y, x, x, x, y, x, x]}{9953280} - \\
 \frac{6137 \text{ AW}_1 [y, y, x, x, x, y, x, y]}{1393459200} - \frac{6061 \text{ AW}_1 [y, y, x, x, x, y, y, x]}{278691840} - \\
 \frac{581 \text{ AW}_1 [y, y, x, x, x, y, y, y]}{66355200} - \frac{157 \text{ AW}_1 [y, y, x, x, y, x, x, x]}{116121600} + \\
 \frac{1619 \text{ AW}_1 [y, y, x, x, y, x, x, y]}{154828800} + \frac{863 \text{ AW}_1 [y, y, x, x, y, x, y, x]}{30965760} + \\
 \frac{5101 \text{ AW}_1 [y, y, x, x, y, x, y, y]}{464486400} + \frac{221 \text{ AW}_1 [y, y, x, x, y, y, x, x]}{92897280} + \\
 \frac{5549 \text{ AW}_1 [y, y, x, x, y, y, x, y]}{464486400} + \frac{6359 \text{ AW}_1 [y, y, x, x, y, y, y, x]}{1393459200} + \\
 \frac{127 \text{ AW}_1 [y, y, x, x, y, y, y, y]}{22118400} - \frac{553 \text{ AW}_1 [y, y, x, y, x, x, x, x]}{49766400} - \\
 \frac{14071 \text{ AW}_1 [y, y, x, y, x, x, x, y]}{1393459200} - \frac{9241 \text{ AW}_1 [y, y, x, y, x, x, y, x]}{464486400} - \\
 \frac{7159 \text{ AW}_1 [y, y, x, y, x, x, y, y]}{464486400} - \frac{14173 \text{ AW}_1 [y, y, x, y, x, y, x, x]}{464486400} -
 \end{array}$$

$$\begin{aligned}
 & \frac{3683 \text{ AW}_1 [y, y, x, y, x, y, x, y]}{464486400} - \frac{5423 \text{ AW}_1 [y, y, x, y, x, y, y, x]}{92897280} - \\
 & \frac{17 \text{ AW}_1 [y, y, x, y, x, y, y, y]}{819200} + \frac{12989 \text{ AW}_1 [y, y, x, y, y, x, x, x]}{1393459200} - \\
 & \frac{167 \text{ AW}_1 [y, y, x, y, y, x, x, y]}{22118400} + \frac{13253 \text{ AW}_1 [y, y, x, y, y, x, y, x]}{464486400} - \\
 & \frac{49 \text{ AW}_1 [y, y, x, y, y, x, y, y]}{7372800} - \frac{2689 \text{ AW}_1 [y, y, x, y, y, y, x, x]}{278691840} + \\
 & \frac{853 \text{ AW}_1 [y, y, x, y, y, y, x, y]}{464486400} - \frac{7939 \text{ AW}_1 [y, y, x, y, y, y, y, x]}{464486400} - \\
 & \frac{127 \text{ AW}_1 [y, y, x, y, y, y, y, y]}{7372800} + \frac{271 \text{ AW}_1 [y, y, y, x, x, x, x, x]}{58060800} + \\
 & \frac{19 \text{ AW}_1 [y, y, y, x, x, x, x, y]}{10321920} + \frac{3709 \text{ AW}_1 [y, y, y, x, x, x, y, x]}{278691840} + \\
 & \frac{679 \text{ AW}_1 [y, y, y, x, x, x, y, y]}{66355200} - \frac{5839 \text{ AW}_1 [y, y, y, x, x, y, x, x]}{1393459200} - \\
 & \frac{17617 \text{ AW}_1 [y, y, y, x, x, y, x, y]}{1393459200} + \frac{5069 \text{ AW}_1 [y, y, y, x, x, y, y, x]}{464486400} - \\
 & \frac{49 \text{ AW}_1 [y, y, y, x, x, y, y, y]}{66355200} + \frac{3889 \text{ AW}_1 [y, y, y, x, y, x, x, x]}{278691840} + \\
 & \frac{5003 \text{ AW}_1 [y, y, y, x, y, x, x, y]}{278691840} + \frac{10469 \text{ AW}_1 [y, y, y, x, y, x, y, x]}{464486400} + \\
 & \frac{557 \text{ AW}_1 [y, y, y, x, y, x, y, y]}{22118400} + \frac{137 \text{ AW}_1 [y, y, y, x, y, y, x, x]}{51609600} + \\
 & \frac{241 \text{ AW}_1 [y, y, y, x, y, y, x, y]}{92897280} + \frac{10301 \text{ AW}_1 [y, y, y, x, y, y, y, x]}{464486400} + \\
 & \frac{127 \text{ AW}_1 [y, y, y, x, y, y, y, y]}{4423680} - \frac{2893 \text{ AW}_1 [y, y, y, y, x, x, x, x]}{464486400} - \\
 & \frac{2993 \text{ AW}_1 [y, y, y, y, x, x, x, y]}{464486400} - \frac{11051 \text{ AW}_1 [y, y, y, y, x, x, y, x]}{1393459200} - \\
 & \frac{127 \text{ AW}_1 [y, y, y, y, x, x, y, y]}{22118400} - \frac{3191 \text{ AW}_1 [y, y, y, y, x, y, x, x]}{278691840} - \\
 & \frac{6451 \text{ AW}_1 [y, y, y, y, x, y, x, y]}{464486400} - \frac{8027 \text{ AW}_1 [y, y, y, y, x, y, y, x]}{464486400} - \\
 & \frac{127 \text{ AW}_1 [y, y, y, y, x, y, y, y]}{4423680} + \frac{2399 \text{ AW}_1 [y, y, y, y, y, x, x, x]}{464486400} + \\
 & \frac{2357 \text{ AW}_1 [y, y, y, y, y, x, x, y]}{464486400} + \frac{643 \text{ AW}_1 [y, y, y, y, y, x, y, x]}{66355200} + \\
 & \frac{127 \text{ AW}_1 [y, y, y, y, y, x, y, y]}{7372800} - \frac{127 \text{ AW}_1 [y, y, y, y, y, y, x, x]}{51609600} - \\
 & \frac{127 \text{ AW}_1 [y, y, y, y, y, y, y, x]}{22118400} + \frac{127 \text{ AW}_1 [y, y, y, y, y, y, y, x]}{154828800} \Big]
 \end{aligned}$$

In[]:= **PrintProfile**[]

Out[]:=

ProfileRoot is root. Profiled time: 273.079

(7) 0.047/ 0.047 above EMBasis

(18) 0.249/ 227.751 above EMIM
 (18) 0.093/ 2.268 above EMp2s
 (12) 0/ 0.123 above EMp Δ
 (6) 0.015/ 0.015 above EMp σ
 (6) 2.551/ 42.796 above EMS Δ
 (18) 0/ 0.079 above EMS σ
 FA \mathbb{D} : called 330 times, time in 167.658/167.658
 (18) 0.609/ 0.609 under EMp2s
 (24) 0.562/ 0.562 under EMS Δ
 (288) 166.487/ 166.487 under \emptyset
 FA \mathbb{A} m: called 920 times, time in 45.439/45.439
 (488) 17.798/ 17.798 under EMHR
 (96) 1.906/ 1.906 under EMsm
 (48) 12.202/ 12.202 under EMS Δ
 (288) 13.533/ 13.533 under \emptyset
 FA Δ : called 42 times, time in 19.217/19.217
 (42) 19.217/ 19.217 under EMS Δ
 EMHR: called 244 times, time in 11.144/28.942
 (132) 6.079/ 13.725 under EMCF
 (112) 5.065/ 15.217 under \emptyset
 (488) 17.798/ 17.798 above FA \mathbb{A} m
 FA \mathbb{A} σ : called 342 times, time in 9.934/9.934
 (60) 1.562/ 1.562 under EMsm
 (12) 3.998/ 3.998 under EMS Δ
 (270) 4.374/ 4.374 under EMS σ
 \emptyset : called 78 times, time in 9.593/218.646
 (72) 8.843/ 214.380 under EMsm
 (6) 0.750/ 4.266 under EMS Δ
 (78) 0.155/ 13.816 above EMCF
 (112) 5.065/ 15.217 above EMHR
 (288) 13.533/ 13.533 above FA \mathbb{A} m
 (288) 166.487/ 166.487 above FA \mathbb{D}
 FA \mathbb{E} M: called 48 times, time in 4.487/4.487
 (48) 4.487/ 4.487 under EMEM
 EMS Δ : called 6 times, time in 2.551/42.796
 (6) 2.551/ 42.796 under ProfileRoot
 (48) 12.202/ 12.202 above FA \mathbb{A} m
 (12) 3.998/ 3.998 above FA \mathbb{A} σ
 (24) 0.562/ 0.562 above FA \mathbb{D}
 (42) 19.217/ 19.217 above FA Δ
 (6) 0.750/ 4.266 above \emptyset
 FA \mathbb{F} A: called 60 times, time in 1.625/1.625
 (36) 1.502/ 1.502 under EMp2s
 (18) 0.123/ 0.123 under EMp Δ
 (6) 0/ 0 under EMp σ
 EMsm: called 36 times, time in 0.529/218.377
 (36) 0.529/ 218.377 under EMIM


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( 96) 1.906/ 1.906 above FAAm
( 60) 1.562/ 1.562 above FAAσ
( 72) 8.843/ 214.380 above ①
EMIM: called 18 times, time in 0.249/227.751
( 18) 0.249/ 227.751 under ProfileRoot
( 18) 0.172/ 4.659 above EMEM
( 36) 0.529/ 218.377 above EMsm
( 36) 0.171/ 4.466 above EMsσ
EMEM: called 18 times, time in 0.172/4.659
( 18) 0.172/ 4.659 under EMIM
( 48) 4.487/ 4.487 above FAEM
EMsσ: called 54 times, time in 0.171/4.545
( 36) 0.171/ 4.466 under EMIM
( 18) 0/ 0.079 under ProfileRoot
( 270) 4.374/ 4.374 above FAAσ
EMCF: called 96 times, time in 0.155/13.88
( 18) 0/ 0.064 under EMp2s
( 78) 0.155/ 13.816 under ①
( 132) 6.079/ 13.725 above EMHR
EMp2s: called 18 times, time in 0.093/2.268
( 18) 0.093/ 2.268 under ProfileRoot
( 18) 0/ 0.064 above EMCF
( 36) 1.502/ 1.502 above FAFA
( 18) 0.609/ 0.609 above FAID
EMBasis: called 7 times, time in 0.047/0.047
( 7) 0.047/ 0.047 under ProfileRoot
EMpσ: called 6 times, time in 0.015/0.015
( 6) 0.015/ 0.015 under ProfileRoot
( 6) 0/ 0 above FAFA
EMpΔ: called 12 times, time in 0./0.123
( 12) 0/ 0.123 under ProfileRoot
( 18) 0.123/ 0.123 above FAFA
```

Solving to Degree 9

In[]:= **d = 9; i = 0;**

ϕ[d] = ϕ[d - 1] + Sum[c_{d,++i} B, {B, Select[Basis_d[O_{HR}, {x,y}, {1}], FreeQ[#, ϕ_c[1]] &]]]

Out[]:=

$$O_{HR, \{x,y\}, \{1\}} \left[\begin{aligned} & \mathcal{F}_0 \left[AW_1[] + \frac{1}{24} AW_1[x, y] - \frac{1}{24} AW_1[y, x] - \frac{AW_1[x, x, x, y]}{1440} + \frac{1}{480} AW_1[x, x, y, x] + \dots 993 \dots + c_{9,504} AW_1[y, y, y, y, x, y, y, y] + \right. \\ & c_{9,505} AW_1[y, y, y, y, y, x, x, x] + c_{9,506} AW_1[y, y, y, y, y, y, x, x, y] + c_{9,507} AW_1[y, y, y, y, y, y, x, y, x] + \\ & c_{9,508} AW_1[y, y, y, y, y, x, y, y] + c_{9,509} AW_1[y, y, y, y, y, y, x, x] + c_{9,510} AW_1[y, y, y, y, y, y, x, y] + \\ & \left. c_{9,511} AW_1[y, y, y, y, y, y, y, x] + c_{9,512} AW_1[y, y, y, y, y, y, y, y] \right] \end{aligned}$$

Full expression not available (original memory size: 273 kB)

```
In[*]:= Short[
  reIs = Union@@ (List@@Pentagond[ $\mathbb{Z}$ [d]][[1]] /. {
     $\mathcal{A}_0[A\_]$   $\Rightarrow$  Table[Coefficient[A, B], {B, Basisd, {x,y}[AW1 AW2]}},
     $\mathcal{A}_C[1,2][A\_]$   $\Rightarrow$  Table[Coefficient[A, B], {B, AW1[[]] AW2[[]] Basisd-1, {x,y}[AW1 AW2]}},
  }),
  10]
```

Out[*]//Short=

```
{0, -502 c9,1, -430 c9,1, -214 c9,1, -126 c9,1, -84 c9,1, -36 c9,1,
-9 c9,1, -c9,1, 8 c9,1, 62 c9,1, 122 c9,1, 206 c9,1, 374 c9,1, <<4325>>,
-c9,17 - c9,240 - c9,368 - c9,376 - c9,432 - 2 c9,440 - c9,444 - c9,464 - 3 c9,472 - 3 c9,476 -
c9,478 + 4 c9,480 - 4 c9,488 - 6 c9,492 - 4 c9,494 - c9,495 + 20 c9,496 - 10 c9,500 - 10 c9,502 -
5 c9,503 + 49 c9,504 - 20 c9,506 - 15 c9,507 + 93 c9,508 - 35 c9,509 + 146 c9,510 + 188 c9,511,
-501 c9,512, -429 c9,512, -213 c9,512, -126 c9,512, -84 c9,512, -36 c9,512,
-9 c9,512, 9 c9,512, 63 c9,512, 123 c9,512, 207 c9,512, 375 c9,512}
```

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In[*]:= eqns = # == 0 & /@ reIs;
```

In[*]:= vars = Union[Cases[eqns, c_d, ∞]]

Out[*]=

{C_{9,1}, C_{9,2}, C_{9,3}, C_{9,4}, C_{9,5}, C_{9,6}, C_{9,7}, C_{9,8}, C_{9,9}, C_{9,10}, C_{9,11}, C_{9,12}, C_{9,13}, C_{9,14}, C_{9,15}, C_{9,16}, C_{9,17}, C_{9,18}, C_{9,19}, C_{9,20}, C_{9,21}, C_{9,22}, C_{9,23}, C_{9,24}, C_{9,25}, C_{9,26}, C_{9,27}, C_{9,28}, C_{9,29}, C_{9,30}, C_{9,31}, C_{9,32}, C_{9,33}, C_{9,34}, C_{9,35}, C_{9,36}, C_{9,37}, C_{9,38}, C_{9,39}, C_{9,40}, C_{9,41}, C_{9,42}, C_{9,43}, C_{9,44}, C_{9,45}, C_{9,46}, C_{9,47}, C_{9,48}, C_{9,49}, C_{9,50}, C_{9,51}, C_{9,52}, C_{9,53}, C_{9,54}, C_{9,55}, C_{9,56}, C_{9,57}, C_{9,58}, C_{9,59}, C_{9,60}, C_{9,61}, C_{9,62}, C_{9,63}, C_{9,64}, C_{9,65}, C_{9,66}, C_{9,67}, C_{9,68}, C_{9,69}, C_{9,70}, C_{9,71}, C_{9,72}, C_{9,73}, C_{9,74}, C_{9,75}, C_{9,76}, C_{9,77}, C_{9,78}, C_{9,79}, C_{9,80}, C_{9,81}, C_{9,82}, C_{9,83}, C_{9,84}, C_{9,85}, C_{9,86}, C_{9,87}, C_{9,88}, C_{9,89}, C_{9,90}, C_{9,91}, C_{9,92}, C_{9,93}, C_{9,94}, C_{9,95}, C_{9,96}, C_{9,97}, C_{9,98}, C_{9,99}, C_{9,100}, C_{9,101}, C_{9,102}, C_{9,103}, C_{9,104}, C_{9,105}, C_{9,106}, C_{9,107}, C_{9,108}, C_{9,109}, C_{9,110}, C_{9,111}, C_{9,112}, C_{9,113}, C_{9,114}, C_{9,115}, C_{9,116}, C_{9,117}, C_{9,118}, C_{9,119}, C_{9,120}, C_{9,121}, C_{9,122}, C_{9,123}, C_{9,124}, C_{9,125}, C_{9,126}, C_{9,127}, C_{9,128}, C_{9,129}, C_{9,130}, C_{9,131}, C_{9,132}, C_{9,133}, C_{9,134}, C_{9,135}, C_{9,136}, C_{9,137}, C_{9,138}, C_{9,139}, C_{9,140}, C_{9,141}, C_{9,142}, C_{9,143}, C_{9,144}, C_{9,145}, C_{9,146}, C_{9,147}, C_{9,148}, C_{9,149}, C_{9,150}, C_{9,151}, C_{9,152}, C_{9,153}, C_{9,154}, C_{9,155}, C_{9,156}, C_{9,157}, C_{9,158}, C_{9,159}, C_{9,160}, C_{9,161}, C_{9,162}, C_{9,163}, C_{9,164}, C_{9,165}, C_{9,166}, C_{9,167}, C_{9,168}, C_{9,169}, C_{9,170}, C_{9,171}, C_{9,172}, C_{9,173}, C_{9,174}, C_{9,175}, C_{9,176}, C_{9,177}, C_{9,178}, C_{9,179}, C_{9,180}, C_{9,181}, C_{9,182}, C_{9,183}, C_{9,184}, C_{9,185}, C_{9,186}, C_{9,187}, C_{9,188}, C_{9,189}, C_{9,190}, C_{9,191}, C_{9,192}, C_{9,193}, C_{9,194}, C_{9,195}, C_{9,196}, C_{9,197}, C_{9,198}, C_{9,199}, C_{9,200}, C_{9,201}, C_{9,202}, C_{9,203}, C_{9,204}, C_{9,205}, C_{9,206}, C_{9,207}, C_{9,208}, C_{9,209}, C_{9,210}, C_{9,211}, C_{9,212}, C_{9,213}, C_{9,214}, C_{9,215}, C_{9,216}, C_{9,217}, C_{9,218}, C_{9,219}, C_{9,220}, C_{9,221}, C_{9,222}, C_{9,223}, C_{9,224}, C_{9,225}, C_{9,226}, C_{9,227}, C_{9,228}, C_{9,229}, C_{9,230}, C_{9,231}, C_{9,232}, C_{9,233}, C_{9,234}, C_{9,235}, C_{9,236}, C_{9,237}, C_{9,238}, C_{9,239}, C_{9,240}, C_{9,241}, C_{9,242}, C_{9,243}, C_{9,244}, C_{9,245}, C_{9,246}, C_{9,247}, C_{9,248}, C_{9,249}, C_{9,250}, C_{9,251}, C_{9,252}, C_{9,253}, C_{9,254}, C_{9,255}, C_{9,256}, C_{9,257}, C_{9,258}, C_{9,259}, C_{9,260}, C_{9,261}, C_{9,262}, C_{9,263}, C_{9,264}, C_{9,265}, C_{9,266}, C_{9,267}, C_{9,268}, C_{9,269}, C_{9,270}, C_{9,271}, C_{9,272}, C_{9,273}, C_{9,274}, C_{9,275}, C_{9,276}, C_{9,277}, C_{9,278}, C_{9,279}, C_{9,280}, C_{9,281}, C_{9,282}, C_{9,283}, C_{9,284}, C_{9,285}, C_{9,286}, C_{9,287}, C_{9,288}, C_{9,289}, C_{9,290}, C_{9,291}, C_{9,292}, C_{9,293}, C_{9,294}, C_{9,295}, C_{9,296}, C_{9,297}, C_{9,298}, C_{9,299}, C_{9,300}, C_{9,301}, C_{9,302}, C_{9,303}, C_{9,304}, C_{9,305}, C_{9,306}, C_{9,307}, C_{9,308}, C_{9,309}, C_{9,310}, C_{9,311}, C_{9,312}, C_{9,313}, C_{9,314}, C_{9,315}, C_{9,316}, C_{9,317}, C_{9,318}, C_{9,319}, C_{9,320}, C_{9,321}, C_{9,322}, C_{9,323}, C_{9,324}, C_{9,325}, C_{9,326}, C_{9,327}, C_{9,328}, C_{9,329}, C_{9,330}, C_{9,331}, C_{9,332}, C_{9,333}, C_{9,334}, C_{9,335}, C_{9,336}, C_{9,337}, C_{9,338}, C_{9,339}, C_{9,340}, C_{9,341}, C_{9,342}, C_{9,343}, C_{9,344}, C_{9,345}, C_{9,346}, C_{9,347}, C_{9,348}, C_{9,349}, C_{9,350}, C_{9,351}, C_{9,352}, C_{9,353}, C_{9,354}, C_{9,355}, C_{9,356}, C_{9,357}, C_{9,358}, C_{9,359}, C_{9,360}, C_{9,361}, C_{9,362}, C_{9,363}, C_{9,364}, C_{9,365}, C_{9,366}, C_{9,367}, C_{9,368}, C_{9,369}, C_{9,370}, C_{9,371}, C_{9,372}, C_{9,373}, C_{9,374}, C_{9,375}, C_{9,376}, C_{9,377}, C_{9,378}, C_{9,379}, C_{9,380}, C_{9,381}, C_{9,382}, C_{9,383}, C_{9,384}, C_{9,385}, C_{9,386}, C_{9,387}, C_{9,388}, C_{9,389}, C_{9,390}, C_{9,391}, C_{9,392}, C_{9,393}, C_{9,394}, C_{9,395}, C_{9,396}, C_{9,397}, C_{9,398}, C_{9,399}, C_{9,400}, C_{9,401}, C_{9,402}, C_{9,403}, C_{9,404}, C_{9,405}, C_{9,406}, C_{9,407}, C_{9,408}, C_{9,409}, C_{9,410}, C_{9,411}, C_{9,412}, C_{9,413}, C_{9,414}, C_{9,415}, C_{9,416}, C_{9,417}, C_{9,418}, C_{9,419}, C_{9,420}, C_{9,421}, C_{9,422}, C_{9,423}, C_{9,424}, C_{9,425}, C_{9,426}, C_{9,427}, C_{9,428}, C_{9,429}, C_{9,430}, C_{9,431}, C_{9,432}, C_{9,433}, C_{9,434}, C_{9,435}, C_{9,436}, C_{9,437}, C_{9,438}, C_{9,439}, C_{9,440}, C_{9,441}, C_{9,442}, C_{9,443}, C_{9,444}, C_{9,445}, C_{9,446}, C_{9,447}, C_{9,448}, C_{9,449}, C_{9,450}, C_{9,451}, C_{9,452}, C_{9,453}, C_{9,454}, C_{9,455}, C_{9,456}, C_{9,457}, C_{9,458}, C_{9,459}, C_{9,460}, C_{9,461}, C_{9,462}, C_{9,463}, C_{9,464}, C_{9,465}, C_{9,466}, C_{9,467}, C_{9,468}, C_{9,469}, C_{9,470}, C_{9,471}, C_{9,472}, C_{9,473}, C_{9,474}, C_{9,475}, C_{9,476}, C_{9,477}, C_{9,478}, C_{9,479}, C_{9,480}, C_{9,481}, C_{9,482}, C_{9,483}, C_{9,484}, C_{9,485}, C_{9,486}, C_{9,487}, C_{9,488}, C_{9,489}, C_{9,490}, C_{9,491}, C_{9,492}, C_{9,493}, C_{9,494}, C_{9,495}, C_{9,496}, C_{9,497}, C_{9,498}, C_{9,499}, C_{9,500}, C_{9,501}, C_{9,502}, C_{9,503}, C_{9,504}, C_{9,505}, C_{9,506}, C_{9,507}, C_{9,508}, C_{9,509}, C_{9,510}, C_{9,511}, C_{9,512}}

In[*]:= sol = Solve[eqns, vars] [[1]]

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

Out[*]=

$$\left\{ C_{9,1} \rightarrow 0, C_{9,3} \rightarrow -8 C_{9,2}, C_{9,4} \rightarrow -3 C_{9,2}, C_{9,5} \rightarrow 28 C_{9,2}, C_{9,6} \rightarrow \frac{21 C_{9,2}}{2}, C_{9,7} \rightarrow \frac{21 C_{9,2}}{2}, C_{9,8} \rightarrow \frac{19 C_{9,2}}{3}, \right.$$

$$\begin{aligned}
 c_{9,9} &\rightarrow -56 c_{9,2}, c_{9,10} \rightarrow -\frac{27 c_{9,2}}{2}, c_{9,11} \rightarrow -36 c_{9,2}, c_{9,12} \rightarrow -\frac{1433 c_{9,2}}{72}, c_{9,13} \rightarrow -\frac{27 c_{9,2}}{2}, \\
 c_{9,14} &\rightarrow \frac{65 c_{9,2}}{36}, c_{9,15} \rightarrow -\frac{1433 c_{9,2}}{72}, c_{9,16} \rightarrow -\frac{23 c_{9,2}}{3}, c_{9,17} \rightarrow 70 c_{9,2}, c_{9,18} \rightarrow \frac{15 c_{9,2}}{2}, c_{9,19} \rightarrow 45 c_{9,2}, \\
 c_{9,20} &\rightarrow \frac{521 c_{9,2}}{24}, c_{9,21} \rightarrow 45 c_{9,2}, c_{9,22} \rightarrow -\frac{79 c_{9,2}}{72}, c_{9,23} \rightarrow \frac{2059 c_{9,2}}{36}, c_{9,24} \rightarrow \frac{2861 c_{9,2}}{144}, \\
 c_{9,25} &\rightarrow \frac{15 c_{9,2}}{2}, c_{9,26} \rightarrow -\frac{41 c_{9,2}}{12}, c_{9,27} \rightarrow -\frac{79 c_{9,2}}{72}, c_{9,28} \rightarrow -\frac{101 c_{9,2}}{144}, c_{9,29} \rightarrow \frac{521 c_{9,2}}{24}, \\
 c_{9,30} &\rightarrow -\frac{101 c_{9,2}}{144}, c_{9,31} \rightarrow \frac{2861 c_{9,2}}{144}, c_{9,32} \rightarrow \frac{19 c_{9,2}}{3}, c_{9,33} \rightarrow -56 c_{9,2}, c_{9,34} \rightarrow \frac{15 c_{9,2}}{2}, \\
 c_{9,35} &\rightarrow -60 c_{9,2}, c_{9,36} \rightarrow -\frac{521 c_{9,2}}{18}, c_{9,37} \rightarrow 0, c_{9,38} \rightarrow \frac{1567 c_{9,2}}{36}, c_{9,39} \rightarrow -\frac{1567 c_{9,2}}{36}, \\
 c_{9,40} &\rightarrow -\frac{101 c_{9,2}}{144}, c_{9,41} \rightarrow -60 c_{9,2}, c_{9,42} \rightarrow -14 c_{9,2}, c_{9,43} \rightarrow -\frac{164 c_{9,2}}{3}, c_{9,44} \rightarrow -\frac{1307 c_{9,2}}{36}, \\
 c_{9,45} &\rightarrow -\frac{1567 c_{9,2}}{36}, c_{9,46} \rightarrow \frac{31 c_{9,2}}{2}, c_{9,47} \rightarrow -\frac{4123 c_{9,2}}{72}, c_{9,48} \rightarrow -\frac{1433 c_{9,2}}{72}, c_{9,49} \rightarrow \frac{15 c_{9,2}}{2}, \\
 c_{9,50} &\rightarrow \frac{125 c_{9,2}}{9}, c_{9,51} \rightarrow -14 c_{9,2}, c_{9,52} \rightarrow -\frac{595 c_{9,2}}{144}, c_{9,53} \rightarrow \frac{1567 c_{9,2}}{36}, c_{9,54} \rightarrow \frac{255 c_{9,2}}{8}, \\
 c_{9,55} &\rightarrow \frac{31 c_{9,2}}{2}, c_{9,56} \rightarrow \frac{521 c_{9,2}}{24}, c_{9,57} \rightarrow -\frac{521 c_{9,2}}{18}, c_{9,58} \rightarrow -\frac{595 c_{9,2}}{144}, c_{9,59} \rightarrow -\frac{1307 c_{9,2}}{36}, \\
 c_{9,60} &\rightarrow -\frac{521 c_{9,2}}{18}, c_{9,61} \rightarrow -\frac{101 c_{9,2}}{144}, c_{9,62} \rightarrow \frac{521 c_{9,2}}{24}, c_{9,63} \rightarrow -\frac{1433 c_{9,2}}{72}, c_{9,64} \rightarrow -3 c_{9,2}, \\
 c_{9,65} &\rightarrow 28 c_{9,2}, c_{9,66} \rightarrow -\frac{27 c_{9,2}}{2}, c_{9,67} \rightarrow 45 c_{9,2}, c_{9,68} \rightarrow \frac{521 c_{9,2}}{24}, c_{9,69} \rightarrow 0, c_{9,70} \rightarrow -\frac{1567 c_{9,2}}{36}, \\
 c_{9,71} &\rightarrow \frac{1567 c_{9,2}}{36}, c_{9,72} \rightarrow -\frac{101 c_{9,2}}{144}, c_{9,73} \rightarrow 0, c_{9,74} \rightarrow \frac{c_{9,2}}{3}, c_{9,75} \rightarrow -\frac{2 c_{9,2}}{3}, c_{9,76} \rightarrow \frac{31 c_{9,2}}{2}, \\
 c_{9,77} &\rightarrow \frac{c_{9,2}}{3}, c_{9,78} \rightarrow -\frac{643 c_{9,2}}{24}, c_{9,79} \rightarrow \frac{31 c_{9,2}}{2}, c_{9,80} \rightarrow \frac{65 c_{9,2}}{36}, c_{9,81} \rightarrow 45 c_{9,2}, c_{9,82} \rightarrow -14 c_{9,2}, \\
 c_{9,83} &\rightarrow \frac{250 c_{9,2}}{3}, c_{9,84} \rightarrow \frac{255 c_{9,2}}{8}, c_{9,85} \rightarrow -\frac{2 c_{9,2}}{3}, c_{9,86} \rightarrow -\frac{1955 c_{9,2}}{48}, c_{9,87} \rightarrow \frac{2635 c_{9,2}}{48}, \\
 c_{9,88} &\rightarrow -\frac{79 c_{9,2}}{72}, c_{9,89} \rightarrow \frac{1567 c_{9,2}}{36}, c_{9,90} \rightarrow -\frac{85 c_{9,2}}{24}, c_{9,91} \rightarrow \frac{2635 c_{9,2}}{48}, c_{9,92} \rightarrow \frac{1567 c_{9,2}}{36}, \\
 c_{9,93} &\rightarrow \frac{31 c_{9,2}}{2}, c_{9,94} \rightarrow -\frac{1567 c_{9,2}}{36}, c_{9,95} \rightarrow \frac{2059 c_{9,2}}{36}, c_{9,96} \rightarrow \frac{21 c_{9,2}}{2}, c_{9,97} \rightarrow -\frac{27 c_{9,2}}{2}, \\
 c_{9,98} &\rightarrow -\frac{41 c_{9,2}}{12}, c_{9,99} \rightarrow -14 c_{9,2}, c_{9,100} \rightarrow -\frac{595 c_{9,2}}{144}, c_{9,101} \rightarrow \frac{c_{9,2}}{3}, c_{9,102} \rightarrow -\frac{85 c_{9,2}}{24}, \\
 c_{9,103} &\rightarrow -\frac{85 c_{9,2}}{24}, c_{9,104} \rightarrow -\frac{41 c_{9,2}}{12}, c_{9,105} \rightarrow -\frac{1567 c_{9,2}}{36}, c_{9,106} \rightarrow -\frac{85 c_{9,2}}{24}, c_{9,107} \rightarrow -\frac{1955 c_{9,2}}{48}, \\
 c_{9,108} &\rightarrow -14 c_{9,2}, c_{9,109} \rightarrow -\frac{643 c_{9,2}}{24}, c_{9,110} \rightarrow \frac{c_{9,2}}{3}, c_{9,111} \rightarrow -\frac{1567 c_{9,2}}{36}, c_{9,112} \rightarrow -\frac{27 c_{9,2}}{2}, \\
 c_{9,113} &\rightarrow \frac{521 c_{9,2}}{24}, c_{9,114} \rightarrow -\frac{595 c_{9,2}}{144}, c_{9,115} \rightarrow \frac{255 c_{9,2}}{8}, c_{9,116} \rightarrow \frac{125 c_{9,2}}{9}, c_{9,117} \rightarrow \frac{31 c_{9,2}}{2}, \\
 c_{9,118} &\rightarrow -14 c_{9,2}, c_{9,119} \rightarrow \frac{1567 c_{9,2}}{36}, c_{9,120} \rightarrow \frac{15 c_{9,2}}{2}, c_{9,121} \rightarrow -\frac{101 c_{9,2}}{144}, c_{9,122} \rightarrow -\frac{41 c_{9,2}}{12},
 \end{aligned}$$

$$\begin{aligned}
 C_{9,123} &\rightarrow -\frac{79 C_{9,2}}{72}, C_{9,124} \rightarrow \frac{15 C_{9,2}}{2}, C_{9,125} \rightarrow \frac{65 C_{9,2}}{36}, C_{9,126} \rightarrow -\frac{27 C_{9,2}}{2}, C_{9,127} \rightarrow \frac{21 C_{9,2}}{2}, \\
 C_{9,128} &\rightarrow C_{9,2}, C_{9,129} \rightarrow -8 C_{9,2}, C_{9,130} \rightarrow \frac{21 C_{9,2}}{2}, C_{9,131} \rightarrow -36 C_{9,2}, C_{9,132} \rightarrow -\frac{1433 C_{9,2}}{72}, \\
 C_{9,133} &\rightarrow 45 C_{9,2}, C_{9,134} \rightarrow \frac{2059 C_{9,2}}{36}, C_{9,135} \rightarrow -\frac{79 C_{9,2}}{72}, C_{9,136} \rightarrow \frac{2861 C_{9,2}}{144}, C_{9,137} \rightarrow -60 C_{9,2}, \\
 C_{9,138} &\rightarrow -\frac{1567 C_{9,2}}{36}, C_{9,139} \rightarrow -\frac{164 C_{9,2}}{3}, C_{9,140} \rightarrow -\frac{4123 C_{9,2}}{72}, C_{9,141} \rightarrow -14 C_{9,2}, C_{9,142} \rightarrow \frac{31 C_{9,2}}{2}, \\
 C_{9,143} &\rightarrow -\frac{1307 C_{9,2}}{36}, C_{9,144} \rightarrow -\frac{1433 C_{9,2}}{72}, C_{9,145} \rightarrow 45 C_{9,2}, C_{9,146} \rightarrow \frac{1567 C_{9,2}}{36}, C_{9,147} \rightarrow -\frac{2 C_{9,2}}{3}, \\
 C_{9,148} &\rightarrow \frac{31 C_{9,2}}{2}, C_{9,149} \rightarrow \frac{250 C_{9,2}}{3}, C_{9,150} \rightarrow \frac{2635 C_{9,2}}{48}, C_{9,151} \rightarrow \frac{2635 C_{9,2}}{48}, C_{9,152} \rightarrow \frac{2059 C_{9,2}}{36}, \\
 C_{9,153} &\rightarrow -14 C_{9,2}, C_{9,154} \rightarrow -\frac{85 C_{9,2}}{24}, C_{9,155} \rightarrow -\frac{1955 C_{9,2}}{48}, C_{9,156} \rightarrow -\frac{1567 C_{9,2}}{36}, C_{9,157} \rightarrow \frac{255 C_{9,2}}{8}, \\
 C_{9,158} &\rightarrow \frac{1567 C_{9,2}}{36}, C_{9,159} \rightarrow -\frac{79 C_{9,2}}{72}, C_{9,160} \rightarrow \frac{21 C_{9,2}}{2}, C_{9,161} \rightarrow -36 C_{9,2}, C_{9,162} \rightarrow -\frac{79 C_{9,2}}{72}, \\
 C_{9,163} &\rightarrow -\frac{164 C_{9,2}}{3}, C_{9,164} \rightarrow -\frac{1307 C_{9,2}}{36}, C_{9,165} \rightarrow -\frac{2 C_{9,2}}{3}, C_{9,166} \rightarrow \frac{2635 C_{9,2}}{48}, C_{9,167} \rightarrow -\frac{1955 C_{9,2}}{48}, \\
 C_{9,168} &\rightarrow -\frac{79 C_{9,2}}{72}, C_{9,169} \rightarrow -\frac{164 C_{9,2}}{3}, C_{9,170} \rightarrow -\frac{1955 C_{9,2}}{48}, C_{9,171} \rightarrow -\frac{170 C_{9,2}}{3}, C_{9,172} \rightarrow -\frac{164 C_{9,2}}{3}, \\
 C_{9,173} &\rightarrow -\frac{1955 C_{9,2}}{48}, C_{9,174} \rightarrow -\frac{2 C_{9,2}}{3}, C_{9,175} \rightarrow -\frac{164 C_{9,2}}{3}, C_{9,176} \rightarrow -36 C_{9,2}, C_{9,177} \rightarrow -\frac{79 C_{9,2}}{72}, \\
 C_{9,178} &\rightarrow \frac{255 C_{9,2}}{8}, C_{9,179} \rightarrow -\frac{1955 C_{9,2}}{48}, C_{9,180} \rightarrow -14 C_{9,2}, C_{9,181} \rightarrow \frac{2635 C_{9,2}}{48}, C_{9,182} \rightarrow \frac{250 C_{9,2}}{3}, \\
 C_{9,183} &\rightarrow -\frac{2 C_{9,2}}{3}, C_{9,184} \rightarrow 45 C_{9,2}, C_{9,185} \rightarrow -\frac{1307 C_{9,2}}{36}, C_{9,186} \rightarrow -14 C_{9,2}, C_{9,187} \rightarrow -\frac{164 C_{9,2}}{3}, \\
 C_{9,188} &\rightarrow -60 C_{9,2}, C_{9,189} \rightarrow -\frac{79 C_{9,2}}{72}, C_{9,190} \rightarrow 45 C_{9,2}, C_{9,191} \rightarrow -36 C_{9,2}, C_{9,192} \rightarrow -8 C_{9,2}, \\
 C_{9,193} &\rightarrow \frac{21 C_{9,2}}{2}, C_{9,194} \rightarrow \frac{65 C_{9,2}}{36}, C_{9,195} \rightarrow -\frac{79 C_{9,2}}{72}, C_{9,196} \rightarrow -\frac{101 C_{9,2}}{144}, C_{9,197} \rightarrow \frac{1567 C_{9,2}}{36}, \\
 C_{9,198} &\rightarrow \frac{31 C_{9,2}}{2}, C_{9,199} \rightarrow \frac{255 C_{9,2}}{8}, C_{9,200} \rightarrow \frac{521 C_{9,2}}{24}, C_{9,201} \rightarrow -\frac{1567 C_{9,2}}{36}, C_{9,202} \rightarrow -\frac{643 C_{9,2}}{24}, \\
 C_{9,203} &\rightarrow -\frac{1955 C_{9,2}}{48}, C_{9,204} \rightarrow -\frac{1567 C_{9,2}}{36}, C_{9,205} \rightarrow -\frac{85 C_{9,2}}{24}, C_{9,206} \rightarrow \frac{C_{9,2}}{3}, C_{9,207} \rightarrow -14 C_{9,2}, \\
 C_{9,208} &\rightarrow -\frac{27 C_{9,2}}{2}, C_{9,209} \rightarrow \frac{2059 C_{9,2}}{36}, C_{9,210} \rightarrow \frac{31 C_{9,2}}{2}, C_{9,211} \rightarrow \frac{2635 C_{9,2}}{48}, C_{9,212} \rightarrow \frac{1567 C_{9,2}}{36}, \\
 C_{9,213} &\rightarrow \frac{2635 C_{9,2}}{48}, C_{9,214} \rightarrow -\frac{2 C_{9,2}}{3}, C_{9,215} \rightarrow \frac{250 C_{9,2}}{3}, C_{9,216} \rightarrow 45 C_{9,2}, C_{9,217} \rightarrow \frac{31 C_{9,2}}{2}, \\
 C_{9,218} &\rightarrow \frac{C_{9,2}}{3}, C_{9,219} \rightarrow -\frac{2 C_{9,2}}{3}, C_{9,220} \rightarrow 0, C_{9,221} \rightarrow \frac{1567 C_{9,2}}{36}, C_{9,222} \rightarrow 0, C_{9,223} \rightarrow 45 C_{9,2}, \\
 C_{9,224} &\rightarrow 28 C_{9,2}, C_{9,225} \rightarrow -\frac{1433 C_{9,2}}{72}, C_{9,226} \rightarrow -\frac{101 C_{9,2}}{144}, C_{9,227} \rightarrow -\frac{1307 C_{9,2}}{36}, C_{9,228} \rightarrow -\frac{521 C_{9,2}}{18}, \\
 C_{9,229} &\rightarrow \frac{31 C_{9,2}}{2}, C_{9,230} \rightarrow \frac{1567 C_{9,2}}{36}, C_{9,231} \rightarrow -14 C_{9,2}, C_{9,232} \rightarrow \frac{15 C_{9,2}}{2}, C_{9,233} \rightarrow -\frac{4123 C_{9,2}}{72},
 \end{aligned}$$

$$\begin{aligned}
 C_{9,234} &\rightarrow -\frac{1567 C_{9,2}}{36}, C_{9,235} \rightarrow -\frac{164 C_{9,2}}{3}, C_{9,236} \rightarrow -60 C_{9,2}, C_{9,237} \rightarrow -\frac{1567 C_{9,2}}{36}, C_{9,238} \rightarrow 0, \\
 C_{9,239} &\rightarrow -60 C_{9,2}, C_{9,240} \rightarrow -56 C_{9,2}, C_{9,241} \rightarrow \frac{2861 C_{9,2}}{144}, C_{9,242} \rightarrow \frac{521 C_{9,2}}{24}, C_{9,243} \rightarrow -\frac{79 C_{9,2}}{72}, \\
 C_{9,244} &\rightarrow \frac{15 C_{9,2}}{2}, C_{9,245} \rightarrow \frac{2059 C_{9,2}}{36}, C_{9,246} \rightarrow 45 C_{9,2}, C_{9,247} \rightarrow 45 C_{9,2}, C_{9,248} \rightarrow 70 C_{9,2}, \\
 C_{9,249} &\rightarrow -\frac{1433 C_{9,2}}{72}, C_{9,250} \rightarrow -\frac{27 C_{9,2}}{2}, C_{9,251} \rightarrow -36 C_{9,2}, C_{9,252} \rightarrow -56 C_{9,2}, C_{9,253} \rightarrow \frac{21 C_{9,2}}{2}, \\
 C_{9,254} &\rightarrow 28 C_{9,2}, C_{9,255} \rightarrow -8 C_{9,2}, C_{9,256} \rightarrow 0, C_{9,257} \rightarrow C_{9,2}, C_{9,258} \rightarrow -3 C_{9,2}, C_{9,259} \rightarrow \frac{21 C_{9,2}}{2}, \\
 C_{9,260} &\rightarrow \frac{19 C_{9,2}}{3}, C_{9,261} \rightarrow -\frac{27 C_{9,2}}{2}, C_{9,262} \rightarrow -\frac{1433 C_{9,2}}{72}, C_{9,263} \rightarrow \frac{65 C_{9,2}}{36}, C_{9,264} \rightarrow -\frac{23 C_{9,2}}{3}, \\
 C_{9,265} &\rightarrow \frac{15 C_{9,2}}{2}, C_{9,266} \rightarrow \frac{521 C_{9,2}}{24}, C_{9,267} \rightarrow -\frac{79 C_{9,2}}{72}, C_{9,268} \rightarrow \frac{2861 C_{9,2}}{144}, C_{9,269} \rightarrow -\frac{41 C_{9,2}}{12}, \\
 C_{9,270} &\rightarrow -\frac{101 C_{9,2}}{144}, C_{9,271} \rightarrow -\frac{101 C_{9,2}}{144}, C_{9,272} \rightarrow \frac{19 C_{9,2}}{3}, C_{9,273} \rightarrow \frac{15 C_{9,2}}{2}, C_{9,274} \rightarrow -\frac{521 C_{9,2}}{18}, \\
 C_{9,275} &\rightarrow \frac{1567 C_{9,2}}{36}, C_{9,276} \rightarrow -\frac{101 C_{9,2}}{144}, C_{9,277} \rightarrow -14 C_{9,2}, C_{9,278} \rightarrow -\frac{1307 C_{9,2}}{36}, C_{9,279} \rightarrow \frac{31 C_{9,2}}{2}, \\
 C_{9,280} &\rightarrow -\frac{1433 C_{9,2}}{72}, C_{9,281} \rightarrow \frac{125 C_{9,2}}{9}, C_{9,282} \rightarrow -\frac{595 C_{9,2}}{144}, C_{9,283} \rightarrow \frac{255 C_{9,2}}{8}, C_{9,284} \rightarrow \frac{521 C_{9,2}}{24}, \\
 C_{9,285} &\rightarrow -\frac{595 C_{9,2}}{144}, C_{9,286} \rightarrow -\frac{521 C_{9,2}}{18}, C_{9,287} \rightarrow \frac{521 C_{9,2}}{24}, C_{9,288} \rightarrow -3 C_{9,2}, C_{9,289} \rightarrow -\frac{27 C_{9,2}}{2}, \\
 C_{9,290} &\rightarrow \frac{521 C_{9,2}}{24}, C_{9,291} \rightarrow -\frac{1567 C_{9,2}}{36}, C_{9,292} \rightarrow -\frac{101 C_{9,2}}{144}, C_{9,293} \rightarrow \frac{C_{9,2}}{3}, C_{9,294} \rightarrow \frac{31 C_{9,2}}{2}, \\
 C_{9,295} &\rightarrow -\frac{643 C_{9,2}}{24}, C_{9,296} \rightarrow \frac{65 C_{9,2}}{36}, C_{9,297} \rightarrow -14 C_{9,2}, C_{9,298} \rightarrow \frac{255 C_{9,2}}{8}, C_{9,299} \rightarrow -\frac{1955 C_{9,2}}{48}, \\
 C_{9,300} &\rightarrow -\frac{79 C_{9,2}}{72}, C_{9,301} \rightarrow -\frac{85 C_{9,2}}{24}, C_{9,302} \rightarrow \frac{1567 C_{9,2}}{36}, C_{9,303} \rightarrow -\frac{1567 C_{9,2}}{36}, C_{9,304} \rightarrow \frac{21 C_{9,2}}{2}, \\
 C_{9,305} &\rightarrow -\frac{41 C_{9,2}}{12}, C_{9,306} \rightarrow -\frac{595 C_{9,2}}{144}, C_{9,307} \rightarrow -\frac{85 C_{9,2}}{24}, C_{9,308} \rightarrow -\frac{41 C_{9,2}}{12}, C_{9,309} \rightarrow -\frac{85 C_{9,2}}{24}, \\
 C_{9,310} &\rightarrow -14 C_{9,2}, C_{9,311} \rightarrow \frac{C_{9,2}}{3}, C_{9,312} \rightarrow -\frac{27 C_{9,2}}{2}, C_{9,313} \rightarrow -\frac{595 C_{9,2}}{144}, C_{9,314} \rightarrow \frac{125 C_{9,2}}{9}, \\
 C_{9,315} &\rightarrow -14 C_{9,2}, C_{9,316} \rightarrow \frac{15 C_{9,2}}{2}, C_{9,317} \rightarrow -\frac{41 C_{9,2}}{12}, C_{9,318} \rightarrow \frac{15 C_{9,2}}{2}, C_{9,319} \rightarrow -\frac{27 C_{9,2}}{2}, \\
 C_{9,320} &\rightarrow C_{9,2}, C_{9,321} \rightarrow \frac{21 C_{9,2}}{2}, C_{9,322} \rightarrow -\frac{1433 C_{9,2}}{72}, C_{9,323} \rightarrow \frac{2059 C_{9,2}}{36}, C_{9,324} \rightarrow \frac{2861 C_{9,2}}{144}, \\
 C_{9,325} &\rightarrow -\frac{1567 C_{9,2}}{36}, C_{9,326} \rightarrow -\frac{4123 C_{9,2}}{72}, C_{9,327} \rightarrow \frac{31 C_{9,2}}{2}, C_{9,328} \rightarrow -\frac{1433 C_{9,2}}{72}, C_{9,329} \rightarrow \frac{1567 C_{9,2}}{36}, \\
 C_{9,330} &\rightarrow \frac{31 C_{9,2}}{2}, C_{9,331} \rightarrow \frac{2635 C_{9,2}}{48}, C_{9,332} \rightarrow \frac{2059 C_{9,2}}{36}, C_{9,333} \rightarrow -\frac{85 C_{9,2}}{24}, C_{9,334} \rightarrow -\frac{1567 C_{9,2}}{36}, \\
 C_{9,335} &\rightarrow \frac{1567 C_{9,2}}{36}, C_{9,336} \rightarrow \frac{21 C_{9,2}}{2}, C_{9,337} \rightarrow -\frac{79 C_{9,2}}{72}, C_{9,338} \rightarrow -\frac{1307 C_{9,2}}{36}, C_{9,339} \rightarrow \frac{2635 C_{9,2}}{48}, \\
 C_{9,340} &\rightarrow -\frac{79 C_{9,2}}{72}, C_{9,341} \rightarrow -\frac{1955 C_{9,2}}{48}, C_{9,342} \rightarrow -\frac{164 C_{9,2}}{3}, C_{9,343} \rightarrow -\frac{2 C_{9,2}}{3}, C_{9,344} \rightarrow -36 C_{9,2},
 \end{aligned}$$

$$\begin{aligned}
C_{9,345} &\rightarrow \frac{255 C_{9,2}}{8}, C_{9,346} \rightarrow -14 C_{9,2}, C_{9,347} \rightarrow \frac{250 C_{9,2}}{3}, C_{9,348} \rightarrow 45 C_{9,2}, C_{9,349} \rightarrow -14 C_{9,2}, \\
C_{9,350} &\rightarrow -60 C_{9,2}, C_{9,351} \rightarrow 45 C_{9,2}, C_{9,352} \rightarrow -8 C_{9,2}, C_{9,353} \rightarrow \frac{65 C_{9,2}}{36}, C_{9,354} \rightarrow -\frac{101 C_{9,2}}{144}, \\
C_{9,355} &\rightarrow \frac{31 C_{9,2}}{2}, C_{9,356} \rightarrow \frac{521 C_{9,2}}{24}, C_{9,357} \rightarrow -\frac{643 C_{9,2}}{24}, C_{9,358} \rightarrow -\frac{1567 C_{9,2}}{36}, C_{9,359} \rightarrow \frac{C_{9,2}}{3}, \\
C_{9,360} &\rightarrow -\frac{27 C_{9,2}}{2}, C_{9,361} \rightarrow \frac{31 C_{9,2}}{2}, C_{9,362} \rightarrow \frac{1567 C_{9,2}}{36}, C_{9,363} \rightarrow -\frac{2 C_{9,2}}{3}, C_{9,364} \rightarrow 45 C_{9,2}, \\
C_{9,365} &\rightarrow \frac{C_{9,2}}{3}, C_{9,366} \rightarrow 0, C_{9,367} \rightarrow 0, C_{9,368} \rightarrow 28 C_{9,2}, C_{9,369} \rightarrow -\frac{101 C_{9,2}}{144}, C_{9,370} \rightarrow -\frac{521 C_{9,2}}{18}, \\
C_{9,371} &\rightarrow \frac{1567 C_{9,2}}{36}, C_{9,372} \rightarrow \frac{15 C_{9,2}}{2}, C_{9,373} \rightarrow -\frac{1567 C_{9,2}}{36}, C_{9,374} \rightarrow -60 C_{9,2}, C_{9,375} \rightarrow 0, \\
C_{9,376} &\rightarrow -56 C_{9,2}, C_{9,377} \rightarrow \frac{521 C_{9,2}}{24}, C_{9,378} \rightarrow \frac{15 C_{9,2}}{2}, C_{9,379} \rightarrow 45 C_{9,2}, C_{9,380} \rightarrow 70 C_{9,2}, \\
C_{9,381} &\rightarrow -\frac{27 C_{9,2}}{2}, C_{9,382} \rightarrow -56 C_{9,2}, C_{9,383} \rightarrow 28 C_{9,2}, C_{9,384} \rightarrow 0, C_{9,385} \rightarrow -3 C_{9,2}, C_{9,386} \rightarrow \frac{19 C_{9,2}}{3}, \\
C_{9,387} &\rightarrow -\frac{1433 C_{9,2}}{72}, C_{9,388} \rightarrow -\frac{23 C_{9,2}}{3}, C_{9,389} \rightarrow \frac{521 C_{9,2}}{24}, C_{9,390} \rightarrow \frac{2861 C_{9,2}}{144}, C_{9,391} \rightarrow -\frac{101 C_{9,2}}{144}, \\
C_{9,392} &\rightarrow \frac{19 C_{9,2}}{3}, C_{9,393} \rightarrow -\frac{521 C_{9,2}}{18}, C_{9,394} \rightarrow -\frac{101 C_{9,2}}{144}, C_{9,395} \rightarrow -\frac{1307 C_{9,2}}{36}, C_{9,396} \rightarrow -\frac{1433 C_{9,2}}{72}, \\
C_{9,397} &\rightarrow -\frac{595 C_{9,2}}{144}, C_{9,398} \rightarrow \frac{521 C_{9,2}}{24}, C_{9,399} \rightarrow -\frac{521 C_{9,2}}{18}, C_{9,400} \rightarrow -3 C_{9,2}, C_{9,401} \rightarrow \frac{521 C_{9,2}}{24}, \\
C_{9,402} &\rightarrow -\frac{101 C_{9,2}}{144}, C_{9,403} \rightarrow \frac{31 C_{9,2}}{2}, C_{9,404} \rightarrow \frac{65 C_{9,2}}{36}, C_{9,405} \rightarrow \frac{255 C_{9,2}}{8}, C_{9,406} \rightarrow -\frac{79 C_{9,2}}{72}, \\
C_{9,407} &\rightarrow \frac{1567 C_{9,2}}{36}, C_{9,408} \rightarrow \frac{21 C_{9,2}}{2}, C_{9,409} \rightarrow -\frac{595 C_{9,2}}{144}, C_{9,410} \rightarrow -\frac{41 C_{9,2}}{12}, C_{9,411} \rightarrow -14 C_{9,2}, \\
C_{9,412} &\rightarrow -\frac{27 C_{9,2}}{2}, C_{9,413} \rightarrow \frac{125 C_{9,2}}{9}, C_{9,414} \rightarrow \frac{15 C_{9,2}}{2}, C_{9,415} \rightarrow \frac{15 C_{9,2}}{2}, C_{9,416} \rightarrow C_{9,2}, \\
C_{9,417} &\rightarrow -\frac{1433 C_{9,2}}{72}, C_{9,418} \rightarrow \frac{2861 C_{9,2}}{144}, C_{9,419} \rightarrow -\frac{4123 C_{9,2}}{72}, C_{9,420} \rightarrow -\frac{1433 C_{9,2}}{72}, C_{9,421} \rightarrow \frac{31 C_{9,2}}{2}, \\
C_{9,422} &\rightarrow \frac{2059 C_{9,2}}{36}, C_{9,423} \rightarrow -\frac{1567 C_{9,2}}{36}, C_{9,424} \rightarrow \frac{21 C_{9,2}}{2}, C_{9,425} \rightarrow -\frac{1307 C_{9,2}}{36}, C_{9,426} \rightarrow -\frac{79 C_{9,2}}{72}, \\
C_{9,427} &\rightarrow -\frac{164 C_{9,2}}{3}, C_{9,428} \rightarrow -36 C_{9,2}, C_{9,429} \rightarrow -14 C_{9,2}, C_{9,430} \rightarrow 45 C_{9,2}, C_{9,431} \rightarrow -60 C_{9,2}, \\
C_{9,432} &\rightarrow -8 C_{9,2}, C_{9,433} \rightarrow -\frac{101 C_{9,2}}{144}, C_{9,434} \rightarrow \frac{521 C_{9,2}}{24}, C_{9,435} \rightarrow -\frac{1567 C_{9,2}}{36}, C_{9,436} \rightarrow -\frac{27 C_{9,2}}{2}, \\
C_{9,437} &\rightarrow \frac{1567 C_{9,2}}{36}, C_{9,438} \rightarrow 45 C_{9,2}, C_{9,439} \rightarrow 0, C_{9,440} \rightarrow 28 C_{9,2}, C_{9,441} \rightarrow -\frac{521 C_{9,2}}{18}, C_{9,442} \rightarrow \frac{15 C_{9,2}}{2}, \\
C_{9,443} &\rightarrow -60 C_{9,2}, C_{9,444} \rightarrow -56 C_{9,2}, C_{9,445} \rightarrow \frac{15 C_{9,2}}{2}, C_{9,446} \rightarrow 70 C_{9,2}, C_{9,447} \rightarrow -56 C_{9,2}, C_{9,448} \rightarrow 0, \\
C_{9,449} &\rightarrow \frac{19 C_{9,2}}{3}, C_{9,450} \rightarrow -\frac{23 C_{9,2}}{3}, C_{9,451} \rightarrow \frac{2861 C_{9,2}}{144}, C_{9,452} \rightarrow \frac{19 C_{9,2}}{3}, C_{9,453} \rightarrow -\frac{101 C_{9,2}}{144}, \\
C_{9,454} &\rightarrow -\frac{1433 C_{9,2}}{72}, C_{9,455} \rightarrow \frac{521 C_{9,2}}{24}, C_{9,456} \rightarrow -3 C_{9,2}, C_{9,457} \rightarrow -\frac{101 C_{9,2}}{144}, C_{9,458} \rightarrow \frac{65 C_{9,2}}{36},
\end{aligned}$$

$$\begin{aligned}
 C_{9,459} &\rightarrow -\frac{79 C_{9,2}}{72}, C_{9,460} \rightarrow \frac{21 C_{9,2}}{2}, C_{9,461} \rightarrow -\frac{41 C_{9,2}}{12}, C_{9,462} \rightarrow -\frac{27 C_{9,2}}{2}, C_{9,463} \rightarrow \frac{15 C_{9,2}}{2}, \\
 C_{9,464} &\rightarrow C_{9,2}, C_{9,465} \rightarrow \frac{2861 C_{9,2}}{144}, C_{9,466} \rightarrow -\frac{1433 C_{9,2}}{72}, C_{9,467} \rightarrow \frac{2059 C_{9,2}}{36}, C_{9,468} \rightarrow \frac{21 C_{9,2}}{2}, \\
 C_{9,469} &\rightarrow -\frac{79 C_{9,2}}{72}, C_{9,470} \rightarrow -36 C_{9,2}, C_{9,471} \rightarrow 45 C_{9,2}, C_{9,472} \rightarrow -8 C_{9,2}, C_{9,473} \rightarrow \frac{521 C_{9,2}}{24}, \\
 C_{9,474} &\rightarrow -\frac{27 C_{9,2}}{2}, C_{9,475} \rightarrow 45 C_{9,2}, C_{9,476} \rightarrow 28 C_{9,2}, C_{9,477} \rightarrow \frac{15 C_{9,2}}{2}, C_{9,478} \rightarrow -56 C_{9,2}, \\
 C_{9,479} &\rightarrow 70 C_{9,2}, C_{9,480} \rightarrow 0, C_{9,481} \rightarrow -\frac{23 C_{9,2}}{3}, C_{9,482} \rightarrow \frac{19 C_{9,2}}{3}, C_{9,483} \rightarrow -\frac{1433 C_{9,2}}{72}, \\
 C_{9,484} &\rightarrow -3 C_{9,2}, C_{9,485} \rightarrow \frac{65 C_{9,2}}{36}, C_{9,486} \rightarrow \frac{21 C_{9,2}}{2}, C_{9,487} \rightarrow -\frac{27 C_{9,2}}{2}, C_{9,488} \rightarrow C_{9,2}, \\
 C_{9,489} &\rightarrow -\frac{1433 C_{9,2}}{72}, C_{9,490} \rightarrow \frac{21 C_{9,2}}{2}, C_{9,491} \rightarrow -36 C_{9,2}, C_{9,492} \rightarrow -8 C_{9,2}, C_{9,493} \rightarrow -\frac{27 C_{9,2}}{2}, \\
 C_{9,494} &\rightarrow 28 C_{9,2}, C_{9,495} \rightarrow -56 C_{9,2}, C_{9,496} \rightarrow 0, C_{9,497} \rightarrow \frac{19 C_{9,2}}{3}, C_{9,498} \rightarrow -3 C_{9,2}, C_{9,499} \rightarrow \frac{21 C_{9,2}}{2}, \\
 C_{9,500} &\rightarrow C_{9,2}, C_{9,501} \rightarrow \frac{21 C_{9,2}}{2}, C_{9,502} \rightarrow -8 C_{9,2}, C_{9,503} \rightarrow 28 C_{9,2}, C_{9,504} \rightarrow 0, C_{9,505} \rightarrow -3 C_{9,2}, \\
 C_{9,506} &\rightarrow C_{9,2}, C_{9,507} \rightarrow -8 C_{9,2}, C_{9,508} \rightarrow 0, C_{9,509} \rightarrow C_{9,2}, C_{9,510} \rightarrow 0, C_{9,511} \rightarrow 0, C_{9,512} \rightarrow 0 \}
 \end{aligned}$$

In[*]:= sol /. Rule -> Set;

In[*]:= C9,2 = 0;

In[*]:= q[d]

Out[*]=

$$\begin{aligned}
 &0_{HR, \{x, y\}, \{1\}} \left[\mathcal{A}_0 \left[\right. \right. \\
 &AW_1[] + \frac{1}{24} AW_1[x, y] - \frac{1}{24} AW_1[y, x] - \frac{AW_1[x, x, x, y]}{1440} + \frac{1}{480} AW_1[x, x, y, x] + \frac{7 AW_1[x, x, y, y]}{5760} - \\
 &\frac{1}{480} AW_1[x, y, x, x] - \frac{1}{640} AW_1[x, y, x, y] - \frac{AW_1[x, y, y, x]}{1152} - \frac{7 AW_1[x, y, y, y]}{5760} + \\
 &\frac{AW_1[y, x, x, x]}{1440} - \frac{AW_1[y, x, x, y]}{1152} + \frac{19 AW_1[y, x, y, x]}{5760} + \frac{7 AW_1[y, x, y, y]}{1920} - \frac{7 AW_1[y, y, x, x]}{5760} - \\
 &\frac{7 AW_1[y, y, x, y]}{1920} + \frac{7 AW_1[y, y, y, x]}{5760} + \frac{AW_1[x, x, x, x, x, y]}{60480} - \frac{AW_1[x, x, x, x, y, x]}{12096} - \\
 &\frac{13 AW_1[x, x, x, x, y, y]}{241920} + \frac{AW_1[x, x, x, y, x, x]}{6048} + \frac{19 AW_1[x, x, x, y, x, y]}{145152} + \\
 &\frac{61 AW_1[x, x, x, y, y, x]}{725760} + \frac{83 AW_1[x, x, x, y, y, y]}{967680} - \frac{AW_1[x, x, y, x, x, x]}{6048} - \\
 &\frac{17 AW_1[x, x, y, x, x, y]}{725760} - \frac{61 AW_1[x, x, y, x, y, x]}{619200} - \frac{89 AW_1[x, x, y, x, y, y]}{6048} + \\
 &\frac{241920}{71 AW_1[x, x, y, y, x, y]} - \frac{241920}{337 AW_1[x, x, y, y, y, x]} - \frac{414720}{31 AW_1[x, x, y, y, y, y]} + \\
 &\frac{967680}{AW_1[x, y, x, x, x, x]} + \frac{13 AW_1[x, y, x, x, x, y]}{725760} + \frac{AW_1[x, y, x, x, y, x]}{11520} +
 \end{aligned}$$

$$\begin{aligned}
 & \frac{37 AW_1[x, y, x, x, y, y]}{580608} + \frac{AW_1[x, y, x, y, x, x]}{6048} + \frac{79 AW_1[x, y, x, y, x, y]}{967680} + \\
 & \frac{71 AW_1[x, y, x, y, y, x]}{322560} + \frac{73 AW_1[x, y, x, y, y, y]}{483840} - \frac{AW_1[x, y, y, x, x, x]}{18144} - \\
 & \frac{53 AW_1[x, y, y, x, x, y]}{967680} - \frac{23 AW_1[x, y, y, x, y, x]}{193536} - \frac{11 AW_1[x, y, y, x, y, y]}{161280} + \\
 & \frac{19 AW_1[x, y, y, y, x, x]}{290304} - \frac{AW_1[x, y, y, y, x, y]}{193536} + \frac{7 AW_1[x, y, y, y, y, x]}{138240} + \\
 & \frac{31 AW_1[x, y, y, y, y, y]}{967680} - \frac{AW_1[y, x, x, x, x, x]}{60480} + \frac{AW_1[y, x, x, x, x, y]}{34560} - \\
 & \frac{97 AW_1[y, x, x, x, y, x]}{725760} - \frac{103 AW_1[y, x, x, x, y, y]}{967680} + \frac{19 AW_1[y, x, x, y, x, x]}{120960} + \\
 & \frac{583 AW_1[y, x, x, y, x, y]}{2903040} + \frac{53 AW_1[y, x, x, y, y, x]}{967680} + \frac{17 AW_1[y, x, x, y, y, y]}{161280} - \\
 & \frac{29 AW_1[y, x, y, x, x, x]}{181440} - \frac{289 AW_1[y, x, y, x, x, y]}{2903040} - \frac{55 AW_1[y, x, y, x, y, x]}{193536} - \\
 & \frac{17 AW_1[y, x, y, x, y, y]}{53760} - \frac{11 AW_1[y, x, y, y, x, x]}{483840} + \frac{7 AW_1[y, x, y, y, x, y]}{46080} - \\
 & \frac{191 AW_1[y, x, y, y, y, x]}{967680} - \frac{31 AW_1[y, x, y, y, y, y]}{193536} + \frac{13 AW_1[y, y, x, x, x, x]}{241920} + \\
 & \frac{AW_1[y, y, x, x, x, y]}{17920} - \frac{19 AW_1[y, y, x, x, y, x]}{1451520} + \frac{89 AW_1[y, y, x, y, x, x]}{414720} + \\
 & \frac{53 AW_1[y, y, x, y, x, y]}{322560} + \frac{71 AW_1[y, y, x, y, y, x]}{322560} + \frac{31 AW_1[y, y, x, y, y, y]}{96768} - \\
 & \frac{83 AW_1[y, y, y, x, x, x]}{967680} - \frac{53 AW_1[y, y, y, x, x, y]}{967680} - \frac{13 AW_1[y, y, y, x, y, x]}{64512} - \\
 & \frac{31 AW_1[y, y, y, x, y, y]}{96768} + \frac{31 AW_1[y, y, y, y, x, x]}{483840} + \frac{31 AW_1[y, y, y, y, x, y]}{193536} - \\
 & \frac{31 AW_1[y, y, y, y, y, x]}{967680} - \frac{AW_1[x, x, x, x, x, x, y]}{2419200} + \frac{AW_1[x, x, x, x, x, x, y, x]}{345600} + \\
 & \frac{19 AW_1[x, x, x, x, x, x, y, y]}{9676800} - \frac{AW_1[x, x, x, x, x, x, y, x, x]}{115200} - \frac{13 AW_1[x, x, x, x, x, x, y, x, y]}{3628800} - \\
 & \frac{17 AW_1[x, x, x, x, x, y, y, x]}{2073600} - \frac{271 AW_1[x, x, x, x, x, y, y, y]}{58060800} + \\
 & \frac{AW_1[x, x, x, x, y, x, x, x]}{69120} + \frac{AW_1[x, x, x, x, y, x, x, y]}{921600} + \frac{457 AW_1[x, x, x, x, y, x, y, x]}{29030400} + \\
 & \frac{553 AW_1[x, x, x, x, y, x, y, y]}{49766400} + \frac{733 AW_1[x, x, x, x, y, y, x, x]}{58060800} + \\
 & \frac{223 AW_1[x, x, x, x, y, y, x, y]}{174182400} + \frac{1271 AW_1[x, x, x, x, y, y, y, x]}{116121600} + \\
 & \frac{2893 AW_1[x, x, x, x, y, y, y, y]}{464486400} - \frac{AW_1[x, x, x, y, x, x, x, x]}{69120} - \frac{73 AW_1[x, x, x, y, x, x, x, y]}{9676800} + \\
 & \frac{59 AW_1[x, x, x, y, x, x, y, x]}{3225600} + \frac{59 AW_1[x, x, x, y, x, x, y, y]}{116121600} -
 \end{aligned}$$

$$\begin{aligned}
 & \frac{289 \text{ AW}_1[x, x, x, y, x, y, x, x]}{5806080} - \frac{239 \text{ AW}_1[x, x, x, y, x, y, x, y]}{9676800} - \\
 & \frac{3617 \text{ AW}_1[x, x, x, y, x, y, y, x]}{174182400} - \frac{18269 \text{ AW}_1[x, x, x, y, x, y, y, y]}{1393459200} - \\
 & \frac{\text{AW}_1[x, x, x, y, y, x, x, x]}{4147200} + \frac{109 \text{ AW}_1[x, x, x, y, y, x, x, y]}{58060800} + \frac{689 \text{ AW}_1[x, x, x, y, y, x, y, x]}{43545600} - \\
 & \frac{16517 \text{ AW}_1[x, x, x, y, y, x, y, y]}{1393459200} - \frac{451 \text{ AW}_1[x, x, x, y, y, y, y, x, x]}{23224320} + \\
 & \frac{14179 \text{ AW}_1[x, x, x, y, y, y, x, y]}{1393459200} - \frac{4703 \text{ AW}_1[x, x, x, y, y, y, y, x]}{464486400} - \\
 & \frac{2399 \text{ AW}_1[x, x, x, y, y, y, y, y]}{464486400} + \frac{\text{AW}_1[x, x, y, x, x, x, x, x]}{115200} + \\
 & \frac{191 \text{ AW}_1[x, x, y, x, x, x, x, y]}{19353600} - \frac{163 \text{ AW}_1[x, x, y, x, x, x, y, x]}{9676800} - \\
 & \frac{19 \text{ AW}_1[x, x, y, x, x, x, y, y]}{49766400} - \frac{\text{AW}_1[x, x, y, x, x, y, x, x]}{460800} + \frac{83 \text{ AW}_1[x, x, y, x, x, y, x, y]}{5529600} - \\
 & \frac{1787 \text{ AW}_1[x, x, y, x, x, y, y, x]}{116121600} + \frac{2311 \text{ AW}_1[x, x, y, x, x, y, y, y]}{1393459200} + \\
 & \frac{1487 \text{ AW}_1[x, x, y, x, y, x, x, x]}{29030400} + \frac{113 \text{ AW}_1[x, x, y, x, y, x, x, y]}{11612160} + \\
 & \frac{1429 \text{ AW}_1[x, x, y, x, y, x, y, x]}{58060800} + \frac{17701 \text{ AW}_1[x, x, y, x, y, x, y, y]}{464486400} + \\
 & \frac{53 \text{ AW}_1[x, x, y, x, y, y, x, x]}{1548288} - \frac{10999 \text{ AW}_1[x, x, y, x, y, y, x, y]}{464486400} + \\
 & \frac{4297 \text{ AW}_1[x, x, y, x, y, y, y, x]}{199065600} + \frac{3191 \text{ AW}_1[x, x, y, x, y, y, y, y]}{278691840} - \\
 & \frac{733 \text{ AW}_1[x, x, y, y, x, x, x, x]}{58060800} - \frac{467 \text{ AW}_1[x, x, y, y, x, x, x, y]}{87091200} + \frac{\text{AW}_1[x, x, y, y, x, x, y, x]}{1382400} - \\
 & \frac{419 \text{ AW}_1[x, x, y, y, x, x, y, y]}{464486400} - \frac{1423 \text{ AW}_1[x, x, y, y, x, y, x, x]}{38707200} - \\
 & \frac{31 \text{ AW}_1[x, x, y, y, x, y, x, y]}{2457600} + \frac{5513 \text{ AW}_1[x, x, y, y, x, y, y, x]}{464486400} - \\
 & \frac{1919 \text{ AW}_1[x, x, y, y, x, y, y, y]}{464486400} + \frac{2353 \text{ AW}_1[x, x, y, y, y, x, x, x]}{116121600} + \\
 & \frac{1027 \text{ AW}_1[x, x, y, y, y, x, x, y]}{278691840} - \frac{319 \text{ AW}_1[x, x, y, y, y, x, y, x]}{199065600} + \\
 & \frac{19619 \text{ AW}_1[x, x, y, y, y, x, y, y]}{1393459200} - \frac{49 \text{ AW}_1[x, x, y, y, y, y, x, x]}{66355200} - \\
 & \frac{6931 \text{ AW}_1[x, x, y, y, y, y, x, y]}{464486400} + \frac{4189 \text{ AW}_1[x, x, y, y, y, y, y, x]}{464486400} + \\
 & \frac{127 \text{ AW}_1[x, x, y, y, y, y, y, y]}{51609600} - \frac{\text{AW}_1[x, y, x, x, x, x, x, x]}{345600} - \frac{41 \text{ AW}_1[x, y, x, x, x, x, x, y]}{14515200} - \\
 & \frac{163 \text{ AW}_1[x, y, x, x, x, x, y, y]}{29030400} - \frac{109 \text{ AW}_1[x, y, x, x, x, x, y, y]}{116121600} +
 \end{aligned}$$

$$\begin{aligned}
 & \frac{163 \text{ AW}_1[x, y, x, x, x, y, x, x]}{5806080} - \frac{391 \text{ AW}_1[x, y, x, x, x, y, x, y]}{174182400} + \\
 & \frac{589 \text{ AW}_1[x, y, x, x, x, y, y, x]}{87091200} - \frac{10037 \text{ AW}_1[x, y, x, x, x, y, y, y]}{1393459200} - \\
 & \frac{773 \text{ AW}_1[x, y, x, x, y, x, x, x]}{29030400} - \frac{1751 \text{ AW}_1[x, y, x, x, y, x, x, y]}{116121600} + \\
 & \frac{19 \text{ AW}_1[x, y, x, x, y, x, y, x]}{2764800} + \frac{4679 \text{ AW}_1[x, y, x, x, y, x, y, y]}{1393459200} + \frac{\text{AW}_1[x, y, x, x, y, y, x, x]}{552960} + \\
 & \frac{103 \text{ AW}_1[x, y, x, x, y, y, x, y]}{3440640} - \frac{4181 \text{ AW}_1[x, y, x, x, y, y, y, x]}{278691840} + \\
 & \frac{7331 \text{ AW}_1[x, y, x, x, y, y, y, y]}{1393459200} - \frac{17 \text{ AW}_1[x, y, x, y, x, x, x, x]}{1382400} + \\
 & \frac{1819 \text{ AW}_1[x, y, x, y, x, x, x, y]}{174182400} - \frac{599 \text{ AW}_1[x, y, x, y, x, x, y, x]}{29030400} - \\
 & \frac{40721 \text{ AW}_1[x, y, x, y, x, x, y, y]}{1393459200} - \frac{\text{AW}_1[x, y, x, y, x, y, x, x]}{92160} - \\
 & \frac{2339 \text{ AW}_1[x, y, x, y, x, y, x, y]}{464486400} - \frac{1807 \text{ AW}_1[x, y, x, y, x, y, y, x]}{92897280} - \\
 & \frac{5687 \text{ AW}_1[x, y, x, y, x, y, y, y]}{464486400} - \frac{79 \text{ AW}_1[x, y, x, y, y, x, x, x]}{3870720} + \\
 & \frac{677 \text{ AW}_1[x, y, x, y, y, x, x, y]}{464486400} - \frac{1609 \text{ AW}_1[x, y, x, y, y, x, y, x]}{154828800} - \\
 & \frac{20159 \text{ AW}_1[x, y, x, y, y, x, y, y]}{464486400} + \frac{1291 \text{ AW}_1[x, y, x, y, y, y, x, x]}{154828800} + \\
 & \frac{213 \text{ AW}_1[x, y, x, y, y, y, x, y]}{5734400} - \frac{6931 \text{ AW}_1[x, y, x, y, y, y, y, x]}{464486400} - \\
 & \frac{3881 \text{ AW}_1[x, y, x, y, y, y, y, y]}{464486400} + \frac{109 \text{ AW}_1[x, y, y, x, x, x, x, x]}{14515200} + \\
 & \frac{53 \text{ AW}_1[x, y, y, x, x, x, x, y]}{29030400} - \frac{1223 \text{ AW}_1[x, y, y, x, x, x, y, x]}{174182400} + \\
 & \frac{5119 \text{ AW}_1[x, y, y, x, x, x, y, y]}{278691840} + \frac{779 \text{ AW}_1[x, y, y, x, x, y, x, x]}{38707200} - \\
 & \frac{7241 \text{ AW}_1[x, y, y, x, x, y, x, y]}{278691840} + \frac{59 \text{ AW}_1[x, y, y, x, x, y, y, x]}{30965760} - \\
 & \frac{391 \text{ AW}_1[x, y, y, x, x, y, y, y]}{51609600} + \frac{61 \text{ AW}_1[x, y, y, x, y, x, x, x]}{4147200} + \\
 & \frac{6229 \text{ AW}_1[x, y, y, x, y, x, x, y]}{199065600} + \frac{365 \text{ AW}_1[x, y, y, x, y, x, y, x]}{18579456} + \\
 & \frac{4493 \text{ AW}_1[x, y, y, x, y, x, y, y]}{92897280} - \frac{6443 \text{ AW}_1[x, y, y, x, y, y, x, x]}{464486400} + \\
 & \frac{2213 \text{ AW}_1[x, y, y, x, y, y, x, y]}{464486400} - \frac{541 \text{ AW}_1[x, y, y, x, y, y, y, x]}{30965760} + \\
 & \frac{4927 \text{ AW}_1[x, y, y, x, y, y, y, y]}{464486400} - \frac{337 \text{ AW}_1[x, y, y, y, x, x, x, x]}{38707200} -
 \end{aligned}$$

$$\begin{aligned}
 & \frac{7309 \text{ AW}_1[x, y, y, y, x, x, x, y]}{464486400} + \frac{1411 \text{ AW}_1[x, y, y, y, x, x, y, x]}{199065600} - \\
 & \frac{8417 \text{ AW}_1[x, y, y, y, x, x, y, y]}{1393459200} - \frac{671 \text{ AW}_1[x, y, y, y, x, y, x, x]}{66355200} - \\
 & \frac{697 \text{ AW}_1[x, y, y, y, x, y, x, y]}{17203200} + \frac{67 \text{ AW}_1[x, y, y, y, x, y, y, x]}{3440640} - \\
 & \frac{683 \text{ AW}_1[x, y, y, y, x, y, y, y]}{92897280} + \frac{2651 \text{ AW}_1[x, y, y, y, y, x, x, x]}{464486400} + \\
 & \frac{5533 \text{ AW}_1[x, y, y, y, y, x, x, y]}{464486400} + \frac{307 \text{ AW}_1[x, y, y, y, y, x, y, x]}{66355200} - \\
 & \frac{319 \text{ AW}_1[x, y, y, y, y, x, y, y]}{464486400} - \frac{2263 \text{ AW}_1[x, y, y, y, y, y, x, x]}{464486400} + \\
 & \frac{13 \text{ AW}_1[x, y, y, y, y, y, x, y]}{4423680} - \frac{107 \text{ AW}_1[x, y, y, y, y, y, y, x]}{51609600} - \\
 & \frac{127 \text{ AW}_1[x, y, y, y, y, y, y, y]}{154828800} + \frac{\text{AW}_1[y, x, x, x, x, x, x, x]}{2419200} - \frac{\text{AW}_1[y, x, x, x, x, x, x, y]}{1075200} + \\
 & \frac{61 \text{ AW}_1[y, x, x, x, x, x, y, x]}{7257600} + \frac{43 \text{ AW}_1[y, x, x, x, x, x, y, y]}{11612160} - \\
 & \frac{151 \text{ AW}_1[y, x, x, x, x, y, x, x]}{8294400} - \frac{4477 \text{ AW}_1[y, x, x, x, x, y, x, y]}{348364800} - \\
 & \frac{823 \text{ AW}_1[y, x, x, x, x, y, y, x]}{174182400} - \frac{323 \text{ AW}_1[y, x, x, x, x, y, y, y]}{51609600} + \\
 & \frac{433 \text{ AW}_1[y, x, x, x, y, x, x, x]}{29030400} + \frac{587 \text{ AW}_1[y, x, x, x, y, x, x, y]}{23224320} + \frac{\text{AW}_1[y, x, x, x, y, x, y, x]}{322560} + \\
 & \frac{30059 \text{ AW}_1[y, x, x, x, y, x, y, y]}{1393459200} + \frac{787 \text{ AW}_1[y, x, x, x, y, y, x, x]}{174182400} - \\
 & \frac{2603 \text{ AW}_1[y, x, x, x, y, y, x, y]}{199065600} + \frac{33083 \text{ AW}_1[y, x, x, x, y, y, y, x]}{1393459200} + \\
 & \frac{1411 \text{ AW}_1[y, x, x, x, y, y, y, y]}{154828800} - \frac{263 \text{ AW}_1[y, x, x, y, x, x, x, x]}{58060800} - \\
 & \frac{1651 \text{ AW}_1[y, x, x, y, x, x, x, y]}{69672960} + \frac{1201 \text{ AW}_1[y, x, x, y, x, x, y, x]}{116121600} - \\
 & \frac{16801 \text{ AW}_1[y, x, x, y, x, x, y, y]}{1393459200} - \frac{107 \text{ AW}_1[y, x, x, y, x, y, x, x]}{5806080} + \\
 & \frac{653 \text{ AW}_1[y, x, x, y, x, y, x, y]}{464486400} - \frac{21071 \text{ AW}_1[y, x, x, y, x, y, y, x]}{464486400} - \\
 & \frac{1007 \text{ AW}_1[y, x, x, y, x, y, y, y]}{39813120} + \frac{89 \text{ AW}_1[y, x, x, y, y, x, x, x]}{87091200} + \\
 & \frac{59 \text{ AW}_1[y, x, x, y, y, x, x, y]}{30965760} + \frac{631 \text{ AW}_1[y, x, x, y, y, x, y, x]}{154828800} + \\
 & \frac{2099 \text{ AW}_1[y, x, x, y, y, x, y, y]}{154828800} - \frac{2081 \text{ AW}_1[y, x, x, y, y, y, x, x]}{278691840} - \\
 & \frac{313 \text{ AW}_1[y, x, x, y, y, y, x, y]}{55738368} - \frac{787 \text{ AW}_1[y, x, x, y, y, y, y, x]}{51609600} -
 \end{aligned}$$

$$\begin{aligned}
 & \frac{2977 \text{ AW}_1[y, x, x, y, y, y, y, y]}{464486400} + \frac{31 \text{ AW}_1[y, x, y, x, x, x, x, x]}{7257600} + \\
 & \frac{593 \text{ AW}_1[y, x, y, x, x, x, x, y]}{116121600} + \frac{1439 \text{ AW}_1[y, x, y, x, x, x, y, x]}{87091200} + \\
 & \frac{14963 \text{ AW}_1[y, x, y, x, x, x, y, y]}{1393459200} - \frac{2881 \text{ AW}_1[y, x, y, x, x, y, x, x]}{116121600} - \\
 & \frac{13361 \text{ AW}_1[y, x, y, x, x, y, x, y]}{1393459200} + \frac{317 \text{ AW}_1[y, x, y, x, x, y, y, x]}{10321920} + \\
 & \frac{8851 \text{ AW}_1[y, x, y, x, x, y, y, y]}{1393459200} + \frac{5651 \text{ AW}_1[y, x, y, x, y, x, x, x]}{174182400} - \\
 & \frac{2809 \text{ AW}_1[y, x, y, x, y, x, x, y]}{1393459200} + \frac{11813 \text{ AW}_1[y, x, y, x, y, x, y, x]}{464486400} + \\
 & \frac{12449 \text{ AW}_1[y, x, y, x, y, x, y, y]}{464486400} + \frac{5417 \text{ AW}_1[y, x, y, x, y, y, x, x]}{464486400} - \\
 & \frac{1763 \text{ AW}_1[y, x, y, x, y, y, x, y]}{51609600} + \frac{26701 \text{ AW}_1[y, x, y, x, y, y, y, x]}{464486400} + \\
 & \frac{9551 \text{ AW}_1[y, x, y, x, y, y, y, y]}{464486400} - \frac{613 \text{ AW}_1[y, x, y, y, x, x, x, x]}{174182400} + \\
 & \frac{7193 \text{ AW}_1[y, x, y, y, x, x, x, y]}{1393459200} - \frac{26111 \text{ AW}_1[y, x, y, y, x, x, y, x]}{1393459200} - \\
 & \frac{3491 \text{ AW}_1[y, x, y, y, x, x, y, y]}{464486400} + \frac{9953 \text{ AW}_1[y, x, y, y, x, y, x, x]}{1393459200} + \\
 & \frac{263 \text{ AW}_1[y, x, y, y, x, y, x, y]}{17203200} - \frac{5003 \text{ AW}_1[y, x, y, y, x, y, y, x]}{464486400} - \\
 & \frac{9463 \text{ AW}_1[y, x, y, y, x, y, y, y]}{464486400} - \frac{5671 \text{ AW}_1[y, x, y, y, y, x, x, x]}{1393459200} + \\
 & \frac{197 \text{ AW}_1[y, x, y, y, y, x, x, y]}{39813120} - \frac{7867 \text{ AW}_1[y, x, y, y, y, x, y, x]}{464486400} + \\
 & \frac{11521 \text{ AW}_1[y, x, y, y, y, x, y, y]}{464486400} + \frac{173 \text{ AW}_1[y, x, y, y, y, y, x, x]}{22118400} - \\
 & \frac{6187 \text{ AW}_1[y, x, y, y, y, y, x, y]}{464486400} + \frac{1471 \text{ AW}_1[y, x, y, y, y, y, y, x]}{154828800} + \\
 & \frac{127 \text{ AW}_1[y, x, y, y, y, y, y, y]}{22118400} - \frac{19 \text{ AW}_1[y, y, x, x, x, x, x, x]}{9676800} - \frac{\text{AW}_1[y, y, x, x, x, x, x, y]}{1612800} - \\
 & \frac{89 \text{ AW}_1[y, y, x, x, x, x, y, x]}{23224320} - \frac{49 \text{ AW}_1[y, y, x, x, x, x, y, y]}{66355200} + \frac{29 \text{ AW}_1[y, y, x, x, x, y, x, x]}{9953280} - \\
 & \frac{6137 \text{ AW}_1[y, y, x, x, x, y, x, y]}{1393459200} - \frac{6061 \text{ AW}_1[y, y, x, x, x, y, y, x]}{278691840} - \\
 & \frac{581 \text{ AW}_1[y, y, x, x, x, y, y, y]}{66355200} - \frac{157 \text{ AW}_1[y, y, x, x, y, x, x, x]}{116121600} + \\
 & \frac{1619 \text{ AW}_1[y, y, x, x, y, x, x, y]}{154828800} + \frac{863 \text{ AW}_1[y, y, x, x, y, x, y, x]}{30965760} + \\
 & \frac{5101 \text{ AW}_1[y, y, x, x, y, x, y, y]}{464486400} + \frac{221 \text{ AW}_1[y, y, x, x, y, y, x, x]}{92897280} +
 \end{aligned}$$

$$\begin{aligned}
 & \frac{5549 \text{ AW}_1 [y, y, x, x, y, y, x, y]}{464486400} + \frac{6359 \text{ AW}_1 [y, y, x, x, y, y, y, x]}{1393459200} + \\
 & \frac{127 \text{ AW}_1 [y, y, x, x, y, y, y, y]}{22118400} - \frac{553 \text{ AW}_1 [y, y, x, y, x, x, x, x]}{49766400} - \\
 & \frac{14071 \text{ AW}_1 [y, y, x, y, x, x, x, y]}{1393459200} - \frac{9241 \text{ AW}_1 [y, y, x, y, x, x, y, x]}{464486400} - \\
 & \frac{7159 \text{ AW}_1 [y, y, x, y, x, x, y, y]}{464486400} - \frac{14173 \text{ AW}_1 [y, y, x, y, x, y, x, x]}{464486400} - \\
 & \frac{3683 \text{ AW}_1 [y, y, x, y, x, y, x, y]}{464486400} - \frac{5423 \text{ AW}_1 [y, y, x, y, x, y, y, x]}{92897280} - \\
 & \frac{17 \text{ AW}_1 [y, y, x, y, x, y, y, y]}{819200} + \frac{12989 \text{ AW}_1 [y, y, x, y, y, x, x, x]}{1393459200} - \\
 & \frac{167 \text{ AW}_1 [y, y, x, y, y, x, x, y]}{22118400} + \frac{13253 \text{ AW}_1 [y, y, x, y, y, x, y, x]}{464486400} - \\
 & \frac{49 \text{ AW}_1 [y, y, x, y, y, x, y, y]}{7372800} - \frac{2689 \text{ AW}_1 [y, y, x, y, y, y, x, x]}{278691840} + \\
 & \frac{853 \text{ AW}_1 [y, y, x, y, y, y, x, y]}{464486400} - \frac{7939 \text{ AW}_1 [y, y, x, y, y, y, y, x]}{464486400} - \\
 & \frac{127 \text{ AW}_1 [y, y, x, y, y, y, y, y]}{7372800} + \frac{271 \text{ AW}_1 [y, y, y, x, x, x, x, x]}{58060800} + \\
 & \frac{19 \text{ AW}_1 [y, y, y, x, x, x, x, y]}{10321920} + \frac{3709 \text{ AW}_1 [y, y, y, x, x, x, y, x]}{278691840} + \\
 & \frac{679 \text{ AW}_1 [y, y, y, x, x, x, y, y]}{66355200} - \frac{5839 \text{ AW}_1 [y, y, y, x, x, y, x, x]}{1393459200} - \\
 & \frac{17617 \text{ AW}_1 [y, y, y, x, x, y, x, y]}{1393459200} + \frac{5069 \text{ AW}_1 [y, y, y, x, x, y, y, x]}{464486400} - \\
 & \frac{49 \text{ AW}_1 [y, y, y, x, x, y, y, y]}{66355200} + \frac{3889 \text{ AW}_1 [y, y, y, x, y, x, x, x]}{278691840} + \\
 & \frac{5003 \text{ AW}_1 [y, y, y, x, y, x, x, y]}{278691840} + \frac{10469 \text{ AW}_1 [y, y, y, x, y, x, y, x]}{464486400} + \\
 & \frac{557 \text{ AW}_1 [y, y, y, x, y, x, y, y]}{22118400} + \frac{137 \text{ AW}_1 [y, y, y, x, y, y, x, x]}{51609600} + \\
 & \frac{241 \text{ AW}_1 [y, y, y, x, y, y, x, y]}{92897280} + \frac{10301 \text{ AW}_1 [y, y, y, x, y, y, y, x]}{464486400} + \\
 & \frac{127 \text{ AW}_1 [y, y, y, x, y, y, y, y]}{4423680} - \frac{2893 \text{ AW}_1 [y, y, y, y, x, x, x, x]}{464486400} - \\
 & \frac{2993 \text{ AW}_1 [y, y, y, y, x, x, x, y]}{464486400} - \frac{11051 \text{ AW}_1 [y, y, y, y, x, x, y, x]}{1393459200} - \\
 & \frac{127 \text{ AW}_1 [y, y, y, y, x, x, y, y]}{22118400} - \frac{3191 \text{ AW}_1 [y, y, y, y, x, y, x, x]}{278691840} - \\
 & \frac{6451 \text{ AW}_1 [y, y, y, y, x, y, x, y]}{464486400} - \frac{8027 \text{ AW}_1 [y, y, y, y, x, y, y, x]}{464486400} - \\
 & \frac{127 \text{ AW}_1 [y, y, y, y, x, y, y, y]}{4423680} + \frac{2399 \text{ AW}_1 [y, y, y, y, y, x, x, x]}{464486400} +
 \end{aligned}$$

$$\begin{aligned}
 & \frac{2357 \text{ AW}_1[y, y, y, y, y, x, x, y]}{464\,486\,400} + \frac{643 \text{ AW}_1[y, y, y, y, y, x, y, x]}{66\,355\,200} + \\
 & \frac{127 \text{ AW}_1[y, y, y, y, y, x, y, y]}{7\,372\,800} - \frac{127 \text{ AW}_1[y, y, y, y, y, y, x, x]}{51\,609\,600} - \\
 & \left. \left. \frac{127 \text{ AW}_1[y, y, y, y, y, y, x, y]}{22\,118\,400} + \frac{127 \text{ AW}_1[y, y, y, y, y, y, y, x]}{154\,828\,800} \right] \right]
 \end{aligned}$$

In[]:= **PrintProfile**[]

Out[]:=

```

ProfileRoot is root. Profiled time: 848.782
( 8) 0.141/ 0.141 above EMBasis
( 21) 0.969/ 646.142 above EMIM
( 21) 0.186/ 7.379 above EMP2s
( 14) 0/ 0.357 above EMPΔ
( 7) 0.015/ 0.030 above EMPσ
( 7) 12.454/ 194.609 above EMSΔ
( 21) 0.015/ 0.124 above EMSσ
FAD: called 385 times, time in 419.409/419.409
( 21) 2.203/ 2.203 under EMP2s
( 28) 1.422/ 1.422 under EMSΔ
( 336) 415.784/ 415.784 under 0
FAAm: called 1076 times, time in 183.068/183.068
( 572) 69.516/ 69.516 under EMHR
( 112) 6.298/ 6.298 under EMsm
( 56) 53.376/ 53.376 under EMSΔ
( 336) 53.878/ 53.878 under 0
FAΔ: called 49 times, time in 91.061/91.061
( 49) 91.061/ 91.061 under EMSΔ
EMHR: called 286 times, time in 42.081/111.597
( 154) 22.863/ 51.743 under EMCF
( 132) 19.218/ 59.854 under 0
( 572) 69.516/ 69.516 above FAAm
FAAσ: called 399 times, time in 39.373/39.373
( 70) 5.313/ 5.313 under EMsm
( 14) 18.546/ 18.546 under EMSΔ
( 315) 15.514/ 15.514 under EMSσ
0: called 91 times, time in 34.404/615.909
( 84) 31.045/ 598.159 under EMsm
( 7) 3.359/ 17.750 under EMSΔ
( 91) 0.420/ 51.989 above EMCF
( 132) 19.218/ 59.854 above EMHR
( 336) 53.878/ 53.878 above FAAm
( 336) 415.784/ 415.784 above FAD
FAEM: called 56 times, time in 16.925/16.925
( 56) 16.925/ 16.925 under EMEM
EMSΔ: called 7 times, time in 12.454/194.609
( 7) 12.454/ 194.609 under ProfileRoot
    
```

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( 56) 53.376/ 53.376 above FAAm
( 14) 18.546/ 18.546 above FAAσ
( 28) 1.422/ 1.422 above FAID
( 49) 91.061/ 91.061 above FAΔ
( 7) 3.359/ 17.750 above 0
FAFA: called 70 times, time in 5.188/5.188
( 42) 4.816/ 4.816 under EMp2s
( 21) 0.357/ 0.357 under EMpΔ
( 7) 0.015/ 0.015 under EMpσ
EMsm: called 42 times, time in 1.81/611.58
( 42) 1.810/ 611.580 under EMIM
( 112) 6.298/ 6.298 above FAAm
( 70) 5.313/ 5.313 above FAAσ
( 84) 31.045/ 598.159 above 0
EMIM: called 21 times, time in 0.969/646.142
( 21) 0.969/ 646.142 under ProfileRoot
( 21) 0.593/ 17.518 above EMEM
( 42) 1.810/ 611.580 above EMsm
( 42) 0.670/ 16.075 above EMsσ
EMsσ: called 63 times, time in 0.685/16.199
( 42) 0.670/ 16.075 under EMIM
( 21) 0.015/ 0.124 under ProfileRoot
( 315) 15.514/ 15.514 above FAAσ
EMEM: called 21 times, time in 0.593/17.518
( 21) 0.593/ 17.518 under EMIM
( 56) 16.925/ 16.925 above FAEM
EMCF: called 112 times, time in 0.42/52.163
( 21) 0/ 0.174 under EMp2s
( 91) 0.420/ 51.989 under 0
( 154) 22.863/ 51.743 above EMHR
EMp2s: called 21 times, time in 0.186/7.379
( 21) 0.186/ 7.379 under ProfileRoot
( 21) 0/ 0.174 above EMCF
( 42) 4.816/ 4.816 above FAFA
( 21) 2.203/ 2.203 above FAID
EMBasis: called 8 times, time in 0.141/0.141
( 8) 0.141/ 0.141 under ProfileRoot
EMpσ: called 7 times, time in 0.015/0.03
( 7) 0.015/ 0.030 under ProfileRoot
( 7) 0.015/ 0.015 above FAFA
EMpΔ: called 14 times, time in 0./0.357
( 14) 0/ 0.357 under ProfileRoot
( 21) 0.357/ 0.357 above FAFA

```

Solving to Degree 10

In[*]:= **d = 10; i = 0;**

ϕ[d] = ϕ[d - 1] + Sum[Cd,++i B, {B, Select[Basisd[OHR,{x,y},{1}], FreeQ[#, ϕc[1]] &]]}

Out[*]=

$$\begin{aligned}
 &O_{HR, \{x,y\}, \{1\}} \left[\mathcal{A}_0 \left[AW_1[] + \frac{1}{24} AW_1[x, y] - \frac{1}{24} AW_1[y, x] - \right. \right. \\
 &\quad \left. \frac{AW_1[x, x, x, y]}{1440} + \frac{1}{480} AW_1[x, x, y, x] + \dots 1505 \dots + C_{10,1016} AW_1[y, y, y, y, y, y, x, y, y, y] + \right. \\
 &\quad C_{10,1017} AW_1[y, y, y, y, y, y, x, x, x] + C_{10,1018} AW_1[y, y, y, y, y, y, x, x, y] + \\
 &\quad C_{10,1019} AW_1[y, y, y, y, y, y, x, y, x] + C_{10,1020} AW_1[y, y, y, y, y, y, x, y, y] + \\
 &\quad C_{10,1021} AW_1[y, y, y, y, y, y, y, x, x] + C_{10,1022} AW_1[y, y, y, y, y, y, y, x, y] + \\
 &\quad \left. \left. C_{10,1023} AW_1[y, y, y, y, y, y, y, y, x] + C_{10,1024} AW_1[y, y, y, y, y, y, y, y, y] \right] \right]
 \end{aligned}$$

Full expression not available (original memory size: 457.5 kB)

In[*]:= **Short [**

rels = Union@@ (List@@Pentagond[ϕ[d]] [1] /. {
ϕ0[A_] => Table[Coefficient[A, B], {B, Basisd,{x,y}[AW1 AW2]}],
ϕc[1,2][A_] => Table[Coefficient[A, B], {B, AW1[] AW2[] Basisd-1,{x,y}[AW1 AW2]}]
}),
10]

Out[*]//Short=

{0, -1013 C10,1, -923 C10,1, -608 C10,1, -252 C10,1, -210 C10,1, -120 C10,1, -45 C10,1, -10 C10,1,
 -8 C10,1, -C10,1, 9 C10,1, 79 C10,1, 304 C10,1, 622 C10,1, 664 C10,1, <<9715>>, -1012 C10,1024,
 -922 C10,1024, -607 C10,1024, -252 C10,1024, -210 C10,1024, -120 C10,1024, -45 C10,1024, -10 C10,1024,
 -7 C10,1024, 10 C10,1024, 80 C10,1024, 305 C10,1024, 623 C10,1024, 665 C10,1024, 875 C10,1024 }

In[*]:= **eqns = # == 0 & /@ rels;**

In[*]:= **vars = Union[Cases[eqns, Cd,_, ∞]]**

Out[*]=

{C10,1, C10,2, C10,3, C10,4, C10,5, C10,6, C10,7, C10,8, C10,9, C10,10, C10,11, C10,12, C10,13, C10,14, C10,15,
 C10,16, C10,17, C10,18, C10,19, C10,20, C10,21, C10,22, C10,23, C10,24, C10,25, C10,26, C10,27, C10,28,
 C10,29, C10,30, C10,31, C10,32, C10,33, C10,34, C10,35, C10,36, C10,37, C10,38, C10,39, C10,40, C10,41,
 C10,42, C10,43, C10,44, C10,45, C10,46, C10,47, C10,48, C10,49, C10,50, C10,51, C10,52, C10,53, C10,54,
 C10,55, C10,56, C10,57, C10,58, C10,59, C10,60, C10,61, C10,62, C10,63, C10,64, C10,65, C10,66, C10,67,
 C10,68, C10,69, C10,70, C10,71, C10,72, C10,73, C10,74, C10,75, C10,76, C10,77, C10,78, C10,79, C10,80,
 C10,81, C10,82, C10,83, C10,84, C10,85, C10,86, C10,87, C10,88, C10,89, C10,90, C10,91, C10,92, C10,93,
 C10,94, C10,95, C10,96, C10,97, C10,98, C10,99, C10,100, C10,101, C10,102, C10,103, C10,104, C10,105,
 C10,106, C10,107, C10,108, C10,109, C10,110, C10,111, C10,112, C10,113, C10,114, C10,115, C10,116, C10,117,
 C10,118, C10,119, C10,120, C10,121, C10,122, C10,123, C10,124, C10,125, C10,126, C10,127, C10,128, C10,129,
 C10,130, C10,131, C10,132, C10,133, C10,134, C10,135, C10,136, C10,137, C10,138, C10,139, C10,140, C10,141,
 C10,142, C10,143, C10,144, C10,145, C10,146, C10,147, C10,148, C10,149, C10,150, C10,151, C10,152, C10,153,
 C10,154, C10,155, C10,156, C10,157, C10,158, C10,159, C10,160, C10,161, C10,162, C10,163, C10,164, C10,165,
 C10,166, C10,167, C10,168, C10,169, C10,170, C10,171, C10,172, C10,173, C10,174, C10,175, C10,176, C10,177,
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 C10,190, C10,191, C10,192, C10,193, C10,194, C10,195, C10,196, C10,197, C10,198, C10,199, C10,200, C10,201,
 C10,202, C10,203, C10,204, C10,205, C10,206, C10,207, C10,208, C10,209, C10,210, C10,211, C10,212, C10,213,
 C10,214, C10,215, C10,216, C10,217, C10,218, C10,219, C10,220, C10,221, C10,222, C10,223, C10,224,
 C10,225, C10,226, C10,227, C10,228, C10,229, C10,230, C10,231, C10,232, C10,233, C10,234, C10,235, C10,236,

C_{10,237}, C_{10,238}, C_{10,239}, C_{10,240}, C_{10,241}, C_{10,242}, C_{10,243}, C_{10,244}, C_{10,245}, C_{10,246}, C_{10,247}, C_{10,248},
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C_{10,261}, C_{10,262}, C_{10,263}, C_{10,264}, C_{10,265}, C_{10,266}, C_{10,267}, C_{10,268}, C_{10,269}, C_{10,270}, C_{10,271}, C_{10,272},
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C_{10,729}, C_{10,730}, C_{10,731}, C_{10,732}, C_{10,733}, C_{10,734}, C_{10,735}, C_{10,736}, C_{10,737}, C_{10,738}, C_{10,739}, C_{10,740},
C_{10,741}, C_{10,742}, C_{10,743}, C_{10,744}, C_{10,745}, C_{10,746}, C_{10,747}, C_{10,748}, C_{10,749}, C_{10,750}, C_{10,751}, C_{10,752},
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C_{10,765}, C_{10,766}, C_{10,767}, C_{10,768}, C_{10,769}, C_{10,770}, C_{10,771}, C_{10,772}, C_{10,773}, C_{10,774}, C_{10,775}, C_{10,776},

C_{10,777}, C_{10,778}, C_{10,779}, C_{10,780}, C_{10,781}, C_{10,782}, C_{10,783}, C_{10,784}, C_{10,785}, C_{10,786}, C_{10,787}, C_{10,788},
 C_{10,789}, C_{10,790}, C_{10,791}, C_{10,792}, C_{10,793}, C_{10,794}, C_{10,795}, C_{10,796}, C_{10,797}, C_{10,798}, C_{10,799}, C_{10,800},
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 C_{10,813}, C_{10,814}, C_{10,815}, C_{10,816}, C_{10,817}, C_{10,818}, C_{10,819}, C_{10,820}, C_{10,821}, C_{10,822}, C_{10,823}, C_{10,824},
 C_{10,825}, C_{10,826}, C_{10,827}, C_{10,828}, C_{10,829}, C_{10,830}, C_{10,831}, C_{10,832}, C_{10,833}, C_{10,834}, C_{10,835}, C_{10,836},
 C_{10,837}, C_{10,838}, C_{10,839}, C_{10,840}, C_{10,841}, C_{10,842}, C_{10,843}, C_{10,844}, C_{10,845}, C_{10,846}, C_{10,847}, C_{10,848},
 C_{10,849}, C_{10,850}, C_{10,851}, C_{10,852}, C_{10,853}, C_{10,854}, C_{10,855}, C_{10,856}, C_{10,857}, C_{10,858}, C_{10,859}, C_{10,860},
 C_{10,861}, C_{10,862}, C_{10,863}, C_{10,864}, C_{10,865}, C_{10,866}, C_{10,867}, C_{10,868}, C_{10,869}, C_{10,870}, C_{10,871}, C_{10,872},
 C_{10,873}, C_{10,874}, C_{10,875}, C_{10,876}, C_{10,877}, C_{10,878}, C_{10,879}, C_{10,880}, C_{10,881}, C_{10,882}, C_{10,883}, C_{10,884},
 C_{10,885}, C_{10,886}, C_{10,887}, C_{10,888}, C_{10,889}, C_{10,890}, C_{10,891}, C_{10,892}, C_{10,893}, C_{10,894}, C_{10,895}, C_{10,896},
 C_{10,897}, C_{10,898}, C_{10,899}, C_{10,900}, C_{10,901}, C_{10,902}, C_{10,903}, C_{10,904}, C_{10,905}, C_{10,906}, C_{10,907}, C_{10,908},
 C_{10,909}, C_{10,910}, C_{10,911}, C_{10,912}, C_{10,913}, C_{10,914}, C_{10,915}, C_{10,916}, C_{10,917}, C_{10,918}, C_{10,919}, C_{10,920},
 C_{10,921}, C_{10,922}, C_{10,923}, C_{10,924}, C_{10,925}, C_{10,926}, C_{10,927}, C_{10,928}, C_{10,929}, C_{10,930}, C_{10,931}, C_{10,932},
 C_{10,933}, C_{10,934}, C_{10,935}, C_{10,936}, C_{10,937}, C_{10,938}, C_{10,939}, C_{10,940}, C_{10,941}, C_{10,942}, C_{10,943}, C_{10,944},
 C_{10,945}, C_{10,946}, C_{10,947}, C_{10,948}, C_{10,949}, C_{10,950}, C_{10,951}, C_{10,952}, C_{10,953}, C_{10,954}, C_{10,955}, C_{10,956},
 C_{10,957}, C_{10,958}, C_{10,959}, C_{10,960}, C_{10,961}, C_{10,962}, C_{10,963}, C_{10,964}, C_{10,965}, C_{10,966}, C_{10,967}, C_{10,968},
 C_{10,969}, C_{10,970}, C_{10,971}, C_{10,972}, C_{10,973}, C_{10,974}, C_{10,975}, C_{10,976}, C_{10,977}, C_{10,978}, C_{10,979}, C_{10,980},
 C_{10,981}, C_{10,982}, C_{10,983}, C_{10,984}, C_{10,985}, C_{10,986}, C_{10,987}, C_{10,988}, C_{10,989}, C_{10,990}, C_{10,991}, C_{10,992},
 C_{10,993}, C_{10,994}, C_{10,995}, C_{10,996}, C_{10,997}, C_{10,998}, C_{10,999}, C_{10,1000}, C_{10,1001}, C_{10,1002}, C_{10,1003},
 C_{10,1004}, C_{10,1005}, C_{10,1006}, C_{10,1007}, C_{10,1008}, C_{10,1009}, C_{10,1010}, C_{10,1011}, C_{10,1012}, C_{10,1013}, C_{10,1014},
 C_{10,1015}, C_{10,1016}, C_{10,1017}, C_{10,1018}, C_{10,1019}, C_{10,1020}, C_{10,1021}, C_{10,1022}, C_{10,1023}, C_{10,1024} }

In[] := sol = Solve[eqns, vars] [[1]]

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

Out[] :=

$$\left\{ \begin{array}{l} C_{10,1} \rightarrow 0, C_{10,2} \rightarrow \frac{1}{95800320}, C_{10,3} \rightarrow -\frac{1}{10644480}, C_{10,4} \rightarrow -\frac{5}{76640256}, C_{10,5} \rightarrow \frac{1}{2661120}, C_{10,7} \rightarrow \frac{5}{95800320} - C_{10,6}, \\ C_{10,8} \rightarrow \frac{59}{283852800}, C_{10,9} \rightarrow -\frac{1}{1140480}, C_{10,10} \rightarrow \frac{527}{1277337600} - \frac{7C_{10,6}}{2}, C_{10,11} \rightarrow \frac{527}{638668800}, \dots 1003 \dots, \\ C_{10,1015} \rightarrow \frac{17243}{17517772800}, C_{10,1016} \rightarrow \frac{511}{291962880}, C_{10,1017} \rightarrow -\frac{1621}{6812467200}, C_{10,1018} \rightarrow -\frac{10799}{40874803200}, C_{10,1019} \rightarrow -\frac{49363}{122624409600}, \\ C_{10,1020} \rightarrow -\frac{73}{97320960}, C_{10,1021} \rightarrow \frac{73}{875888640}, C_{10,1022} \rightarrow \frac{73}{389283840}, C_{10,1023} \rightarrow -\frac{73}{3503554560}, C_{10,1024} \rightarrow 0 \end{array} \right\}$$

Full expression not available (original memory size: 395.1 kB)

In[] := sol /. Rule -> Set;

In[] := \mathfrak{d} [d]

Out[] :=

$$\mathcal{O}_{HR, (x,y), (1)} \left[\mathfrak{A}_0 \left[AW_1[] \right] + \frac{1}{24} AW_1[x, y] - \frac{1}{24} AW_1[y, x] - \frac{AW_1[x, x, x, y]}{1440} + \frac{1}{480} AW_1[x, x, y, x] + \dots 1661 \dots + \frac{73 AW_1[y, y, y, y, y, y, x, x]}{875888640} + \frac{73 AW_1[y, y, y, y, y, y, x, y]}{389283840} - \frac{73 AW_1[y, y, y, y, y, y, y, x]}{3503554560} \right]$$

Full expression not available (original memory size: 0.6 MB)

In[] := Cases[\mathfrak{d} [d], c_., ∞] // Union

Out[] :=

{C_{10,6}}

In[] := PrintProfile[]

Out[] :=

ProfileRoot is root. Profiled time: 30403.1

(9) 0.454 / 0.454 above EMBasis
<http://drobrn.net/AcademicPensieve/People/Kuno/#MathematicaNotebooks>

(24) 3.373/ 29592.892 above EMIM
 (24) 0.514/ 25.755 above EMp2s
 (16) 0.015/ 1.060 above EMp Δ
 (8) 0.015/ 0.030 above EMp σ
 (8) 49.078/ 782.718 above EMS Δ
 (24) 0.015/ 0.170 above EMS σ
 FA \mathbb{D} : called 440 times, time in 28748./28748.
 (24) 7.719/ 7.719 under EMp2s
 (32) 3.047/ 3.047 under EMS Δ
 (384) 28737.189/ 28737.189 under \emptyset
 FAAm: called 1232 times, time in 740.734/740.734
 (656) 261.398/ 261.398 under EMHR
 (128) 21.548/ 21.548 under EMsm
 (64) 233.800/ 233.800 under EMS Δ
 (384) 223.988/ 223.988 under \emptyset
 FA Δ : called 56 times, time in 350.622/350.622
 (56) 350.622/ 350.622 under EMS Δ
 EMHR: called 328 times, time in 153.262/414.66
 (176) 81.344/ 185.791 under EMCF
 (152) 71.918/ 228.869 under \emptyset
 (656) 261.398/ 261.398 above FAAm
 FAA σ : called 456 times, time in 150.418/150.418
 (80) 18.469/ 18.469 under EMsm
 (16) 75.562/ 75.562 under EMS Δ
 (360) 56.387/ 56.387 under EMS σ
 \emptyset : called 104 times, time in 121.562/29498.4
 (96) 107.844/ 29427.801 under EMsm
 (8) 13.718/ 70.609 under EMS Δ
 (104) 1.451/ 186.802 above EMCF
 (152) 71.918/ 228.869 above EMHR
 (384) 223.988/ 223.988 above FAAm
 (384) 28737.189/ 28737.189 above FA \mathbb{D}
 FAEM: called 64 times, time in 54.316/54.316
 (64) 54.316/ 54.316 under EMEM
 EMS Δ : called 8 times, time in 49.078/782.718
 (8) 49.078/ 782.718 under ProfileRoot
 (64) 233.800/ 233.800 above FAAm
 (16) 75.562/ 75.562 above FAA σ
 (32) 3.047/ 3.047 above FA \mathbb{D}
 (56) 350.622/ 350.622 above FA Δ
 (8) 13.718/ 70.609 above \emptyset
 FAFA: called 80 times, time in 18.142/18.142
 (48) 17.082/ 17.082 under EMp2s
 (24) 1.045/ 1.045 under EMp Δ
 (8) 0.015/ 0.015 under EMp σ
 EMsm: called 48 times, time in 6.467/29474.3
 (48) 6.467/ 29474.285 under EMIM

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( 128)    21.548/    21.548 above FAAM
(  80)    18.469/    18.469 above FAAσ
(  96)   107.844/ 29427.801 above 0
EMIM: called 24 times, time in 3.373/29592.9
(  24)    3.373/ 29592.892 under ProfileRoot
(  24)    2.109/    56.425 above EMEM
(  48)    6.467/ 29474.285 above EMsm
(  48)    2.577/    58.809 above EMsσ
EMsσ: called 72 times, time in 2.592/58.979
(  48)    2.577/    58.809 under EMIM
(  24)    0.015/    0.170 under ProfileRoot
( 360)   56.387/    56.387 above FAAσ
EMEM: called 24 times, time in 2.109/56.425
(  24)    2.109/    56.425 under EMIM
(  64)   54.316/    54.316 above FAEM
EMCF: called 128 times, time in 1.451/187.242
(  24)     0/    0.440 under EMp2s
( 104)    1.451/   186.802 under 0
( 176)   81.344/   185.791 above EMHR
EMp2s: called 24 times, time in 0.514/25.755
(  24)    0.514/   25.755 under ProfileRoot
(  24)     0/    0.440 above EMCF
(  48)   17.082/   17.082 above FAFA
(  24)    7.719/    7.719 above FAD
EMBasis: called 9 times, time in 0.454/0.454
(  9)    0.454/    0.454 under ProfileRoot
EMpΔ: called 16 times, time in 0.015/1.06
(  16)    0.015/    1.060 under ProfileRoot
(  24)    1.045/    1.045 above FAFA
EMpσ: called 8 times, time in 0.015/0.03
(  8)    0.015/    0.030 under ProfileRoot
(  8)    0.015/    0.015 above FAFA

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