

```
In[ ]:= ClearAll["Global`*"]
```

```
(* Define Infinitesimal Representations by this order
   a1+a2, a1, a2, -a1, -a2, -a1-a2, 0, 0
*)
```

```
In[ ]:= LB[x_, y_] := x.y - y.x;
```

```
In[ ]:= ConstantArray[0, {8, 8}]
```

```
Out[ ]:= {{0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0},
          {0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0},
          {0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0},
          {0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0}}
```

```
X3 = {{0, 0, 0, -2 Sqrt[3], 2, 0, 0, 0}, {0, 0, 0, 0, 0, 0, -2, 0},
      {0, 0, 0, 0, 0, 2, 0, 0}, {0, 0, 0, 0, 0, 0, 2 Sqrt[3]}, {0, 0, 0, 0, 0, 0, 0, -2},
      {0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0}};
Y3 = {{0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0},
      {2 Sqrt[3], 0, 0, 0, 0, 0, 0, 0}, {-2, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 2, 0, 0, 0, 0, 0},
      {0, -2, 0, 0, 0, 0, 0, 0}, {0, 0, 0, -2 Sqrt[3], 2, 0, 0, 0}};
```

```
H1 = {{1, 0, 0, 0, 0, 0, 0, 0}, {0, 2, 0, 0, 0, 0, 0, 0},
      {0, 0, -1, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0},
      {0, 0, 0, 0, 0, -2, 0, 0}, {0, 0, 0, 0, 0, 0, 1, 0}, {0, 0, 0, 0, 0, 0, 0, -1}};
H2 = {{1, 0, 0, 0, 0, 0, 0, 0}, {0, -1, 0, 0, 0, 0, 0, 0}, {0, 0, 2, 0, 0, 0, 0, 0},
      {0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 1, 0, 0},
      {0, 0, 0, 0, 0, 0, -2, 0}, {0, 0, 0, 0, 0, 0, 0, -1}};
```

```
{{0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0},
 {0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0},
 {0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0}}
```

```
In[ ]:= (* Adjoint Representations *)
```

```
{ {0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0},
  {0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0},
  {0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0}};
```

```
X1 = { {0, 1, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0},
  {0, 0, 0, 1, 2, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 1, 0},
  {0, 0, 0, 0, 0, 0, 0, 1}, {0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0}};
Y1 = { {0, 0, 0, 0, 0, 0, 0, 0}, {1, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0},
  {0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 1, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0},
  {0, 0, 0, 1, 2, 0, 0, 0}, {0, 0, 0, 0, 0, 1, 0, 0}};
```

```
X2 = { {0, 0, 1, 0, 0, 0, 0, 0}, {0, 0, 0, 2, 1, 0, 0, 0},
  {0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 1, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0},
  {0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 1, 0}, {0, 0, 0, 0, 0, 0, 0, 0}};
Y2 = { {0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0}, {1, 0, 0, 0, 0, 0, 0, 0},
  {0, 1, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 2, 1, 0, 0, 0},
  {0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 1, 0}};
```

```
X3 = { {0, 0, 0, 1, -1, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, -1},
  {0, 0, 0, 0, 0, 1, 0, 0}, {0, 0, 0, 0, 0, 0, 0, -1}, {0, 0, 0, 0, 0, 0, 0, 1},
  {0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0}};
Y3 = { {0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0},
  {1, 0, 0, 0, 0, 0, 0, 0}, {-1, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 1, 0, 0, 0, 0, 0},
  {0, -1, 0, 0, 0, 0, 0, 0}, {0, 0, 0, -1, 1, 0, 0, 0}};
```

```
H1 = { {1, 0, 0, 0, 0, 0, 0, 0}, {0, -1, 0, 0, 0, 0, 0, 0},
  {0, 0, 2, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0},
  {0, 0, 0, 0, 0, 1, 0, 0}, {0, 0, 0, 0, 0, 0, -2, 0}, {0, 0, 0, 0, 0, 0, 0, -1}};
H2 = { {1, 0, 0, 0, 0, 0, 0, 0}, {0, 2, 0, 0, 0, 0, 0, 0}, {0, 0, -1, 0, 0, 0, 0, 0},
  {0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, -2, 0, 0},
  {0, 0, 0, 0, 0, 0, 1, 0}, {0, 0, 0, 0, 0, 0, 0, -1}};
```

```
In[ ]:= LB[X3, Y1] // MatrixForm
```

```
Out[ ]//MatrixForm=
```

$$\begin{pmatrix} 0 & 0 & -1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -2 & -1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -1 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{pmatrix}$$

```
(*h1=1;h2=1;x1=1;y1=1;x2=1;y2=1;x3=1;y3=1;*)
```

```
In[ ]:= M = i h1 H1 + i h2 H2 + x1 (X1 - Y1) + i y1 (X1 + Y1) +
          x2 (X2 - Y2) + i y2 (X2 + Y2) + x3 (X3 - Y3) + i y3 (X3 + Y3);
M // MatrixForm
```

Out[ ]//MatrixForm=

$$\begin{pmatrix} i h_1 + i h_2 & x_1 + i y_1 & x_2 + i y_2 & x_3 + i y_3 & -x_3 - i y_3 & 0 & 0 \\ -x_1 + i y_1 & -i h_1 + 2 i h_2 & 0 & 2 x_2 + 2 i y_2 & x_2 + i y_2 & 0 & -x_3 - i y_3 \\ -x_2 + i y_2 & 0 & 2 i h_1 - i h_2 & x_1 + i y_1 & 2 x_1 + 2 i y_1 & x_3 + i y_3 & 0 \\ -x_3 + i y_3 & -x_2 + i y_2 & 0 & 0 & 0 & x_2 + i y_2 & 0 \\ x_3 - i y_3 & 0 & -x_1 + i y_1 & 0 & 0 & 0 & x_1 + i y_1 \\ 0 & 0 & -x_3 + i y_3 & -2 x_2 + 2 i y_2 & -x_2 + i y_2 & i h_1 - 2 i h_2 & 0 \\ 0 & x_3 - i y_3 & 0 & -x_1 + i y_1 & -2 x_1 + 2 i y_1 & 0 & -2 i h_1 + i h_2 \\ 0 & 0 & 0 & x_3 - i y_3 & -x_3 + i y_3 & -x_1 + i y_1 & -x_2 + i y_2 \end{pmatrix}$$

```
In[ ]:= M1 = i h1 H1 + x1 (X1 - Y1) + i y1 (X1 + Y1);
M1 // MatrixForm
```

```
M2 = i h2 H2 + x2 (X2 - Y2) + i y2 (X2 + Y2);
M2 // MatrixForm
```

```
M3 = i h3 (H1 + H2) + x3 (X3 - Y3) + i y3 (X3 + Y3);
M3 // MatrixForm
```

```
In[ ]:= Eigenvalues[M] // MatrixForm
```

Out[ ]//MatrixForm=

$$\begin{pmatrix} -\sqrt{\text{Root}\left[\pm 1^3 + 4 h_1^6 - 12 h_1^5 h_2 - 3 h_1^4 h_2^2 + 26 h_1^3 h_2^3 - 3 h_1^2 h_2^4 - 12 h_1 h_2^5 + 4 h_2^6 + 12 h_1^4 x_1^2 - 24 h_1^3 h_2 x_1^2 - 18 h_1^2 h_2^2 x_1^2\right]} \\ \sqrt{\text{Root}\left[\pm 1^3 + 4 h_1^6 - 12 h_1^5 h_2 - 3 h_1^4 h_2^2 + 26 h_1^3 h_2^3 - 3 h_1^2 h_2^4 - 12 h_1 h_2^5 + 4 h_2^6 + 12 h_1^4 x_1^2 - 24 h_1^3 h_2 x_1^2 - 18 h_1^2 h_2^2 x_1^2\right]} \\ -\sqrt{\text{Root}\left[\pm 1^3 + 4 h_1^6 - 12 h_1^5 h_2 - 3 h_1^4 h_2^2 + 26 h_1^3 h_2^3 - 3 h_1^2 h_2^4 - 12 h_1 h_2^5 + 4 h_2^6 + 12 h_1^4 x_1^2 - 24 h_1^3 h_2 x_1^2 - 18 h_1^2 h_2^2 x_1^2\right]} \\ \sqrt{\text{Root}\left[\pm 1^3 + 4 h_1^6 - 12 h_1^5 h_2 - 3 h_1^4 h_2^2 + 26 h_1^3 h_2^3 - 3 h_1^2 h_2^4 - 12 h_1 h_2^5 + 4 h_2^6 + 12 h_1^4 x_1^2 - 24 h_1^3 h_2 x_1^2 - 18 h_1^2 h_2^2 x_1^2\right]} \\ -\sqrt{\text{Root}\left[\pm 1^3 + 4 h_1^6 - 12 h_1^5 h_2 - 3 h_1^4 h_2^2 + 26 h_1^3 h_2^3 - 3 h_1^2 h_2^4 - 12 h_1 h_2^5 + 4 h_2^6 + 12 h_1^4 x_1^2 - 24 h_1^3 h_2 x_1^2 - 18 h_1^2 h_2^2 x_1^2\right]} \\ \sqrt{\text{Root}\left[\pm 1^3 + 4 h_1^6 - 12 h_1^5 h_2 - 3 h_1^4 h_2^2 + 26 h_1^3 h_2^3 - 3 h_1^2 h_2^4 - 12 h_1 h_2^5 + 4 h_2^6 + 12 h_1^4 x_1^2 - 24 h_1^3 h_2 x_1^2 - 18 h_1^2 h_2^2 x_1^2\right]} \end{pmatrix}$$

```
(*
Tim's version of Nelson's Formula
*)
```

$$f[p\_]:= \sum_{q=0}^p \text{Binomial}[p, q] (-1)^{p-q} (p-q)! (d\gamma) * \text{If}[q == 0, 1, f[q-1]];$$

```
i = 8; n = 8;
```

$$A = \sum_{k=0}^{n-1} \sum_{j=0}^{n-k-1} \sum_{m=0}^j (-1)^{n-k-j-1} * \text{Binomial}[j, m] * \left( \frac{(n-1)!}{(n-j+m-1)!} \right) * \text{If}[k == 0, \text{IdentityMatrix}[i], \text{MatrixPower}[M, k]] * \text{Tr}[\text{Minors}[M, n-j-k-1]] * \text{If}[m == 0, 1, f[m-1]];$$

```
In[ ]:= A[[1, 1]] // Expand
```

$$\begin{aligned} \text{Out[ ]}= & 5040 + 13068 d\gamma + 13132 d\gamma^2 + 6769 d\gamma^3 + 1960 d\gamma^4 + 322 d\gamma^5 + 28 d\gamma^6 + d\gamma^7 + 5040 i h_1 + 8028 i d\gamma h_1 + \\ & 5104 i d\gamma^2 h_1 + 1665 i d\gamma^3 h_1 + 295 i d\gamma^4 h_1 + 27 i d\gamma^5 h_1 + i d\gamma^6 h_1 + 12600 h_1^2 + 13770 d\gamma h_1^2 + \\ & 5875 d\gamma^2 h_1^2 + 1225 d\gamma^3 h_1^2 + 125 d\gamma^4 h_1^2 + 5 d\gamma^5 h_1^2 + 4200 i h_1^3 + 3190 i d\gamma h_1^3 + 895 i d\gamma^2 h_1^3 + \\ & 110 i d\gamma^3 h_1^3 + 5 i d\gamma^4 h_1^3 + 840 h_1^4 + 428 d\gamma h_1^4 + 72 d\gamma^2 h_1^4 + 4 d\gamma^3 h_1^4 + 168 i h_1^5 + 52 i d\gamma h_1^5 + \end{aligned}$$

$$\begin{aligned}
& 4 \, \mathfrak{d} \gamma^2 h_1^5 + 5040 \, \mathfrak{d} h_2 + 8028 \, \mathfrak{d} \gamma h_2 + 5104 \, \mathfrak{d} \gamma^2 h_2 + 1665 \, \mathfrak{d} \gamma^3 h_2 + 295 \, \mathfrak{d} \gamma^4 h_2 + 27 \, \mathfrak{d} \gamma^5 h_2 + \\
& \mathfrak{d} \gamma^6 h_2 - 20 \, 160 \, h_1 h_2 - 22 \, 032 \, \mathfrak{d} \gamma h_1 h_2 - 9400 \, \mathfrak{d} \gamma^2 h_1 h_2 - 1960 \, \mathfrak{d} \gamma^3 h_1 h_2 - 200 \, \mathfrak{d} \gamma^4 h_1 h_2 - \\
& 8 \, \mathfrak{d} \gamma^5 h_1 h_2 - 2520 \, \mathfrak{d} h_1^2 h_2 - 1914 \, \mathfrak{d} \gamma h_1^2 h_2 - 537 \, \mathfrak{d} \gamma^2 h_1^2 h_2 - 66 \, \mathfrak{d} \gamma^3 h_1^2 h_2 - 3 \, \mathfrak{d} \gamma^4 h_1^2 h_2 - \\
& 4200 \, h_1^3 h_2 - 2140 \, \mathfrak{d} \gamma h_1^3 h_2 - 360 \, \mathfrak{d} \gamma^2 h_1^3 h_2 - 20 \, \mathfrak{d} \gamma^3 h_1^3 h_2 - 672 \, \mathfrak{d} h_1^4 h_2 - 208 \, \mathfrak{d} \gamma h_1^4 h_2 - \\
& 16 \, \mathfrak{d} \gamma^2 h_1^4 h_2 + 12 \, 600 \, h_2^2 + 13 \, 770 \, \mathfrak{d} \gamma h_2^2 + 5875 \, \mathfrak{d} \gamma^2 h_2^2 + 1225 \, \mathfrak{d} \gamma^3 h_2^2 + 125 \, \mathfrak{d} \gamma^4 h_2^2 + 5 \, \mathfrak{d} \gamma^5 h_2^2 - \\
& 2520 \, \mathfrak{d} h_1 h_2^2 - 1914 \, \mathfrak{d} \gamma h_1 h_2^2 - 537 \, \mathfrak{d} \gamma^2 h_1 h_2^2 - 66 \, \mathfrak{d} \gamma^3 h_1 h_2^2 - 3 \, \mathfrak{d} \gamma^4 h_1 h_2^2 + 6930 \, h_1^2 h_2^2 + \\
& 3531 \, \mathfrak{d} \gamma h_1^2 h_2^2 + 594 \, \mathfrak{d} \gamma^2 h_1^2 h_2^2 + 33 \, \mathfrak{d} \gamma^3 h_1^2 h_2^2 + 546 \, \mathfrak{d} h_1^3 h_2^2 + 169 \, \mathfrak{d} \gamma h_1^3 h_2^2 + 13 \, \mathfrak{d} \gamma^2 h_1^3 h_2^2 + \\
& 4200 \, \mathfrak{d} h_2^3 + 3190 \, \mathfrak{d} \gamma h_2^3 + 895 \, \mathfrak{d} \gamma^2 h_2^3 + 110 \, \mathfrak{d} \gamma^3 h_2^3 + 5 \, \mathfrak{d} \gamma^4 h_2^3 - 4200 \, h_1 h_2^3 - 2140 \, \mathfrak{d} \gamma h_1 h_2^3 - \\
& 360 \, \mathfrak{d} \gamma^2 h_1 h_2^3 - 20 \, \mathfrak{d} \gamma^3 h_1 h_2^3 + 546 \, \mathfrak{d} h_1^2 h_2^3 + 169 \, \mathfrak{d} \gamma h_1^2 h_2^3 + 13 \, \mathfrak{d} \gamma^2 h_1^2 h_2^3 + 840 \, h_2^4 + 428 \, \mathfrak{d} \gamma h_2^4 + \\
& 72 \, \mathfrak{d} \gamma^2 h_2^4 + 4 \, \mathfrak{d} \gamma^3 h_2^4 - 672 \, \mathfrak{d} h_1 h_2^4 - 208 \, \mathfrak{d} \gamma h_1 h_2^4 - 16 \, \mathfrak{d} \gamma^2 h_1 h_2^4 + 168 \, \mathfrak{d} h_1^5 + 52 \, \mathfrak{d} \gamma h_1^5 + \\
& 4 \, \mathfrak{d} \gamma^2 h_1^5 + 12 \, 600 \, x_1^2 + 13 \, 770 \, \mathfrak{d} \gamma x_1^2 + 5875 \, \mathfrak{d} \gamma^2 x_1^2 + 1225 \, \mathfrak{d} \gamma^3 x_1^2 + 125 \, \mathfrak{d} \gamma^4 x_1^2 + 5 \, \mathfrak{d} \gamma^5 x_1^2 + \\
& 4200 \, \mathfrak{d} h_1 x_1^2 + 3190 \, \mathfrak{d} \gamma h_1 x_1^2 + 895 \, \mathfrak{d} \gamma^2 h_1 x_1^2 + 110 \, \mathfrak{d} \gamma^3 h_1 x_1^2 + 5 \, \mathfrak{d} \gamma^4 h_1 x_1^2 + 1680 \, h_1^2 x_1^2 + \\
& 856 \, \mathfrak{d} \gamma h_1^2 x_1^2 + 144 \, \mathfrak{d} \gamma^2 h_1^2 x_1^2 + 8 \, \mathfrak{d} \gamma^3 h_1^2 x_1^2 + 336 \, \mathfrak{d} h_1^3 x_1^2 + 104 \, \mathfrak{d} \gamma h_1^3 x_1^2 + 8 \, \mathfrak{d} \gamma^2 h_1^3 x_1^2 + \\
& 1680 \, \mathfrak{d} h_2 x_1^2 + 1276 \, \mathfrak{d} \gamma h_2 x_1^2 + 358 \, \mathfrak{d} \gamma^2 h_2 x_1^2 + 44 \, \mathfrak{d} \gamma^3 h_2 x_1^2 + 2 \, \mathfrak{d} \gamma^4 h_2 x_1^2 - 4200 \, h_1 h_2 x_1^2 - \\
& 2140 \, \mathfrak{d} \gamma h_1 h_2 x_1^2 - 360 \, \mathfrak{d} \gamma^2 h_1 h_2 x_1^2 - 20 \, \mathfrak{d} \gamma^3 h_1 h_2 x_1^2 - 1008 \, \mathfrak{d} h_1^2 h_2 x_1^2 - 312 \, \mathfrak{d} \gamma h_1^2 h_2 x_1^2 - \\
& 24 \, \mathfrak{d} \gamma^2 h_1^2 h_2 x_1^2 + 3570 \, h_2^2 x_1^2 + 1819 \, \mathfrak{d} \gamma h_2^2 x_1^2 + 306 \, \mathfrak{d} \gamma^2 h_2^2 x_1^2 + 17 \, \mathfrak{d} \gamma^3 h_2^2 x_1^2 + 378 \, \mathfrak{d} h_1 h_2^2 x_1^2 + \\
& 117 \, \mathfrak{d} \gamma h_1 h_2^2 x_1^2 + 9 \, \mathfrak{d} \gamma^2 h_1 h_2^2 x_1^2 + 588 \, \mathfrak{d} h_2^3 x_1^2 + 182 \, \mathfrak{d} \gamma h_2^3 x_1^2 + 14 \, \mathfrak{d} \gamma^2 h_2^3 x_1^2 + 840 \, x_1^4 + 428 \, \mathfrak{d} \gamma x_1^4 + \\
& 72 \, \mathfrak{d} \gamma^2 x_1^4 + 4 \, \mathfrak{d} \gamma^3 x_1^4 + 168 \, \mathfrak{d} h_1 x_1^4 + 52 \, \mathfrak{d} \gamma h_1 x_1^4 + 4 \, \mathfrak{d} \gamma^2 h_1 x_1^4 - 336 \, \mathfrak{d} h_2 x_1^4 - 104 \, \mathfrak{d} \gamma h_2 x_1^4 - \\
& 8 \, \mathfrak{d} \gamma^2 h_2 x_1^4 + 12 \, 600 \, x_2^2 + 13 \, 770 \, \mathfrak{d} \gamma x_2^2 + 5875 \, \mathfrak{d} \gamma^2 x_2^2 + 1225 \, \mathfrak{d} \gamma^3 x_2^2 + 125 \, \mathfrak{d} \gamma^4 x_2^2 + 5 \, \mathfrak{d} \gamma^5 x_2^2 + \\
& 1680 \, \mathfrak{d} h_1 x_2^2 + 1276 \, \mathfrak{d} \gamma h_1 x_2^2 + 358 \, \mathfrak{d} \gamma^2 h_1 x_2^2 + 44 \, \mathfrak{d} \gamma^3 h_1 x_2^2 + 2 \, \mathfrak{d} \gamma^4 h_1 x_2^2 + 3570 \, h_1^2 x_2^2 + \\
& 1819 \, \mathfrak{d} \gamma h_1^2 x_2^2 + 306 \, \mathfrak{d} \gamma^2 h_1^2 x_2^2 + 17 \, \mathfrak{d} \gamma^3 h_1^2 x_2^2 + 588 \, \mathfrak{d} h_1^3 x_2^2 + 182 \, \mathfrak{d} \gamma h_1^3 x_2^2 + 14 \, \mathfrak{d} \gamma^2 h_1^3 x_2^2 + \\
& 4200 \, \mathfrak{d} h_2 x_2^2 + 3190 \, \mathfrak{d} \gamma h_2 x_2^2 + 895 \, \mathfrak{d} \gamma^2 h_2 x_2^2 + 110 \, \mathfrak{d} \gamma^3 h_2 x_2^2 + 5 \, \mathfrak{d} \gamma^4 h_2 x_2^2 - 4200 \, h_1 h_2 x_2^2 - \\
& 2140 \, \mathfrak{d} \gamma h_1 h_2 x_2^2 - 360 \, \mathfrak{d} \gamma^2 h_1 h_2 x_2^2 - 20 \, \mathfrak{d} \gamma^3 h_1 h_2 x_2^2 + 378 \, \mathfrak{d} h_1^2 h_2 x_2^2 + 117 \, \mathfrak{d} \gamma h_1^2 h_2 x_2^2 + \\
& 9 \, \mathfrak{d} \gamma^2 h_1^2 h_2 x_2^2 + 1680 \, h_2^2 x_2^2 + 856 \, \mathfrak{d} \gamma h_2^2 x_2^2 + 144 \, \mathfrak{d} \gamma^2 h_2^2 x_2^2 + 8 \, \mathfrak{d} \gamma^3 h_2^2 x_2^2 - 1008 \, \mathfrak{d} h_1 h_2^2 x_2^2 - \\
& 312 \, \mathfrak{d} \gamma h_1 h_2^2 x_2^2 - 24 \, \mathfrak{d} \gamma^2 h_1 h_2^2 x_2^2 + 336 \, \mathfrak{d} h_2^3 x_2^2 + 104 \, \mathfrak{d} \gamma h_2^3 x_2^2 + 8 \, \mathfrak{d} \gamma^2 h_2^3 x_2^2 + 2940 \, x_1^2 x_2^2 + \\
& 1498 \, \mathfrak{d} \gamma x_1^2 x_2^2 + 252 \, \mathfrak{d} \gamma^2 x_1^2 x_2^2 + 14 \, \mathfrak{d} \gamma^3 x_1^2 x_2^2 + 588 \, \mathfrak{d} h_1 x_1^2 x_2^2 + 182 \, \mathfrak{d} \gamma h_1 x_1^2 x_2^2 + 14 \, \mathfrak{d} \gamma^2 h_1 x_1^2 x_2^2 + \\
& 42 \, h_1^2 x_1^2 x_2^2 + 6 \, \mathfrak{d} \gamma h_1^2 x_1^2 x_2^2 + 588 \, \mathfrak{d} h_2 x_1^2 x_2^2 + 182 \, \mathfrak{d} \gamma h_2 x_1^2 x_2^2 + 14 \, \mathfrak{d} \gamma^2 h_2 x_1^2 x_2^2 - 42 \, h_1 h_2 x_1^2 x_2^2 - \\
& 6 \, \mathfrak{d} \gamma h_1 h_2 x_1^2 x_2^2 + 42 \, h_2^2 x_1^2 x_2^2 + 6 \, \mathfrak{d} \gamma h_2^2 x_1^2 x_2^2 + 42 \, x_1^4 x_2^2 + 6 \, \mathfrak{d} \gamma x_1^4 x_2^2 + 840 \, x_2^4 + 428 \, \mathfrak{d} \gamma x_2^4 + 72 \, \mathfrak{d} \gamma^2 x_2^4 + \\
& 4 \, \mathfrak{d} \gamma^3 x_2^4 - 336 \, \mathfrak{d} h_1 x_2^4 - 104 \, \mathfrak{d} \gamma h_1 x_2^4 - 8 \, \mathfrak{d} \gamma^2 h_1 x_2^4 + 168 \, \mathfrak{d} h_2 x_2^4 + 52 \, \mathfrak{d} \gamma h_2 x_2^4 + 4 \, \mathfrak{d} \gamma^2 h_2 x_2^4 + \\
& 42 \, x_1^2 x_2^4 + 6 \, \mathfrak{d} \gamma x_1^2 x_2^4 + 10 \, 080 \, x_3^2 + 11 \, 016 \, \mathfrak{d} \gamma x_3^2 + 4700 \, \mathfrak{d} \gamma^2 x_3^2 + 980 \, \mathfrak{d} \gamma^3 x_3^2 + 100 \, \mathfrak{d} \gamma^4 x_3^2 + 4 \, \mathfrak{d} \gamma^5 x_3^2 + \\
& 1680 \, \mathfrak{d} h_1 x_3^2 + 1276 \, \mathfrak{d} \gamma h_1 x_3^2 + 358 \, \mathfrak{d} \gamma^2 h_1 x_3^2 + 44 \, \mathfrak{d} \gamma^3 h_1 x_3^2 + 2 \, \mathfrak{d} \gamma^4 h_1 x_3^2 + 1260 \, h_1^2 x_3^2 + \\
& 642 \, \mathfrak{d} \gamma h_1^2 x_3^2 + 108 \, \mathfrak{d} \gamma^2 h_1^2 x_3^2 + 6 \, \mathfrak{d} \gamma^3 h_1^2 x_3^2 - 168 \, \mathfrak{d} h_1^3 x_3^2 - 52 \, \mathfrak{d} \gamma h_1^3 x_3^2 - 4 \, \mathfrak{d} \gamma^2 h_1^3 x_3^2 + 56 \, h_1^4 x_3^2 + \\
& 8 \, \mathfrak{d} \gamma h_1^4 x_3^2 + 1680 \, \mathfrak{d} h_2 x_3^2 + 1276 \, \mathfrak{d} \gamma h_2 x_3^2 + 358 \, \mathfrak{d} \gamma^2 h_2 x_3^2 + 44 \, \mathfrak{d} \gamma^3 h_2 x_3^2 + 2 \, \mathfrak{d} \gamma^4 h_2 x_3^2 - \\
& 1260 \, h_1 h_2 x_3^2 - 642 \, \mathfrak{d} \gamma h_1 h_2 x_3^2 - 108 \, \mathfrak{d} \gamma^2 h_1 h_2 x_3^2 - 6 \, \mathfrak{d} \gamma^3 h_1 h_2 x_3^2 + 252 \, \mathfrak{d} h_1^2 h_2 x_3^2 + 78 \, \mathfrak{d} \gamma h_1^2 h_2 x_3^2 + \\
& 6 \, \mathfrak{d} \gamma^2 h_1^2 h_2 x_3^2 - 280 \, h_1^3 h_2 x_3^2 - 40 \, \mathfrak{d} \gamma h_1^3 h_2 x_3^2 + 1260 \, h_2^2 x_3^2 + 642 \, \mathfrak{d} \gamma h_2^2 x_3^2 + 108 \, \mathfrak{d} \gamma^2 h_2^2 x_3^2 + \\
& 6 \, \mathfrak{d} \gamma^3 h_2^2 x_3^2 + 252 \, \mathfrak{d} h_1 h_2^2 x_3^2 + 78 \, \mathfrak{d} \gamma h_1 h_2^2 x_3^2 + 6 \, \mathfrak{d} \gamma^2 h_1 h_2^2 x_3^2 + 462 \, h_1^2 h_2^2 x_3^2 + 66 \, \mathfrak{d} \gamma h_1^2 h_2^2 x_3^2 - \\
& 168 \, \mathfrak{d} h_2^3 x_3^2 - 52 \, \mathfrak{d} \gamma h_2^3 x_3^2 - 4 \, \mathfrak{d} \gamma^2 h_2^3 x_3^2 - 280 \, h_1 h_2^3 x_3^2 - 40 \, \mathfrak{d} \gamma h_1 h_2^3 x_3^2 + 56 \, h_2^4 x_3^2 + 8 \, \mathfrak{d} \gamma h_2^4 x_3^2 + \\
& 1890 \, x_1^2 x_3^2 + 963 \, \mathfrak{d} \gamma x_1^2 x_3^2 + 162 \, \mathfrak{d} \gamma^2 x_1^2 x_3^2 + 9 \, \mathfrak{d} \gamma^3 x_1^2 x_3^2 - 168 \, \mathfrak{d} h_1 x_1^2 x_3^2 - 52 \, \mathfrak{d} \gamma h_1 x_1^2 x_3^2 - \\
& 4 \, \mathfrak{d} \gamma^2 h_1 x_1^2 x_3^2 + 70 \, h_1^2 x_1^2 x_3^2 + 10 \, \mathfrak{d} \gamma h_1^2 x_1^2 x_3^2 + 462 \, \mathfrak{d} h_2 x_1^2 x_3^2 + 143 \, \mathfrak{d} \gamma h_2 x_1^2 x_3^2 + 11 \, \mathfrak{d} \gamma^2 h_2 x_1^2 x_3^2 - \\
& 238 \, h_1 h_2 x_1^2 x_3^2 - 34 \, \mathfrak{d} \gamma h_1 h_2 x_1^2 x_3^2 + 196 \, h_2^2 x_1^2 x_3^2 + 28 \, \mathfrak{d} \gamma h_2^2 x_1^2 x_3^2 + 14 \, x_1^4 x_3^2 + 2 \, \mathfrak{d} \gamma x_1^4 x_3^2 + 1890 \, x_2^2 x_3^2 + \\
& 963 \, \mathfrak{d} \gamma x_2^2 x_3^2 + 162 \, \mathfrak{d} \gamma^2 x_2^2 x_3^2 + 9 \, \mathfrak{d} \gamma^3 x_2^2 x_3^2 + 462 \, \mathfrak{d} h_1 x_2^2 x_3^2 + 143 \, \mathfrak{d} \gamma h_1 x_2^2 x_3^2 + 11 \, \mathfrak{d} \gamma^2 h_1 x_2^2 x_3^2 + \\
& 196 \, h_1^2 x_2^2 x_3^2 + 28 \, \mathfrak{d} \gamma h_1^2 x_2^2 x_3^2 - 168 \, \mathfrak{d} h_2 x_2^2 x_3^2 - 52 \, \mathfrak{d} \gamma h_2 x_2^2 x_3^2 - 4 \, \mathfrak{d} \gamma^2 h_2 x_2^2 x_3^2 - 238 \, h_1 h_2 x_2^2 x_3^2 - \\
& 34 \, \mathfrak{d} \gamma h_1 h_2 x_2^2 x_3^2 + 70 \, h_2^2 x_2^2 x_3^2 + 10 \, \mathfrak{d} \gamma h_2^2 x_2^2 x_3^2 + 70 \, x_1^2 x_2^2 x_3^2 + 10 \, \mathfrak{d} \gamma x_1^2 x_2^2 x_3^2 + 14 \, x_2^4 x_3^2 + 2 \, \mathfrak{d} \gamma x_2^4 x_3^2 + \\
& 1050 \, x_3^4 + 535 \, \mathfrak{d} \gamma x_3^4 + 90 \, \mathfrak{d} \gamma^2 x_3^4 + 5 \, \mathfrak{d} \gamma^3 x_3^4 + 42 \, \mathfrak{d} h_1 x_3^4 + 13 \, \mathfrak{d} \gamma h_1 x_3^4 + \mathfrak{d} \gamma^2 h_1 x_3^4 - 56 \, h_1^2 x_3^4 - \\
& 8 \, \mathfrak{d} \gamma h_1^2 x_3^4 + 42 \, \mathfrak{d} h_2 x_3^4 + 13 \, \mathfrak{d} \gamma h_2 x_3^4 + \mathfrak{d} \gamma^2 h_2 x_3^4 + 140 \, h_1 h_2 x_3^4 + 20 \, \mathfrak{d} \gamma h_1 h_2 x_3^4 - 56 \, h_2^2 x_3^4 - \\
& 8 \, \mathfrak{d} \gamma h_2^2 x_3^4 + 28 \, x_1^2 x_3^4 + 4 \, \mathfrak{d} \gamma x_1^2 x_3^4 + 28 \, x_2^2 x_3^4 + 4 \, \mathfrak{d} \gamma x_2^2 x_3^4 + 14 \, x_3^6 + 2 \, \mathfrak{d} \gamma x_3^6 - 1260 \, h_1 x_2 x_3 y_1 - \\
& 642 \, \mathfrak{d} \gamma h_1 x_2 x_3 y_1 - 108 \, \mathfrak{d} \gamma^2 h_1 x_2 x_3 y_1 - 6 \, \mathfrak{d} \gamma^3 h_1 x_2 x_3 y_1 - 756 \, \mathfrak{d} h_1^2 x_2 x_3 y_1 - 234 \, \mathfrak{d} \gamma h_1^2 x_2 x_3 y_1 - \\
& 18 \, \mathfrak{d} \gamma^2 h_1^2 x_2 x_3 y_1 + 84 \, h_1^3 x_2 x_3 y_1 + 12 \, \mathfrak{d} \gamma h_1^3 x_2 x_3 y_1 + 1260 \, h_2 x_2 x_3 y_1 + 642 \, \mathfrak{d} \gamma h_2 x_2 x_3 y_1 +
\end{aligned}$$

$$\begin{aligned}
& 108 d\gamma^2 h_2 x_2 x_3 y_1 + 6 d\gamma^3 h_2 x_2 x_3 y_1 - 294 h_1^2 h_2 x_2 x_3 y_1 - 42 d\gamma h_1^2 h_2 x_2 x_3 y_1 + 756 \mathbb{I} h_2^2 x_2 x_3 y_1 + \\
& 234 \mathbb{I} d\gamma h_2^2 x_2 x_3 y_1 + 18 \mathbb{I} d\gamma^2 h_2^2 x_2 x_3 y_1 + 294 h_1 h_2^2 x_2 x_3 y_1 + 42 d\gamma h_1 h_2^2 x_2 x_3 y_1 - \\
& 84 h_2^3 x_2 x_3 y_1 - 12 d\gamma h_2^3 x_2 x_3 y_1 - 756 \mathbb{I} x_1^2 x_2 x_3 y_1 - 234 \mathbb{I} d\gamma x_1^2 x_2 x_3 y_1 - 18 \mathbb{I} d\gamma^2 x_1^2 x_2 x_3 y_1 + \\
& 84 h_1 x_1^2 x_2 x_3 y_1 + 12 d\gamma h_1 x_1^2 x_2 x_3 y_1 - 210 h_2 x_1^2 x_2 x_3 y_1 - 30 d\gamma h_2 x_1^2 x_2 x_3 y_1 + 756 \mathbb{I} x_2^3 x_3 y_1 + \\
& 234 \mathbb{I} d\gamma x_2^3 x_3 y_1 + 18 \mathbb{I} d\gamma^2 x_2^3 x_3 y_1 + 210 h_1 x_2^3 x_3 y_1 + 30 d\gamma h_1 x_2^3 x_3 y_1 - 84 h_2 x_2^3 x_3 y_1 - \\
& 12 d\gamma h_2 x_2^3 x_3 y_1 - 294 h_1 x_2 x_3^3 y_1 - 42 d\gamma h_1 x_2 x_3^3 y_1 + 294 h_2 x_2 x_3^3 y_1 + 42 d\gamma h_2 x_2 x_3^3 y_1 + \\
& 12 600 y_1^2 + 13 770 d\gamma y_1^2 + 5875 d\gamma^2 y_1^2 + 1225 d\gamma^3 y_1^2 + 125 d\gamma^4 y_1^2 + 5 d\gamma^5 y_1^2 + 4200 \mathbb{I} h_1 y_1^2 + \\
& 3190 \mathbb{I} d\gamma h_1 y_1^2 + 895 \mathbb{I} d\gamma^2 h_1 y_1^2 + 110 \mathbb{I} d\gamma^3 h_1 y_1^2 + 5 \mathbb{I} d\gamma^4 h_1 y_1^2 + 1680 h_2^2 y_1^2 + 856 d\gamma h_2^2 y_1^2 + \\
& 144 d\gamma^2 h_2^2 y_1^2 + 8 d\gamma^3 h_2^2 y_1^2 + 336 \mathbb{I} h_1^3 y_1^2 + 104 \mathbb{I} d\gamma h_1^3 y_1^2 + 8 \mathbb{I} d\gamma^2 h_1^3 y_1^2 + 1680 \mathbb{I} h_2 y_1^2 + \\
& 1276 \mathbb{I} d\gamma h_2 y_1^2 + 358 \mathbb{I} d\gamma^2 h_2 y_1^2 + 44 \mathbb{I} d\gamma^3 h_2 y_1^2 + 2 \mathbb{I} d\gamma^4 h_2 y_1^2 - 4200 h_1 h_2 y_1^2 - 2140 d\gamma h_1 h_2 y_1^2 - \\
& 360 d\gamma^2 h_1 h_2 y_1^2 - 20 d\gamma^3 h_1 h_2 y_1^2 - 1008 \mathbb{I} h_1^2 h_2 y_1^2 - 312 \mathbb{I} d\gamma h_1^2 h_2 y_1^2 - 24 \mathbb{I} d\gamma^2 h_1^2 h_2 y_1^2 + \\
& 3570 h_2^2 y_1^2 + 1819 d\gamma h_2^2 y_1^2 + 306 d\gamma^2 h_2^2 y_1^2 + 17 d\gamma^3 h_2^2 y_1^2 + 378 \mathbb{I} h_1 h_2^2 y_1^2 + 117 \mathbb{I} d\gamma h_1 h_2^2 y_1^2 + \\
& 9 \mathbb{I} d\gamma^2 h_1 h_2^2 y_1^2 + 588 \mathbb{I} h_2^3 y_1^2 + 182 \mathbb{I} d\gamma h_2^3 y_1^2 + 14 \mathbb{I} d\gamma^2 h_2^3 y_1^2 + 1680 x_1^2 y_1^2 + 856 d\gamma x_1^2 y_1^2 + \\
& 144 d\gamma^2 x_1^2 y_1^2 + 8 d\gamma^3 x_1^2 y_1^2 + 336 \mathbb{I} h_1 x_1^2 y_1^2 + 104 \mathbb{I} d\gamma h_1 x_1^2 y_1^2 + 8 \mathbb{I} d\gamma^2 h_1 x_1^2 y_1^2 - 672 \mathbb{I} h_2 x_1^2 y_1^2 - \\
& 208 \mathbb{I} d\gamma h_2 x_1^2 y_1^2 - 16 \mathbb{I} d\gamma^2 h_2 x_1^2 y_1^2 + 2940 x_2^2 y_1^2 + 1498 d\gamma x_2^2 y_1^2 + 252 d\gamma^2 x_2^2 y_1^2 + 14 d\gamma^3 x_2^2 y_1^2 + \\
& 588 \mathbb{I} h_1 x_2^2 y_1^2 + 182 \mathbb{I} d\gamma h_1 x_2^2 y_1^2 + 14 \mathbb{I} d\gamma^2 h_1 x_2^2 y_1^2 + 42 h_2^2 x_2^2 y_1^2 + 6 d\gamma h_2^2 x_2^2 y_1^2 + 588 \mathbb{I} h_2 x_2^2 y_1^2 + \\
& 182 \mathbb{I} d\gamma h_2 x_2^2 y_1^2 + 14 \mathbb{I} d\gamma^2 h_2 x_2^2 y_1^2 - 42 h_1 h_2 x_2^2 y_1^2 - 6 d\gamma h_1 h_2 x_2^2 y_1^2 + 42 h_2^2 x_2^2 y_1^2 + 6 d\gamma h_2^2 x_2^2 y_1^2 + \\
& 84 x_1^2 x_2^2 y_1^2 + 12 d\gamma x_1^2 x_2^2 y_1^2 + 42 x_2^4 y_1^2 + 6 d\gamma x_2^4 y_1^2 + 1890 x_3^2 y_1^2 + 963 d\gamma x_3^2 y_1^2 + 162 d\gamma^2 x_3^2 y_1^2 + \\
& 9 d\gamma^3 x_3^2 y_1^2 - 168 \mathbb{I} h_1 x_3^2 y_1^2 - 52 \mathbb{I} d\gamma h_1 x_3^2 y_1^2 - 4 \mathbb{I} d\gamma^2 h_1 x_3^2 y_1^2 + 70 h_2^2 x_3^2 y_1^2 + 10 d\gamma h_2^2 x_3^2 y_1^2 + \\
& 462 \mathbb{I} h_2 x_3^2 y_1^2 + 143 \mathbb{I} d\gamma h_2 x_3^2 y_1^2 + 11 \mathbb{I} d\gamma^2 h_2 x_3^2 y_1^2 - 238 h_1 h_2 x_3^2 y_1^2 - 34 d\gamma h_1 h_2 x_3^2 y_1^2 + \\
& 196 h_2^2 x_3^2 y_1^2 + 28 d\gamma h_2^2 x_3^2 y_1^2 + 28 x_1^2 x_3^2 y_1^2 + 4 d\gamma x_1^2 x_3^2 y_1^2 - 182 x_2^2 x_3^2 y_1^2 - 26 d\gamma x_2^2 x_3^2 y_1^2 + \\
& 28 x_3^4 y_1^2 + 4 d\gamma x_3^4 y_1^2 - 756 \mathbb{I} x_2 x_3 y_1^3 - 234 \mathbb{I} d\gamma x_2 x_3 y_1^3 - 18 \mathbb{I} d\gamma^2 x_2 x_3 y_1^3 + 84 h_1 x_2 x_3 y_1^3 + \\
& 12 d\gamma h_1 x_2 x_3 y_1^3 - 210 h_2 x_2 x_3 y_1^3 - 30 d\gamma h_2 x_2 x_3 y_1^3 + 840 y_1^4 + 428 d\gamma y_1^4 + 72 d\gamma^2 y_1^4 + 4 d\gamma^3 y_1^4 + \\
& 168 \mathbb{I} h_1 y_1^4 + 52 \mathbb{I} d\gamma h_1 y_1^4 + 4 \mathbb{I} d\gamma^2 h_1 y_1^4 - 336 \mathbb{I} h_2 y_1^4 - 104 \mathbb{I} d\gamma h_2 y_1^4 - 8 \mathbb{I} d\gamma^2 h_2 y_1^4 + 42 x_2^2 y_1^4 + \\
& 6 d\gamma x_2^2 y_1^4 + 14 x_3^2 y_1^4 + 2 d\gamma x_3^2 y_1^4 - 1260 h_1 x_1 x_3 y_2 - 642 d\gamma h_1 x_1 x_3 y_2 - 108 d\gamma^2 h_1 x_1 x_3 y_2 - \\
& 6 d\gamma^3 h_1 x_1 x_3 y_2 - 756 \mathbb{I} h_1^2 x_1 x_3 y_2 - 234 \mathbb{I} d\gamma h_1^2 x_1 x_3 y_2 - 18 \mathbb{I} d\gamma^2 h_1^2 x_1 x_3 y_2 + 84 h_1^3 x_1 x_3 y_2 + \\
& 12 d\gamma h_1^3 x_1 x_3 y_2 + 1260 h_2 x_1 x_3 y_2 + 642 d\gamma h_2 x_1 x_3 y_2 + 108 d\gamma^2 h_2 x_1 x_3 y_2 + 6 d\gamma^3 h_2 x_1 x_3 y_2 - \\
& 294 h_1^2 h_2 x_1 x_3 y_2 - 42 d\gamma h_1^2 h_2 x_1 x_3 y_2 + 756 \mathbb{I} h_2^2 x_1 x_3 y_2 + 234 \mathbb{I} d\gamma h_2^2 x_1 x_3 y_2 + 18 \mathbb{I} d\gamma^2 h_2^2 x_1 x_3 y_2 + \\
& 294 h_1 h_2^2 x_1 x_3 y_2 + 42 d\gamma h_1 h_2^2 x_1 x_3 y_2 - 84 h_2^3 x_1 x_3 y_2 - 12 d\gamma h_2^3 x_1 x_3 y_2 - 756 \mathbb{I} x_1^3 x_3 y_2 - \\
& 234 \mathbb{I} d\gamma x_1^3 x_3 y_2 - 18 \mathbb{I} d\gamma^2 x_1^3 x_3 y_2 + 84 h_1 x_1^3 x_3 y_2 + 12 d\gamma h_1 x_1^3 x_3 y_2 - 210 h_2 x_1^3 x_3 y_2 - \\
& 30 d\gamma h_2 x_1^3 x_3 y_2 + 756 \mathbb{I} x_1 x_2^2 x_3 y_2 + 234 \mathbb{I} d\gamma x_1 x_2^2 x_3 y_2 + 18 \mathbb{I} d\gamma^2 x_1 x_2^2 x_3 y_2 + 210 h_1 x_1 x_2^2 x_3 y_2 + \\
& 30 d\gamma h_1 x_1 x_2^2 x_3 y_2 - 84 h_2 x_1 x_2^2 x_3 y_2 - 12 d\gamma h_2 x_1 x_2^2 x_3 y_2 - 294 h_1 x_1 x_3^3 y_2 - 42 d\gamma h_1 x_1 x_3^3 y_2 + \\
& 294 h_2 x_1 x_3^3 y_2 + 42 d\gamma h_2 x_1 x_3^3 y_2 - 504 x_1 x_2 x_3^3 y_1 y_2 - 72 d\gamma x_1 x_2 x_3^3 y_1 y_2 - 756 \mathbb{I} x_1 x_3 y_1^2 y_2 - \\
& 234 \mathbb{I} d\gamma x_1 x_3 y_1^2 y_2 - 18 \mathbb{I} d\gamma^2 x_1 x_3 y_1^2 y_2 + 84 h_1 x_1 x_3 y_1^2 y_2 + 12 d\gamma h_1 x_1 x_3 y_1^2 y_2 - 210 h_2 x_1 x_3 y_1^2 y_2 - \\
& 30 d\gamma h_2 x_1 x_3 y_1^2 y_2 + 12 600 y_2^2 + 13 770 d\gamma y_2^2 + 5875 d\gamma^2 y_2^2 + 1225 d\gamma^3 y_2^2 + 125 d\gamma^4 y_2^2 + 5 d\gamma^5 y_2^2 + \\
& 1680 \mathbb{I} h_1 y_2^2 + 1276 \mathbb{I} d\gamma h_1 y_2^2 + 358 \mathbb{I} d\gamma^2 h_1 y_2^2 + 44 \mathbb{I} d\gamma^3 h_1 y_2^2 + 2 \mathbb{I} d\gamma^4 h_1 y_2^2 + 3570 h_2^2 y_2^2 + \\
& 1819 d\gamma h_2^2 y_2^2 + 306 d\gamma^2 h_2^2 y_2^2 + 17 d\gamma^3 h_2^2 y_2^2 + 588 \mathbb{I} h_1^3 y_2^2 + 182 \mathbb{I} d\gamma h_1^3 y_2^2 + 14 \mathbb{I} d\gamma^2 h_1^3 y_2^2 + \\
& 4200 \mathbb{I} h_2 y_2^2 + 3190 \mathbb{I} d\gamma h_2 y_2^2 + 895 \mathbb{I} d\gamma^2 h_2 y_2^2 + 110 \mathbb{I} d\gamma^3 h_2 y_2^2 + 5 \mathbb{I} d\gamma^4 h_2 y_2^2 - 4200 h_1 h_2 y_2^2 - \\
& 2140 d\gamma h_1 h_2 y_2^2 - 360 d\gamma^2 h_1 h_2 y_2^2 - 20 d\gamma^3 h_1 h_2 y_2^2 + 378 \mathbb{I} h_1^2 h_2 y_2^2 + 117 \mathbb{I} d\gamma h_1^2 h_2 y_2^2 + \\
& 9 \mathbb{I} d\gamma^2 h_1^2 h_2 y_2^2 + 1680 h_2^2 y_2^2 + 856 d\gamma h_2^2 y_2^2 + 144 d\gamma^2 h_2^2 y_2^2 + 8 d\gamma^3 h_2^2 y_2^2 - 1008 \mathbb{I} h_1 h_2^2 y_2^2 - \\
& 312 \mathbb{I} d\gamma h_1 h_2^2 y_2^2 - 24 \mathbb{I} d\gamma^2 h_1 h_2^2 y_2^2 + 336 \mathbb{I} h_2^3 y_2^2 + 104 \mathbb{I} d\gamma h_2^3 y_2^2 + 8 \mathbb{I} d\gamma^2 h_2^3 y_2^2 + 2940 x_1^2 y_2^2 + \\
& 1498 d\gamma x_1^2 y_2^2 + 252 d\gamma^2 x_1^2 y_2^2 + 14 d\gamma^3 x_1^2 y_2^2 + 588 \mathbb{I} h_1 x_1^2 y_2^2 + 182 \mathbb{I} d\gamma h_1 x_1^2 y_2^2 + 14 \mathbb{I} d\gamma^2 h_1 x_1^2 y_2^2 + \\
& 42 h_2^2 x_1^2 y_2^2 + 6 d\gamma h_2^2 x_1^2 y_2^2 + 588 \mathbb{I} h_2 x_1^2 y_2^2 + 182 \mathbb{I} d\gamma h_2 x_1^2 y_2^2 + 14 \mathbb{I} d\gamma^2 h_2 x_1^2 y_2^2 - 42 h_1 h_2 x_1^2 y_2^2 - \\
& 6 d\gamma h_1 h_2 x_1^2 y_2^2 + 42 h_2^2 x_1^2 y_2^2 + 6 d\gamma h_2^2 x_1^2 y_2^2 + 42 x_1^4 y_2^2 + 6 d\gamma x_1^4 y_2^2 + 1680 x_2^2 y_2^2 + 856 d\gamma x_2^2 y_2^2 + \\
& 144 d\gamma^2 x_2^2 y_2^2 + 8 d\gamma^3 x_2^2 y_2^2 - 672 \mathbb{I} h_1 x_2^2 y_2^2 - 208 \mathbb{I} d\gamma h_1 x_2^2 y_2^2 - 16 \mathbb{I} d\gamma^2 h_1 x_2^2 y_2^2 + 336 \mathbb{I} h_2 x_2^2 y_2^2 + \\
& 104 \mathbb{I} d\gamma h_2 x_2^2 y_2^2 + 8 \mathbb{I} d\gamma^2 h_2 x_2^2 y_2^2 + 84 x_1^2 x_2^2 y_2^2 + 12 d\gamma x_1^2 x_2^2 y_2^2 + 1890 x_3^2 y_2^2 + 963 d\gamma x_3^2 y_2^2 + \\
& 162 d\gamma^2 x_3^2 y_2^2 + 9 d\gamma^3 x_3^2 y_2^2 + 462 \mathbb{I} h_1 x_3^2 y_2^2 + 143 \mathbb{I} d\gamma h_1 x_3^2 y_2^2 + 11 \mathbb{I} d\gamma^2 h_1 x_3^2 y_2^2 + 196 h_2^2 x_3^2 y_2^2 + \\
& 28 d\gamma h_2^2 x_3^2 y_2^2 - 168 \mathbb{I} h_2 x_3^2 y_2^2 - 52 \mathbb{I} d\gamma h_2 x_3^2 y_2^2 - 4 \mathbb{I} d\gamma^2 h_2 x_3^2 y_2^2 - 238 h_1 h_2 x_3^2 y_2^2 - 34 d\gamma h_1 h_2 x_3^2 y_2^2 +
\end{aligned}$$

$$\begin{aligned}
& 70 h_2^2 x_3^2 y_2^2 + 10 d_Y h_2^2 x_3^2 y_2^2 - 182 x_1^2 x_3^2 y_2^2 - 26 d_Y x_1^2 x_3^2 y_2^2 + 28 x_2^2 x_3^2 y_2^2 + 4 d_Y x_2^2 x_3^2 y_2^2 + 28 x_3^4 y_2^2 + \\
& 4 d_Y x_3^4 y_2^2 + 756 \mathbb{I} x_2 x_3 y_1 y_2^2 + 234 \mathbb{I} d_Y x_2 x_3 y_1 y_2^2 + 18 \mathbb{I} d_Y^2 x_2 x_3 y_1 y_2^2 + 210 h_1 x_2 x_3 y_1 y_2^2 + \\
& 30 d_Y h_1 x_2 x_3 y_1 y_2^2 - 84 h_2 x_2 x_3 y_1 y_2^2 - 12 d_Y h_2 x_2 x_3 y_1 y_2^2 + 2940 y_1^2 y_2^2 + 1498 d_Y y_1^2 y_2^2 + \\
& 252 d_Y^2 y_1^2 y_2^2 + 14 d_Y^3 y_1^2 y_2^2 + 588 \mathbb{I} h_1 y_1^2 y_2^2 + 182 \mathbb{I} d_Y h_1 y_1^2 y_2^2 + 14 \mathbb{I} d_Y^2 h_1 y_1^2 y_2^2 + 42 h_1^2 y_1^2 y_2^2 + \\
& 6 d_Y h_1^2 y_1^2 y_2^2 + 588 \mathbb{I} h_2 y_1^2 y_2^2 + 182 \mathbb{I} d_Y h_2 y_1^2 y_2^2 + 14 \mathbb{I} d_Y^2 h_2 y_1^2 y_2^2 - 42 h_1 h_2 y_1^2 y_2^2 - 6 d_Y h_1 h_2 y_1^2 y_2^2 + \\
& 42 h_2^2 y_1^2 y_2^2 + 6 d_Y h_2^2 y_1^2 y_2^2 + 84 x_1^2 y_1^2 y_2^2 + 12 d_Y x_1^2 y_1^2 y_2^2 + 84 x_2^2 y_1^2 y_2^2 + 12 d_Y x_2^2 y_1^2 y_2^2 + 70 x_3^2 y_1^2 y_2^2 + \\
& 10 d_Y x_3^2 y_1^2 y_2^2 + 42 y_1^4 y_2^2 + 6 d_Y y_1^4 y_2^2 + 756 \mathbb{I} x_1 x_3 y_2^3 + 234 \mathbb{I} d_Y x_1 x_3 y_2^3 + 18 \mathbb{I} d_Y^2 x_1 x_3 y_2^3 + \\
& 210 h_1 x_1 x_3 y_2^3 + 30 d_Y h_1 x_1 x_3 y_2^3 - 84 h_2 x_1 x_3 y_2^3 - 12 d_Y h_2 x_1 x_3 y_2^3 + 840 y_2^4 + 428 d_Y y_2^4 + \\
& 72 d_Y^2 y_2^4 + 4 d_Y^3 y_2^4 - 336 \mathbb{I} h_1 y_2^4 - 104 \mathbb{I} d_Y h_1 y_2^4 - 8 \mathbb{I} d_Y^2 h_1 y_2^4 + 168 \mathbb{I} h_2 y_2^4 + 52 \mathbb{I} d_Y h_2 y_2^4 + \\
& 4 \mathbb{I} d_Y^2 h_2 y_2^4 + 42 x_1^2 y_2^4 + 6 d_Y x_1^2 y_2^4 + 14 x_3^2 y_2^4 + 2 d_Y x_3^2 y_2^4 + 42 y_1^2 y_2^4 + 6 d_Y y_1^2 y_2^4 + 1260 h_1 x_1 x_2 y_3 + \\
& 642 d_Y h_1 x_1 x_2 y_3 + 108 d_Y^2 h_1 x_1 x_2 y_3 + 6 d_Y^3 h_1 x_1 x_2 y_3 + 756 \mathbb{I} h_1^2 x_1 x_2 y_3 + 234 \mathbb{I} d_Y h_1^2 x_1 x_2 y_3 + \\
& 18 \mathbb{I} d_Y^2 h_1^2 x_1 x_2 y_3 - 84 h_1^3 x_1 x_2 y_3 - 12 d_Y h_1^3 x_1 x_2 y_3 - 1260 h_2 x_1 x_2 y_3 - 642 d_Y h_2 x_1 x_2 y_3 - \\
& 108 d_Y^2 h_2 x_1 x_2 y_3 - 6 d_Y^3 h_2 x_1 x_2 y_3 + 294 h_1^2 h_2 x_1 x_2 y_3 + 42 d_Y h_1^2 h_2 x_1 x_2 y_3 - 756 \mathbb{I} h_2^2 x_1 x_2 y_3 - \\
& 234 \mathbb{I} d_Y h_2^2 x_1 x_2 y_3 - 18 \mathbb{I} d_Y^2 h_2^2 x_1 x_2 y_3 - 294 h_1 h_2^2 x_1 x_2 y_3 - 42 d_Y h_1 h_2^2 x_1 x_2 y_3 + 84 h_2^3 x_1 x_2 y_3 + \\
& 12 d_Y h_2^3 x_1 x_2 y_3 + 756 \mathbb{I} x_1^3 x_2 y_3 + 234 \mathbb{I} d_Y x_1^3 x_2 y_3 + 18 \mathbb{I} d_Y^2 x_1^3 x_2 y_3 - 84 h_1 x_1^3 x_2 y_3 - \\
& 12 d_Y h_1 x_1^3 x_2 y_3 + 210 h_2 x_1^3 x_2 y_3 + 30 d_Y h_2 x_1^3 x_2 y_3 - 756 \mathbb{I} x_1 x_2^3 y_3 - 234 \mathbb{I} d_Y x_1 x_2^3 y_3 - \\
& 18 \mathbb{I} d_Y^2 x_1 x_2^3 y_3 - 210 h_1 x_1 x_2^3 y_3 - 30 d_Y h_1 x_1 x_2^3 y_3 + 84 h_2 x_1 x_2^3 y_3 + 12 d_Y h_2 x_1 x_2^3 y_3 + \\
& 294 h_1 x_1 x_2 x_3^2 y_3 + 42 d_Y h_1 x_1 x_2 x_3^2 y_3 - 294 h_2 x_1 x_2 x_3^2 y_3 - 42 d_Y h_2 x_1 x_2 x_3^2 y_3 + 504 x_1 x_2^2 x_3 y_1 y_3 + \\
& 72 d_Y x_1 x_2^2 x_3 y_1 y_3 + 756 \mathbb{I} x_1 x_2 y_1^2 y_3 + 234 \mathbb{I} d_Y x_1 x_2 y_1^2 y_3 + 18 \mathbb{I} d_Y^2 x_1 x_2 y_1^2 y_3 - 84 h_1 x_1 x_2 y_1^2 y_3 - \\
& 12 d_Y h_1 x_1 x_2 y_1^2 y_3 + 210 h_2 x_1 x_2 y_1^2 y_3 + 30 d_Y h_2 x_1 x_2 y_1^2 y_3 + 504 x_1^2 x_2 x_3 y_2 y_3 + 72 d_Y x_1^2 x_2 x_3 y_2 y_3 - \\
& 1260 h_1 y_1 y_2 y_3 - 642 d_Y h_1 y_1 y_2 y_3 - 108 d_Y^2 h_1 y_1 y_2 y_3 - 6 d_Y^3 h_1 y_1 y_2 y_3 - 756 \mathbb{I} h_1^2 y_1 y_2 y_3 - \\
& 234 \mathbb{I} d_Y h_1^2 y_1 y_2 y_3 - 18 \mathbb{I} d_Y^2 h_1^2 y_1 y_2 y_3 + 84 h_1^3 y_1 y_2 y_3 + 12 d_Y h_1^3 y_1 y_2 y_3 + 1260 h_2 y_1 y_2 y_3 + \\
& 642 d_Y h_2 y_1 y_2 y_3 + 108 d_Y^2 h_2 y_1 y_2 y_3 + 6 d_Y^3 h_2 y_1 y_2 y_3 - 294 h_1^2 h_2 y_1 y_2 y_3 - 42 d_Y h_1^2 h_2 y_1 y_2 y_3 + \\
& 756 \mathbb{I} h_2^2 y_1 y_2 y_3 + 234 \mathbb{I} d_Y h_2^2 y_1 y_2 y_3 + 18 \mathbb{I} d_Y^2 h_2^2 y_1 y_2 y_3 + 294 h_1 h_2^2 y_1 y_2 y_3 + 42 d_Y h_1 h_2^2 y_1 y_2 y_3 - \\
& 84 h_2^3 y_1 y_2 y_3 - 12 d_Y h_2^3 y_1 y_2 y_3 - 756 \mathbb{I} x_1^2 y_1 y_2 y_3 - 234 \mathbb{I} d_Y x_1^2 y_1 y_2 y_3 - 18 \mathbb{I} d_Y^2 x_1^2 y_1 y_2 y_3 + \\
& 84 h_1 x_1^2 y_1 y_2 y_3 + 12 d_Y h_1 x_1^2 y_1 y_2 y_3 - 210 h_2 x_1^2 y_1 y_2 y_3 - 30 d_Y h_2 x_1^2 y_1 y_2 y_3 + 756 \mathbb{I} x_2^2 y_1 y_2 y_3 + \\
& 234 \mathbb{I} d_Y x_2^2 y_1 y_2 y_3 + 18 \mathbb{I} d_Y^2 x_2^2 y_1 y_2 y_3 + 210 h_1 x_2^2 y_1 y_2 y_3 + 30 d_Y h_1 x_2^2 y_1 y_2 y_3 - \\
& 84 h_2 x_2^2 y_1 y_2 y_3 - 12 d_Y h_2 x_2^2 y_1 y_2 y_3 - 294 h_1 x_3^2 y_1 y_2 y_3 - 42 d_Y h_1 x_3^2 y_1 y_2 y_3 + 294 h_2 x_3^2 y_1 y_2 y_3 + \\
& 42 d_Y h_2 x_3^2 y_1 y_2 y_3 - 504 x_2 x_3 y_1^2 y_2 y_3 - 72 d_Y x_2 x_3 y_1^2 y_2 y_3 - 756 \mathbb{I} y_1^3 y_2 y_3 - 234 \mathbb{I} d_Y y_1^3 y_2 y_3 - \\
& 18 \mathbb{I} d_Y^2 y_1^3 y_2 y_3 + 84 h_1 y_1^3 y_2 y_3 + 12 d_Y h_1 y_1^3 y_2 y_3 - 210 h_2 y_1^3 y_2 y_3 - 30 d_Y h_2 y_1^3 y_2 y_3 - \\
& 756 \mathbb{I} x_1 x_2 y_2^2 y_3 - 234 \mathbb{I} d_Y x_1 x_2 y_2^2 y_3 - 18 \mathbb{I} d_Y^2 x_1 x_2 y_2^2 y_3 - 210 h_1 x_1 x_2 y_2^2 y_3 - 30 d_Y h_1 x_1 x_2 y_2^2 y_3 + \\
& 84 h_2 x_1 x_2 y_2^2 y_3 + 12 d_Y h_2 x_1 x_2 y_2^2 y_3 - 504 x_1 x_3 y_1 y_2^2 y_3 - 72 d_Y x_1 x_3 y_1 y_2^2 y_3 + 756 \mathbb{I} y_1 y_2^3 y_3 + \\
& 234 \mathbb{I} d_Y y_1 y_2^3 y_3 + 18 \mathbb{I} d_Y^2 y_1 y_2^3 y_3 + 210 h_1 y_1 y_2^3 y_3 + 30 d_Y h_1 y_1 y_2^3 y_3 - 84 h_2 y_1 y_2^3 y_3 - \\
& 12 d_Y h_2 y_1 y_2^3 y_3 + 10080 y_3^2 + 11016 d_Y y_3^2 + 4700 d_Y^2 y_3^2 + 980 d_Y^3 y_3^2 + 100 d_Y^4 y_3^2 + 4 d_Y^5 y_3^2 + \\
& 1680 \mathbb{I} h_1 y_3^2 + 1276 \mathbb{I} d_Y h_1 y_3^2 + 358 \mathbb{I} d_Y^2 h_1 y_3^2 + 44 \mathbb{I} d_Y^3 h_1 y_3^2 + 2 \mathbb{I} d_Y^4 h_1 y_3^2 + 1260 h_1^2 y_3^2 + \\
& 642 d_Y h_1^2 y_3^2 + 108 d_Y^2 h_1^2 y_3^2 + 6 d_Y^3 h_1^2 y_3^2 - 168 \mathbb{I} h_1^3 y_3^2 - 52 \mathbb{I} d_Y h_1^3 y_3^2 - 4 \mathbb{I} d_Y^2 h_1^3 y_3^2 + 56 h_1^4 y_3^2 + \\
& 8 d_Y h_1^4 y_3^2 + 1680 \mathbb{I} h_2 y_3^2 + 1276 \mathbb{I} d_Y h_2 y_3^2 + 358 \mathbb{I} d_Y^2 h_2 y_3^2 + 44 \mathbb{I} d_Y^3 h_2 y_3^2 + 2 \mathbb{I} d_Y^4 h_2 y_3^2 - \\
& 1260 h_1 h_2 y_3^2 - 642 d_Y h_1 h_2 y_3^2 - 108 d_Y^2 h_1 h_2 y_3^2 - 6 d_Y^3 h_1 h_2 y_3^2 + 252 \mathbb{I} h_1^2 h_2 y_3^2 + 78 \mathbb{I} d_Y h_1^2 h_2 y_3^2 + \\
& 6 \mathbb{I} d_Y^2 h_1^2 h_2 y_3^2 - 280 h_1^3 h_2 y_3^2 - 40 d_Y h_1^3 h_2 y_3^2 + 1260 h_2^2 y_3^2 + 642 d_Y h_2^2 y_3^2 + 108 d_Y^2 h_2^2 y_3^2 + \\
& 6 d_Y^3 h_2^2 y_3^2 + 252 \mathbb{I} h_1 h_2^2 y_3^2 + 78 \mathbb{I} d_Y h_1 h_2^2 y_3^2 + 6 \mathbb{I} d_Y^2 h_1 h_2^2 y_3^2 + 462 h_1^2 h_2^2 y_3^2 + 66 d_Y h_1^2 h_2^2 y_3^2 - \\
& 168 \mathbb{I} h_2^3 y_3^2 - 52 \mathbb{I} d_Y h_2^3 y_3^2 - 4 \mathbb{I} d_Y^2 h_2^3 y_3^2 - 280 h_1 h_2^3 y_3^2 - 40 d_Y h_1 h_2^3 y_3^2 + 56 h_2^4 y_3^2 + 8 d_Y h_2^4 y_3^2 + \\
& 1890 x_1^2 y_3^2 + 963 d_Y x_1^2 y_3^2 + 162 d_Y^2 x_1^2 y_3^2 + 9 d_Y^3 x_1^2 y_3^2 - 168 \mathbb{I} h_1 x_1^2 y_3^2 - 52 \mathbb{I} d_Y h_1 x_1^2 y_3^2 - \\
& 4 \mathbb{I} d_Y^2 h_1 x_1^2 y_3^2 + 70 h_1^2 x_1^2 y_3^2 + 10 d_Y h_1^2 x_1^2 y_3^2 + 462 \mathbb{I} h_2 x_1^2 y_3^2 + 143 \mathbb{I} d_Y h_2 x_1^2 y_3^2 + 11 \mathbb{I} d_Y^2 h_2 x_1^2 y_3^2 - \\
& 238 h_1 h_2 x_1^2 y_3^2 - 34 d_Y h_1 h_2 x_1^2 y_3^2 + 196 h_2^2 x_1^2 y_3^2 + 28 d_Y h_2^2 x_1^2 y_3^2 + 14 x_1^4 y_3^2 + 2 d_Y x_1^4 y_3^2 + 1890 x_2^2 y_3^2 + \\
& 963 d_Y x_2^2 y_3^2 + 162 d_Y^2 x_2^2 y_3^2 + 9 d_Y^3 x_2^2 y_3^2 + 462 \mathbb{I} h_1 x_2^2 y_3^2 + 143 \mathbb{I} d_Y h_1 x_2^2 y_3^2 + 11 \mathbb{I} d_Y^2 h_1 x_2^2 y_3^2 + \\
& 196 h_1^2 x_2^2 y_3^2 + 28 d_Y h_1^2 x_2^2 y_3^2 - 168 \mathbb{I} h_2 x_2^2 y_3^2 - 52 \mathbb{I} d_Y h_2 x_2^2 y_3^2 - 4 \mathbb{I} d_Y^2 h_2 x_2^2 y_3^2 - 238 h_1 h_2 x_2^2 y_3^2 - \\
& 34 d_Y h_1 h_2 x_2^2 y_3^2 + 70 h_2^2 x_2^2 y_3^2 + 10 d_Y h_2^2 x_2^2 y_3^2 - 182 x_1^2 x_2^2 y_3^2 - 26 d_Y x_1^2 x_2^2 y_3^2 + 14 x_1^4 y_3^2 + 2 d_Y x_1^4 y_3^2 + \\
& 2100 x_3^2 y_3^2 + 1070 d_Y x_3^2 y_3^2 + 180 d_Y^2 x_3^2 y_3^2 + 10 d_Y^3 x_3^2 y_3^2 + 84 \mathbb{I} h_1 x_3^2 y_3^2 + 26 \mathbb{I} d_Y h_1 x_3^2 y_3^2 +
\end{aligned}$$

$$\begin{aligned}
& 2 \, \mathfrak{d} \gamma^2 h_1 x_3^2 y_3^2 - 112 h_1^2 x_3^2 y_3^2 - 16 \, \mathfrak{d} \gamma h_1^2 x_3^2 y_3^2 + 84 \, \mathfrak{d} h_2 x_3^2 y_3^2 + 26 \, \mathfrak{d} \gamma h_2 x_3^2 y_3^2 + 2 \, \mathfrak{d} \gamma^2 h_2 x_3^2 y_3^2 + \\
& 280 h_1 h_2 x_3^2 y_3^2 + 40 \, \mathfrak{d} \gamma h_1 h_2 x_3^2 y_3^2 - 112 h_2^2 x_3^2 y_3^2 - 16 \, \mathfrak{d} \gamma h_2^2 x_3^2 y_3^2 + 56 x_1^2 x_3^2 y_3^2 + 8 \, \mathfrak{d} \gamma x_1^2 x_3^2 y_3^2 + \\
& 56 x_2^2 x_3^2 y_3^2 + 8 \, \mathfrak{d} \gamma x_2^2 x_3^2 y_3^2 + 42 x_3^4 y_3^2 + 6 \, \mathfrak{d} \gamma x_3^4 y_3^2 - 294 h_1 x_2 x_3 y_1 y_3^2 - 42 \, \mathfrak{d} \gamma h_1 x_2 x_3 y_1 y_3^2 + \\
& 294 h_2 x_2 x_3 y_1 y_3^2 + 42 \, \mathfrak{d} \gamma h_2 x_2 x_3 y_1 y_3^2 + 1890 y_1^2 y_3^2 + 963 \, \mathfrak{d} \gamma y_1^2 y_3^2 + 162 \, \mathfrak{d} \gamma^2 y_1^2 y_3^2 + \\
& 9 \, \mathfrak{d} \gamma^3 y_1^2 y_3^2 - 168 \, \mathfrak{d} h_1 y_1^2 y_3^2 - 52 \, \mathfrak{d} \gamma h_1 y_1^2 y_3^2 - 4 \, \mathfrak{d} \gamma^2 h_1 y_1^2 y_3^2 + 70 h_1^2 y_1^2 y_3^2 + 10 \, \mathfrak{d} \gamma h_1^2 y_1^2 y_3^2 + \\
& 462 \, \mathfrak{d} h_2 y_1^2 y_3^2 + 143 \, \mathfrak{d} \gamma h_2 y_1^2 y_3^2 + 11 \, \mathfrak{d} \gamma^2 h_2 y_1^2 y_3^2 - 238 h_1 h_2 y_1^2 y_3^2 - 34 \, \mathfrak{d} \gamma h_1 h_2 y_1^2 y_3^2 + \\
& 196 h_2^2 y_1^2 y_3^2 + 28 \, \mathfrak{d} \gamma h_2^2 y_1^2 y_3^2 + 28 x_1^2 y_1^2 y_3^2 + 4 \, \mathfrak{d} \gamma x_1^2 y_1^2 y_3^2 + 70 x_2^2 y_1^2 y_3^2 + 10 \, \mathfrak{d} \gamma x_2^2 y_1^2 y_3^2 + \\
& 56 x_3^2 y_1^2 y_3^2 + 8 \, \mathfrak{d} \gamma x_3^2 y_1^2 y_3^2 + 14 y_1^4 y_3^2 + 2 \, \mathfrak{d} \gamma y_1^4 y_3^2 - 294 h_1 x_1 x_3 y_2 y_3^2 - 42 \, \mathfrak{d} \gamma h_1 x_1 x_3 y_2 y_3^2 + \\
& 294 h_2 x_1 x_3 y_2 y_3^2 + 42 \, \mathfrak{d} \gamma h_2 x_1 x_3 y_2 y_3^2 + 504 x_1 x_2 y_1 y_2 y_3^2 + 72 \, \mathfrak{d} \gamma x_1 x_2 y_1 y_2 y_3^2 + 1890 y_2^2 y_3^2 + \\
& 963 \, \mathfrak{d} \gamma y_2^2 y_3^2 + 162 \, \mathfrak{d} \gamma^2 y_2^2 y_3^2 + 9 \, \mathfrak{d} \gamma^3 y_2^2 y_3^2 + 462 \, \mathfrak{d} h_1 y_2^2 y_3^2 + 143 \, \mathfrak{d} \gamma h_1 y_2^2 y_3^2 + 11 \, \mathfrak{d} \gamma^2 h_1 y_2^2 y_3^2 + \\
& 196 h_1^2 y_2^2 y_3^2 + 28 \, \mathfrak{d} \gamma h_1^2 y_2^2 y_3^2 - 168 \, \mathfrak{d} h_2 y_2^2 y_3^2 - 52 \, \mathfrak{d} \gamma h_2 y_2^2 y_3^2 - 4 \, \mathfrak{d} \gamma^2 h_2 y_2^2 y_3^2 - 238 h_1 h_2 y_2^2 y_3^2 - \\
& 34 \, \mathfrak{d} \gamma h_1 h_2 y_2^2 y_3^2 + 70 h_2^2 y_2^2 y_3^2 + 10 \, \mathfrak{d} \gamma h_2^2 y_2^2 y_3^2 + 70 x_1^2 y_2^2 y_3^2 + 10 \, \mathfrak{d} \gamma x_1^2 y_2^2 y_3^2 + 28 x_2^2 y_2^2 y_3^2 + \\
& 4 \, \mathfrak{d} \gamma x_2^2 y_2^2 y_3^2 + 56 x_3^2 y_2^2 y_3^2 + 8 \, \mathfrak{d} \gamma x_3^2 y_2^2 y_3^2 - 182 y_1^2 y_2^2 y_3^2 - 26 \, \mathfrak{d} \gamma y_1^2 y_2^2 y_3^2 + 14 y_2^4 y_3^2 + 2 \, \mathfrak{d} \gamma y_2^4 y_3^2 + \\
& 294 h_1 x_1 x_2 y_3^3 + 42 \, \mathfrak{d} \gamma h_1 x_1 x_2 y_3^3 - 294 h_2 x_1 x_2 y_3^3 - 42 \, \mathfrak{d} \gamma h_2 x_1 x_2 y_3^3 - 294 h_1 y_1 y_2 y_3^3 - \\
& 42 \, \mathfrak{d} \gamma h_1 y_1 y_2 y_3^3 + 294 h_2 y_1 y_2 y_3^3 + 42 \, \mathfrak{d} \gamma h_2 y_1 y_2 y_3^3 + 1050 y_3^4 + 535 \, \mathfrak{d} \gamma y_3^4 + 90 \, \mathfrak{d} \gamma^2 y_3^4 + 5 \, \mathfrak{d} \gamma^3 y_3^4 + \\
& 42 \, \mathfrak{d} h_1 y_3^4 + 13 \, \mathfrak{d} \gamma h_1 y_3^4 + \mathfrak{d} \gamma^2 h_1 y_3^4 - 56 h_1^2 y_3^4 - 8 \, \mathfrak{d} \gamma h_1^2 y_3^4 + 42 \, \mathfrak{d} h_2 y_3^4 + 13 \, \mathfrak{d} \gamma h_2 y_3^4 + \\
& \mathfrak{d} \gamma^2 h_2 y_3^4 + 140 h_1 h_2 y_3^4 + 20 \, \mathfrak{d} \gamma h_1 h_2 y_3^4 - 56 h_2^2 y_3^4 - 8 \, \mathfrak{d} \gamma h_2^2 y_3^4 + 28 x_1^2 y_3^4 + 4 \, \mathfrak{d} \gamma x_1^2 y_3^4 + 28 x_2^2 y_3^4 + \\
& 4 \, \mathfrak{d} \gamma x_2^2 y_3^4 + 42 x_3^2 y_3^4 + 6 \, \mathfrak{d} \gamma x_3^2 y_3^4 + 28 y_1^4 y_3^4 + 4 \, \mathfrak{d} \gamma y_1^4 y_3^4 + 28 y_2^4 y_3^4 + 4 \, \mathfrak{d} \gamma y_2^4 y_3^4 + 14 y_3^6 + 2 \, \mathfrak{d} \gamma y_3^6
\end{aligned}$$

$\text{In}[*]:= (\star \, Y_{\alpha_1}^6 \, \pi^{\lambda_{1,1}} \star)$

$k = 1;$

$$\begin{aligned}
& - \left( -\frac{1}{2} \left( (2 y_1 - \mathfrak{d} 2 x_1) D[A[[1, k]], h_1] - (2 h_1 - h_2) D[A[[1, k]], y_1] + \right. \right. \\
& \quad \mathfrak{d} (2 h_1 - h_2) D[A[[1, k]], x_1] + (x_2 - \mathfrak{d} y_2) D[A[[1, k]], x_3] + (y_2 + \mathfrak{d} x_2) D[A[[1, k]], y_3] + \\
& \quad \left. \left. (-x_3 - \mathfrak{d} y_3) D[A[[1, k]], x_2] + (-y_3 + \mathfrak{d} x_3) D[A[[1, k]], y_2] \right) \right) // \text{Expand}
\end{aligned}$$

$\text{In}[*]:=$

$$\begin{aligned}
& 5040 x_1 + 8028 \, \mathfrak{d} \gamma x_1 + 5104 \, \mathfrak{d} \gamma^2 x_1 + 1665 \, \mathfrak{d} \gamma^3 x_1 + 295 \, \mathfrak{d} \gamma^4 x_1 + 27 \, \mathfrak{d} \gamma^5 x_1 + \mathfrak{d} \gamma^6 x_1 + 4200 h_1^2 x_1 + \\
& 3190 \, \mathfrak{d} \gamma h_1^2 x_1 + 895 \, \mathfrak{d} \gamma^2 h_1^2 x_1 + 110 \, \mathfrak{d} \gamma^3 h_1^2 x_1 + 5 \, \mathfrak{d} \gamma^4 h_1^2 x_1 + 168 h_1^4 x_1 + 52 \, \mathfrak{d} \gamma h_1^4 x_1 + \\
& 4 \, \mathfrak{d} \gamma^2 h_1^4 x_1 + 7560 \, \mathfrak{d} h_2 x_1 + 8262 \, \mathfrak{d} \gamma h_2 x_1 + 3525 \, \mathfrak{d} \gamma^2 h_2 x_1 + 735 \, \mathfrak{d} \gamma^3 h_2 x_1 + \\
& 75 \, \mathfrak{d} \gamma^4 h_2 x_1 + 3 \, \mathfrak{d} \gamma^5 h_2 x_1 - 4200 h_1 h_2 x_1 - 3190 \, \mathfrak{d} \gamma h_1 h_2 x_1 - 895 \, \mathfrak{d} \gamma^2 h_1 h_2 x_1 - \\
& 110 \, \mathfrak{d} \gamma^3 h_1 h_2 x_1 - 5 \, \mathfrak{d} \gamma^4 h_1 h_2 x_1 + 2520 \, \mathfrak{d} h_1^2 h_2 x_1 + \dots 2078 \dots + 28 \, \mathfrak{d} x_2 y_2^2 y_3^3 + \\
& 4 \, \mathfrak{d} \gamma x_2 y_2^2 y_3^3 + 28 y_2^3 y_3^3 + 4 \, \mathfrak{d} \gamma y_2^3 y_3^3 + 42 x_1 y_3^4 + 13 \, \mathfrak{d} \gamma x_1 y_3^4 + \mathfrak{d} \gamma^2 x_1 y_3^4 + 21 \, \mathfrak{d} h_1 x_1 y_3^4 + \\
& 3 \, \mathfrak{d} \gamma h_1 x_1 y_3^4 - 21 \, \mathfrak{d} h_2 x_1 y_3^4 - 3 \, \mathfrak{d} \gamma h_2 x_1 y_3^4 + 14 x_2 x_3 y_3^4 + 2 \, \mathfrak{d} \gamma x_2 x_3 y_3^4 + 42 \, \mathfrak{d} y_1 y_3^4 + \\
& 13 \, \mathfrak{d} \gamma y_1 y_3^4 + \mathfrak{d} \gamma^2 y_1 y_3^4 - 21 h_1 y_1 y_3^4 - 3 \, \mathfrak{d} \gamma h_1 y_1 y_3^4 + 21 h_2 y_1 y_3^4 + 3 \, \mathfrak{d} \gamma h_2 y_1 y_3^4 - \\
& 14 \, \mathfrak{d} x_3 y_2 y_3^4 - 2 \, \mathfrak{d} \gamma x_3 y_2 y_3^4 + 14 \, \mathfrak{d} x_2 y_3^5 + 2 \, \mathfrak{d} \gamma x_2 y_3^5 + 14 y_2 y_3^5 + 2 \, \mathfrak{d} \gamma y_2 y_3^5
\end{aligned}$$

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$\text{Out}[*]= 0$

```

In[ ]:= (* Y6α1 πλ11,k *)
k = 2;
- ( - 1/2 ( (2 y1 - i 2 x1) D[A[[1, k]], h1] - (2 h1 - h2) D[A[[1, k]], y1] +
i (2 h1 - h2) D[A[[1, k]], x1] + (x2 - i y2) D[A[[1, k]], x3] + (y2 + i x2) D[A[[1, k]], y3] +
(-x3 - i y3) D[A[[1, k]], x2] + (-y3 + i x3) D[A[[1, k]], y2]) ) // Expand

```

Out[ ]:= 0

```

In[ ]:= (* Y6α1 πλ11,k *)
k = 3;
- ( - 1/2 ( (2 y1 - i 2 x1) D[A[[1, k]], h1] - (2 h1 - h2) D[A[[1, k]], y1] +
i (2 h1 - h2) D[A[[1, k]], x1] + (x2 - i y2) D[A[[1, k]], x3] + (y2 + i x2) D[A[[1, k]], y3] +
(-x3 - i y3) D[A[[1, k]], x2] + (-y3 + i x3) D[A[[1, k]], y2]) ) // Expand

```

In[ ]:=

7560 x<sub>1</sub> x<sub>2</sub> + 8262 d<sub>γ</sub> x<sub>1</sub> x<sub>2</sub> + 3525 d<sub>γ</sub><sup>2</sup> x<sub>1</sub> x<sub>2</sub> + 735 d<sub>γ</sub><sup>3</sup> x<sub>1</sub> x<sub>2</sub> + 75 d<sub>γ</sub><sup>4</sup> x<sub>1</sub> x<sub>2</sub> + 3 d<sub>γ</sub><sup>5</sup> x<sub>1</sub> x<sub>2</sub> +  
5040 i h<sub>1</sub> x<sub>1</sub> x<sub>2</sub> + 3828 i d<sub>γ</sub> h<sub>1</sub> x<sub>1</sub> x<sub>2</sub> + 1074 i d<sub>γ</sub><sup>2</sup> h<sub>1</sub> x<sub>1</sub> x<sub>2</sub> + 132 i d<sub>γ</sub><sup>3</sup> h<sub>1</sub> x<sub>1</sub> x<sub>2</sub> + 6 i d<sub>γ</sub><sup>4</sup> h<sub>1</sub> x<sub>1</sub> x<sub>2</sub> +  
630 h<sub>1</sub><sup>2</sup> x<sub>1</sub> x<sub>2</sub> + 321 d<sub>γ</sub> h<sub>1</sub><sup>2</sup> x<sub>1</sub> x<sub>2</sub> + 54 d<sub>γ</sub><sup>2</sup> h<sub>1</sub><sup>2</sup> x<sub>1</sub> x<sub>2</sub> + 3 d<sub>γ</sub><sup>3</sup> h<sub>1</sub><sup>2</sup> x<sub>1</sub> x<sub>2</sub> + 252 i h<sub>1</sub><sup>3</sup> x<sub>1</sub> x<sub>2</sub> +  
78 i d<sub>γ</sub> h<sub>1</sub><sup>3</sup> x<sub>1</sub> x<sub>2</sub> + 6 i d<sub>γ</sub><sup>2</sup> h<sub>1</sub><sup>3</sup> x<sub>1</sub> x<sub>2</sub> + 2520 i h<sub>2</sub> x<sub>1</sub> x<sub>2</sub> + 1914 i d<sub>γ</sub> h<sub>2</sub> x<sub>1</sub> x<sub>2</sub> + 537 i d<sub>γ</sub><sup>2</sup> h<sub>2</sub> x<sub>1</sub> x<sub>2</sub> +  
66 i d<sub>γ</sub><sup>3</sup> h<sub>2</sub> x<sub>1</sub> x<sub>2</sub> + ... 2458 ... + 26 d<sub>γ</sub> h<sub>1</sub> y<sub>2</sub><sup>2</sup> y<sub>3</sub><sup>3</sup> - 91 h<sub>2</sub> y<sub>2</sub><sup>2</sup> y<sub>3</sub><sup>3</sup> - 13 d<sub>γ</sub> h<sub>2</sub> y<sub>2</sub><sup>2</sup> y<sub>3</sub><sup>3</sup> + 84 x<sub>1</sub> x<sub>2</sub> y<sub>3</sub><sup>4</sup> +  
12 d<sub>γ</sub> x<sub>1</sub> x<sub>2</sub> y<sub>3</sub><sup>4</sup> - 42 x<sub>3</sub> y<sub>3</sub><sup>4</sup> - 13 d<sub>γ</sub> x<sub>3</sub> y<sub>3</sub><sup>4</sup> - d<sub>γ</sub><sup>2</sup> x<sub>3</sub> y<sub>3</sub><sup>4</sup> - 7 i h<sub>1</sub> x<sub>3</sub> y<sub>3</sub><sup>4</sup> - i d<sub>γ</sub> h<sub>1</sub> x<sub>3</sub> y<sub>3</sub><sup>4</sup> - 7 i h<sub>2</sub> x<sub>3</sub> y<sub>3</sub><sup>4</sup> -  
i d<sub>γ</sub> h<sub>2</sub> x<sub>3</sub> y<sub>3</sub><sup>4</sup> - 42 i x<sub>2</sub> y<sub>1</sub> y<sub>3</sub><sup>4</sup> - 6 i d<sub>γ</sub> x<sub>2</sub> y<sub>1</sub> y<sub>3</sub><sup>4</sup> - 42 i x<sub>1</sub> y<sub>2</sub> y<sub>3</sub><sup>4</sup> - 6 i d<sub>γ</sub> x<sub>1</sub> y<sub>2</sub> y<sub>3</sub><sup>4</sup> - 84 y<sub>1</sub> y<sub>2</sub> y<sub>3</sub><sup>4</sup> -  
12 d<sub>γ</sub> y<sub>1</sub> y<sub>2</sub> y<sub>3</sub><sup>4</sup> - 42 i y<sub>3</sub><sup>5</sup> - 13 i d<sub>γ</sub> y<sub>3</sub><sup>5</sup> - i d<sub>γ</sub><sup>2</sup> y<sub>3</sub><sup>5</sup> + 7 h<sub>1</sub> y<sub>3</sub><sup>5</sup> + d<sub>γ</sub> h<sub>1</sub> y<sub>3</sub><sup>5</sup> + 7 h<sub>2</sub> y<sub>3</sub><sup>5</sup> + d<sub>γ</sub> h<sub>2</sub> y<sub>3</sub><sup>5</sup>

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Out[ ]:= 0

```

In[ ]:= (* Y6α1 πλ11,k *)
k = 4;
- ( - 1/2 ( (2 y1 - i 2 x1) D[A[[1, k]], h1] - (2 h1 - h2) D[A[[1, k]], y1] +
i (2 h1 - h2) D[A[[1, k]], x1] + (x2 - i y2) D[A[[1, k]], x3] + (y2 + i x2) D[A[[1, k]], y3] +
(-x3 - i y3) D[A[[1, k]], x2] + (-y3 + i x3) D[A[[1, k]], y2]) ) // Expand

```

In[ ]:=

2520 x<sub>1</sub><sup>2</sup> x<sub>2</sub> + 1914 d<sub>γ</sub> x<sub>1</sub><sup>2</sup> x<sub>2</sub> + 537 d<sub>γ</sub><sup>2</sup> x<sub>1</sub><sup>2</sup> x<sub>2</sub> + 66 d<sub>γ</sub><sup>3</sup> x<sub>1</sub><sup>2</sup> x<sub>2</sub> + 3 d<sub>γ</sub><sup>4</sup> x<sub>1</sub><sup>2</sup> x<sub>2</sub> + 126 h<sub>1</sub><sup>2</sup> x<sub>1</sub><sup>2</sup> x<sub>2</sub> + 39 d<sub>γ</sub> h<sub>1</sub><sup>2</sup> x<sub>1</sub><sup>2</sup> x<sub>2</sub> +  
3 d<sub>γ</sub><sup>2</sup> h<sub>1</sub><sup>2</sup> x<sub>1</sub><sup>2</sup> x<sub>2</sub> + 1260 i h<sub>2</sub> x<sub>1</sub><sup>2</sup> x<sub>2</sub> + 642 i d<sub>γ</sub> h<sub>2</sub> x<sub>1</sub><sup>2</sup> x<sub>2</sub> + 108 i d<sub>γ</sub><sup>2</sup> h<sub>2</sub> x<sub>1</sub><sup>2</sup> x<sub>2</sub> + 6 i d<sub>γ</sub><sup>3</sup> h<sub>2</sub> x<sub>1</sub><sup>2</sup> x<sub>2</sub> -  
126 h<sub>1</sub> h<sub>2</sub> x<sub>1</sub><sup>2</sup> x<sub>2</sub> - 39 d<sub>γ</sub> h<sub>1</sub> h<sub>2</sub> x<sub>1</sub><sup>2</sup> x<sub>2</sub> - 3 d<sub>γ</sub><sup>2</sup> h<sub>1</sub> h<sub>2</sub> x<sub>1</sub><sup>2</sup> x<sub>2</sub> - 21 i h<sub>1</sub><sup>2</sup> h<sub>2</sub> x<sub>1</sub><sup>2</sup> x<sub>2</sub> - 3 i d<sub>γ</sub> h<sub>1</sub><sup>2</sup> h<sub>2</sub> x<sub>1</sub><sup>2</sup> x<sub>2</sub> +  
126 h<sub>2</sub><sup>2</sup> x<sub>1</sub><sup>2</sup> x<sub>2</sub> + 39 d<sub>γ</sub> h<sub>2</sub><sup>2</sup> x<sub>1</sub><sup>2</sup> x<sub>2</sub> + 3 d<sub>γ</sub><sup>2</sup> h<sub>2</sub><sup>2</sup> x<sub>1</sub><sup>2</sup> x<sub>2</sub> + 21 i h<sub>1</sub> h<sub>2</sub><sup>2</sup> x<sub>1</sub><sup>2</sup> x<sub>2</sub> + 3 i d<sub>γ</sub> h<sub>1</sub> h<sub>2</sub><sup>2</sup> x<sub>1</sub><sup>2</sup> x<sub>2</sub> + 42 i h<sub>2</sub><sup>3</sup> x<sub>1</sub><sup>2</sup> x<sub>2</sub> +  
6 i d<sub>γ</sub> h<sub>2</sub><sup>3</sup> x<sub>1</sub><sup>2</sup> x<sub>2</sub> + ... 2184 ... + 21 i h<sub>2</sub> x<sub>2</sub> y<sub>3</sub><sup>4</sup> + 3 i d<sub>γ</sub> h<sub>2</sub> x<sub>2</sub> y<sub>3</sub><sup>4</sup> - 14 x<sub>1</sub> x<sub>3</sub> y<sub>3</sub><sup>4</sup> - 2 d<sub>γ</sub> x<sub>1</sub> x<sub>3</sub> y<sub>3</sub><sup>4</sup> -  
14 i x<sub>3</sub> y<sub>1</sub> y<sub>3</sub><sup>4</sup> - 2 i d<sub>γ</sub> x<sub>3</sub> y<sub>1</sub> y<sub>3</sub><sup>4</sup> + 126 i y<sub>2</sub> y<sub>3</sub><sup>4</sup> + 39 i d<sub>γ</sub> y<sub>2</sub> y<sub>3</sub><sup>4</sup> + 3 i d<sub>γ</sub><sup>2</sup> y<sub>2</sub> y<sub>3</sub><sup>4</sup> - 21 h<sub>1</sub> y<sub>2</sub> y<sub>3</sub><sup>4</sup> -  
3 d<sub>γ</sub> h<sub>1</sub> y<sub>2</sub> y<sub>3</sub><sup>4</sup> + 21 h<sub>2</sub> y<sub>2</sub> y<sub>3</sub><sup>4</sup> + 3 d<sub>γ</sub> h<sub>2</sub> y<sub>2</sub> y<sub>3</sub><sup>4</sup> - 14 i x<sub>1</sub> y<sub>3</sub><sup>5</sup> - 2 i d<sub>γ</sub> x<sub>1</sub> y<sub>3</sub><sup>5</sup> + 14 y<sub>1</sub> y<sub>3</sub><sup>5</sup> + 2 d<sub>γ</sub> y<sub>1</sub> y<sub>3</sub><sup>5</sup>

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Out[ ]:= 0

In[ ]:= (\* Y<sub>α<sub>1</sub></sub><sup>6</sup> π<sup>λ<sub>1</sub></sup><sub>1,k</sub> \*)

k = 5;

$$- \left( -\frac{1}{2} \left( (2 y_1 - i 2 x_1) D[A[[1, k]], h_1] - (2 h_1 - h_2) D[A[[1, k]], y_1] + \right. \right. \\ \left. \left. i (2 h_1 - h_2) D[A[[1, k]], x_1] + (x_2 - i y_2) D[A[[1, k]], x_3] + (y_2 + i x_2) D[A[[1, k]], y_3] + \right. \right. \\ \left. \left. (-x_3 - i y_3) D[A[[1, k]], x_2] + (-y_3 + i x_3) D[A[[1, k]], y_2] \right) \right) // \text{Expand}$$

In[ ]:=

$$5040 x_1^2 x_2 + 3828 d_Y x_1^2 x_2 + 1074 d_Y^2 x_1^2 x_2 + 132 d_Y^3 x_1^2 x_2 + 6 d_Y^4 x_1^2 x_2 + \\ 252 h_1^2 x_1^2 x_2 + 78 d_Y h_1^2 x_1^2 x_2 + 6 d_Y^2 h_1^2 x_1^2 x_2 + 2520 i h_2 x_1^2 x_2 + 1284 i d_Y h_2 x_1^2 x_2 + \\ 216 i d_Y^2 h_2 x_1^2 x_2 + 12 i d_Y^3 h_2 x_1^2 x_2 - 252 h_1 h_2 x_1^2 x_2 - 78 d_Y h_1 h_2 x_1^2 x_2 - \\ 6 d_Y^2 h_1 h_2 x_1^2 x_2 - 42 i h_1^2 h_2 x_1^2 x_2 - 6 i d_Y h_1^2 h_2 x_1^2 x_2 + 252 h_2^2 x_1^2 x_2 + 78 d_Y h_2^2 x_1^2 x_2 + \\ 6 d_Y^2 h_2^2 x_1^2 x_2 + 42 i h_1 h_2^2 x_1^2 x_2 + 6 i d_Y h_1 h_2^2 x_1^2 x_2 + 84 i h_2^3 x_1^2 x_2 + 12 i d_Y h_2^3 x_1^2 x_2 + \\ \dots 2184 \dots + 42 i h_2 x_2 y_3^4 + 6 i d_Y h_2 x_2 y_3^4 - 28 x_1 x_3 y_3^4 - 4 d_Y x_1 x_3 y_3^4 - \\ 28 i x_3 y_1 y_3^4 - 4 i d_Y x_3 y_1 y_3^4 + 252 i y_2 y_3^4 + 78 i d_Y y_2 y_3^4 + 6 i d_Y^2 y_2 y_3^4 - 42 h_1 y_2 y_3^4 - \\ 6 d_Y h_1 y_2 y_3^4 + 42 h_2 y_2 y_3^4 + 6 d_Y h_2 y_2 y_3^4 - 28 i x_1 y_3^5 - 4 i d_Y x_1 y_3^5 + 28 y_1 y_3^5 + 4 d_Y y_1 y_3^5$$

large output

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Out[ ]:= 0

In[ ]:= (\* Y<sub>α<sub>1</sub></sub><sup>6</sup> π<sup>λ<sub>1</sub></sup><sub>1,k</sub> \*)

k = 6;

$$- \left( -\frac{1}{2} \left( (2 y_1 - i 2 x_1) D[A[[1, k]], h_1] - (2 h_1 - h_2) D[A[[1, k]], y_1] + \right. \right. \\ \left. \left. i (2 h_1 - h_2) D[A[[1, k]], x_1] + (x_2 - i y_2) D[A[[1, k]], x_3] + (y_2 + i x_2) D[A[[1, k]], y_3] + \right. \right. \\ \left. \left. (-x_3 - i y_3) D[A[[1, k]], x_2] + (-y_3 + i x_3) D[A[[1, k]], y_2] \right) \right) // \text{Expand}$$

$$1260 x_1^2 x_2^2 + 642 d_Y x_1^2 x_2^2 + 108 d_Y^2 x_1^2 x_2^2 + 6 d_Y^3 x_1^2 x_2^2 + 42 h_1^2 x_1^2 x_2^2 + 6 d_Y h_1^2 x_1^2 x_2^2 - 42 h_1 h_2 x_1^2 x_2^2 - \\ 6 d_Y h_1 h_2 x_1^2 x_2^2 + 42 h_2^2 x_1^2 x_2^2 + 6 d_Y h_2^2 x_1^2 x_2^2 + 42 x_1^4 x_2^2 + 6 d_Y x_1^4 x_2^2 + 42 x_1^2 x_2^4 + 6 d_Y x_1^2 x_2^4 + \\ 2520 i h_1 x_1 x_2 x_3 + 1284 i d_Y h_1 x_1 x_2 x_3 + 216 i d_Y^2 h_1 x_1 x_2 x_3 + 12 i d_Y^3 h_1 x_1 x_2 x_3 + \\ 84 i h_1^3 x_1 x_2 x_3 + 12 i d_Y h_1^3 x_1 x_2 x_3 - 2520 i h_2 x_1 x_2 x_3 - 1284 i d_Y h_2 x_1 x_2 x_3 - 216 i d_Y^2 h_2 x_1 x_2 x_3 - \\ 12 i d_Y^3 h_2 x_1 x_2 x_3 - 294 i h_1^2 h_2 x_1 x_2 x_3 - 42 i d_Y h_1^2 h_2 x_1 x_2 x_3 + 294 i h_1 h_2^2 x_1 x_2 x_3 + \\ 42 i d_Y h_1 h_2^2 x_1 x_2 x_3 - 84 i h_2^3 x_1 x_2 x_3 - 12 i d_Y h_2^3 x_1 x_2 x_3 + 84 i h_1 x_1^3 x_2 x_3 + 12 i d_Y h_1 x_1^3 x_2 x_3 - \\ 210 i h_2 x_1^3 x_2 x_3 - 30 i d_Y h_2 x_1^3 x_2 x_3 + 210 i h_1 x_1 x_2^3 x_3 + 30 i d_Y h_1 x_1 x_2^3 x_3 - 84 i h_2 x_1 x_2^3 x_3 - \\ 12 i d_Y h_2 x_1 x_2^3 x_3 - 5040 x_3^2 - 5508 d_Y x_3^2 - 2350 d_Y^2 x_3^2 - 490 d_Y^3 x_3^2 - 50 d_Y^4 x_3^2 - 2 d_Y^5 x_3^2 - \\ 2100 h_1^2 x_3^2 - 1070 d_Y h_1^2 x_3^2 - 180 d_Y^2 h_1^2 x_3^2 - 10 d_Y^3 h_1^2 x_3^2 - 56 h_1^4 x_3^2 - 8 d_Y h_1^4 x_3^2 + 3360 h_1 h_2 x_3^2 + \\ 1712 d_Y h_1 h_2 x_3^2 + 288 d_Y^2 h_1 h_2 x_3^2 + 16 d_Y^3 h_1 h_2 x_3^2 + 280 h_1^3 h_2 x_3^2 + 40 d_Y h_1^3 h_2 x_3^2 - 2100 h_2^2 x_3^2 - \\ 1070 d_Y h_2^2 x_3^2 - 180 d_Y^2 h_2^2 x_3^2 - 10 d_Y^3 h_2^2 x_3^2 - 462 h_1^2 h_2^2 x_3^2 - 66 d_Y h_1^2 h_2^2 x_3^2 + 280 h_1 h_2^3 x_3^2 + \\ 40 d_Y h_1 h_2^3 x_3^2 - 56 h_2^4 x_3^2 - 8 d_Y h_2^4 x_3^2 - 840 x_1^2 x_3^2 - 428 d_Y x_1^2 x_3^2 - 72 d_Y^2 x_1^2 x_3^2 - 4 d_Y^3 x_1^2 x_3^2 - \\ 70 h_1^2 x_1^2 x_3^2 - 10 d_Y h_1^2 x_1^2 x_3^2 + 238 h_1 h_2 x_1^2 x_3^2 + 34 d_Y h_1 h_2 x_1^2 x_3^2 - 196 h_2^2 x_1^2 x_3^2 - 28 d_Y h_2^2 x_1^2 x_3^2 - \\ 14 x_1^4 x_3^2 - 2 d_Y x_1^4 x_3^2 - 840 x_2^2 x_3^2 - 428 d_Y x_2^2 x_3^2 - 72 d_Y^2 x_2^2 x_3^2 - 4 d_Y^3 x_2^2 x_3^2 - 196 h_1^2 x_2^2 x_3^2 - \\ 28 d_Y h_1^2 x_2^2 x_3^2 + 238 h_1 h_2 x_2^2 x_3^2 + 34 d_Y h_1 h_2 x_2^2 x_3^2 - 70 h_2^2 x_2^2 x_3^2 - 10 d_Y h_2^2 x_2^2 x_3^2 + 14 x_1^2 x_2^2 x_3^2 + \\ 2 d_Y x_1^2 x_2^2 x_3^2 - 14 x_2^4 x_3^2 - 2 d_Y x_2^4 x_3^2 - 42 i h_1 x_1 x_2 x_3^3 - 6 i d_Y h_1 x_1 x_2 x_3^3 + 42 i h_2 x_1 x_2 x_3^3 + \\ 6 i d_Y h_2 x_1 x_2 x_3^3 - 840 x_3^4 - 428 d_Y x_3^4 - 72 d_Y^2 x_3^4 - 4 d_Y^3 x_3^4 + 56 h_1^2 x_3^4 + 8 d_Y h_1^2 x_3^4 - 140 h_1 h_2 x_3^4 - \\ 20 d_Y h_1 h_2 x_3^4 + 56 h_2^2 x_3^4 + 8 d_Y h_2^2 x_3^4 - 28 x_1^2 x_3^4 - 4 d_Y x_1^2 x_3^4 - 28 x_2^2 x_3^4 - 4 d_Y x_2^2 x_3^4 - 14 x_3^6 -$$

$$\begin{aligned}
& 2 d\gamma x_3^6 + 2520 \, i \, x_1 x_2^2 y_1 + 1284 \, i \, d\gamma x_1 x_2^2 y_1 + 216 \, i \, d\gamma^2 x_1 x_2^2 y_1 + 12 \, i \, d\gamma^3 x_1 x_2^2 y_1 + \\
& 84 \, i \, h_1^2 x_1 x_2^2 y_1 + 12 \, i \, d\gamma h_1^2 x_1 x_2^2 y_1 - 84 \, i \, h_1 h_2 x_1 x_2^2 y_1 - 12 \, i \, d\gamma h_1 h_2 x_1 x_2^2 y_1 + 84 \, i \, h_2^2 x_1 x_2^2 y_1 + \\
& 12 \, i \, d\gamma h_2^2 x_1 x_2^2 y_1 + 84 \, i \, x_1^3 x_2^2 y_1 + 12 \, i \, d\gamma x_1^3 x_2^2 y_1 + 84 \, i \, x_1 x_2^4 y_1 + 12 \, i \, d\gamma x_1 x_2^4 y_1 - \\
& 2520 \, h_1 x_2 x_3 y_1 - 1284 \, d\gamma h_1 x_2 x_3 y_1 - 216 \, d\gamma^2 h_1 x_2 x_3 y_1 - 12 \, d\gamma^3 h_1 x_2 x_3 y_1 - 84 \, h_1^3 x_2 x_3 y_1 - \\
& 12 \, d\gamma h_1^3 x_2 x_3 y_1 + 2520 \, h_2 x_2 x_3 y_1 + 1284 \, d\gamma h_2 x_2 x_3 y_1 + 216 \, d\gamma^2 h_2 x_2 x_3 y_1 + 12 \, d\gamma^3 h_2 x_2 x_3 y_1 + \\
& 294 \, h_1^2 h_2 x_2 x_3 y_1 + 42 \, d\gamma h_1^2 h_2 x_2 x_3 y_1 - 294 \, h_1 h_2^2 x_2 x_3 y_1 - 42 \, d\gamma h_1 h_2^2 x_2 x_3 y_1 + 84 \, h_2^3 x_2 x_3 y_1 + \\
& 12 \, d\gamma h_2^3 x_2 x_3 y_1 - 84 \, h_1 x_1^2 x_2 x_3 y_1 - 12 \, d\gamma h_1 x_1^2 x_2 x_3 y_1 + 210 \, h_2 x_1^2 x_2 x_3 y_1 + 30 \, d\gamma h_2 x_1^2 x_2 x_3 y_1 - \\
& 210 \, h_1 x_2^2 x_3 y_1 - 30 \, d\gamma h_1 x_2^2 x_3 y_1 + 84 \, h_2 x_2^2 x_3 y_1 + 12 \, d\gamma h_2 x_2^2 x_3 y_1 - 168 \, i \, x_1 x_2^2 x_3^2 y_1 - \\
& 24 \, i \, d\gamma x_1 x_2^2 x_3^2 y_1 + 294 \, h_1 x_2 x_3^3 y_1 + 42 \, d\gamma h_1 x_2 x_3^3 y_1 - 294 \, h_2 x_2 x_3^3 y_1 - 42 \, d\gamma h_2 x_2 x_3^3 y_1 - \\
& 1260 \, x_2^2 y_1^2 - 642 \, d\gamma x_2^2 y_1^2 - 108 \, d\gamma^2 x_2^2 y_1^2 - 6 \, d\gamma^3 x_2^2 y_1^2 - 42 \, h_1^2 x_2^2 y_1^2 - 6 \, d\gamma h_1^2 x_2^2 y_1^2 + 42 \, h_1 h_2 x_2^2 y_1^2 + \\
& 6 \, d\gamma h_1 h_2 x_2^2 y_1^2 - 42 \, h_2^2 x_2^2 y_1^2 - 6 \, d\gamma h_2^2 x_2^2 y_1^2 - 42 \, x_2^4 y_1^2 - 6 \, d\gamma x_2^4 y_1^2 + 84 \, i \, h_1 x_1 x_2 x_3 y_1^2 + \\
& 12 \, i \, d\gamma h_1 x_1 x_2 x_3 y_1^2 - 210 \, i \, h_2 x_1 x_2 x_3 y_1^2 - 30 \, i \, d\gamma h_2 x_1 x_2 x_3 y_1^2 - 840 \, x_3^2 y_1^2 - 428 \, d\gamma x_3^2 y_1^2 - \\
& 72 \, d\gamma^2 x_3^2 y_1^2 - 4 \, d\gamma^3 x_3^2 y_1^2 - 70 \, h_1^2 x_3^2 y_1^2 - 10 \, d\gamma h_1^2 x_3^2 y_1^2 + 238 \, h_1 h_2 x_3^2 y_1^2 + 34 \, d\gamma h_1 h_2 x_3^2 y_1^2 - \\
& 196 \, h_2^2 x_3^2 y_1^2 - 28 \, d\gamma h_2^2 x_3^2 y_1^2 - 28 \, x_1^2 x_3^2 y_1^2 - 4 \, d\gamma x_1^2 x_3^2 y_1^2 + 182 \, x_2^2 x_3^2 y_1^2 + 26 \, d\gamma x_2^2 x_3^2 y_1^2 - 28 \, x_3^4 y_1^2 - \\
& 4 \, d\gamma x_3^4 y_1^2 + 84 \, i \, x_1 x_2^2 y_1^3 + 12 \, i \, d\gamma x_1 x_2^2 y_1^3 - 84 \, h_1 x_2 x_3 y_1^3 - 12 \, d\gamma h_1 x_2 x_3 y_1^3 + 210 \, h_2 x_2 x_3 y_1^3 + \\
& 30 \, d\gamma h_2 x_2 x_3 y_1^3 - 42 \, x_2^2 y_1^4 - 6 \, d\gamma x_2^2 y_1^4 - 14 \, x_3^2 y_1^4 - 2 \, d\gamma x_3^2 y_1^4 + 2520 \, i \, x_1^2 x_2 y_2 + 1284 \, i \, d\gamma x_1^2 x_2 y_2 + \\
& 216 \, i \, d\gamma^2 x_1^2 x_2 y_2 + 12 \, i \, d\gamma^3 x_1^2 x_2 y_2 + 84 \, i \, h_1^2 x_1^2 x_2 y_2 + 12 \, i \, d\gamma h_1^2 x_1^2 x_2 y_2 - 84 \, i \, h_1 h_2 x_1^2 x_2 y_2 - \\
& 12 \, i \, d\gamma h_1 h_2 x_1^2 x_2 y_2 + 84 \, i \, h_2^2 x_1^2 x_2 y_2 + 12 \, i \, d\gamma h_2^2 x_1^2 x_2 y_2 + 84 \, i \, x_1^4 x_2 y_2 + 12 \, i \, d\gamma x_1^4 x_2 y_2 + \\
& 84 \, i \, x_1^2 x_3^2 y_2 + 12 \, i \, d\gamma x_1^2 x_3^2 y_2 - 2520 \, h_1 x_1 x_3 y_2 - 1284 \, d\gamma h_1 x_1 x_3 y_2 - 216 \, d\gamma^2 h_1 x_1 x_3 y_2 - \\
& 12 \, d\gamma^3 h_1 x_1 x_3 y_2 - 84 \, h_1^3 x_1 x_3 y_2 - 12 \, d\gamma h_1^3 x_1 x_3 y_2 + 2520 \, h_2 x_1 x_3 y_2 + 1284 \, d\gamma h_2 x_1 x_3 y_2 + \\
& 216 \, d\gamma^2 h_2 x_1 x_3 y_2 + 12 \, d\gamma^3 h_2 x_1 x_3 y_2 + 294 \, h_1^2 h_2 x_1 x_3 y_2 + 42 \, d\gamma h_1^2 h_2 x_1 x_3 y_2 - 294 \, h_1 h_2^2 x_1 x_3 y_2 - \\
& 42 \, d\gamma h_1 h_2^2 x_1 x_3 y_2 + 84 \, h_2^3 x_1 x_3 y_2 + 12 \, d\gamma h_2^3 x_1 x_3 y_2 - 84 \, h_1 x_1^3 x_3 y_2 - 12 \, d\gamma h_1 x_1^3 x_3 y_2 + \\
& 210 \, h_2 x_1^3 x_3 y_2 + 30 \, d\gamma h_2 x_1^3 x_3 y_2 - 210 \, h_1 x_1 x_2^2 x_3 y_2 - 30 \, d\gamma h_1 x_1 x_2^2 x_3 y_2 + 84 \, h_2 x_1 x_2^2 x_3 y_2 + \\
& 12 \, d\gamma h_2 x_1 x_2^2 x_3 y_2 - 168 \, i \, x_1^2 x_2 x_3^2 y_2 - 24 \, i \, d\gamma x_1^2 x_2 x_3^2 y_2 + 294 \, h_1 x_1 x_3^3 y_2 + 42 \, d\gamma h_1 x_1 x_3^3 y_2 - \\
& 294 \, h_2 x_1 x_3^3 y_2 - 42 \, d\gamma h_2 x_1 x_3^3 y_2 - 5040 \, x_1 x_2 y_1 y_2 - 2568 \, d\gamma x_1 x_2 y_1 y_2 - 432 \, d\gamma^2 x_1 x_2 y_1 y_2 - \\
& 24 \, d\gamma^3 x_1 x_2 y_1 y_2 - 168 \, h_1^2 x_1 x_2 y_1 y_2 - 24 \, d\gamma h_1^2 x_1 x_2 y_1 y_2 + 168 \, h_1 h_2 x_1 x_2 y_1 y_2 + \\
& 24 \, d\gamma h_1 h_2 x_1 x_2 y_1 y_2 - 168 \, h_2^2 x_1 x_2 y_1 y_2 - 24 \, d\gamma h_2^2 x_1 x_2 y_1 y_2 - 168 \, x_1^2 x_2 y_1 y_2 - 24 \, d\gamma x_1^2 x_2 y_1 y_2 - \\
& 168 \, x_1 x_2^2 y_1 y_2 - 24 \, d\gamma x_1 x_2^2 y_1 y_2 - 2520 \, i \, h_1 x_3 y_1 y_2 - 1284 \, i \, d\gamma h_1 x_3 y_1 y_2 - 216 \, i \, d\gamma^2 h_1 x_3 y_1 y_2 - \\
& 12 \, i \, d\gamma^3 h_1 x_3 y_1 y_2 - 84 \, i \, h_1^3 x_3 y_1 y_2 - 12 \, i \, d\gamma h_1^3 x_3 y_1 y_2 + 2520 \, i \, h_2 x_3 y_1 y_2 + 1284 \, i \, d\gamma h_2 x_3 y_1 y_2 + \\
& 216 \, i \, d\gamma^2 h_2 x_3 y_1 y_2 + 12 \, i \, d\gamma^3 h_2 x_3 y_1 y_2 + 294 \, i \, h_1^2 h_2 x_3 y_1 y_2 + 42 \, i \, d\gamma h_1^2 h_2 x_3 y_1 y_2 - \\
& 294 \, i \, h_1 h_2^2 x_3 y_1 y_2 - 42 \, i \, d\gamma h_1 h_2^2 x_3 y_1 y_2 + 84 \, i \, h_2^3 x_3 y_1 y_2 + 12 \, i \, d\gamma h_2^3 x_3 y_1 y_2 - \\
& 84 \, i \, h_1 x_1^2 x_3 y_1 y_2 - 12 \, i \, d\gamma h_1 x_1^2 x_3 y_1 y_2 + 210 \, i \, h_2 x_1^2 x_3 y_1 y_2 + 30 \, i \, d\gamma h_2 x_1^2 x_3 y_1 y_2 - \\
& 210 \, i \, h_1 x_2^2 x_3 y_1 y_2 - 30 \, i \, d\gamma h_1 x_2^2 x_3 y_1 y_2 + 84 \, i \, h_2 x_2^2 x_3 y_1 y_2 + 12 \, i \, d\gamma h_2 x_2^2 x_3 y_1 y_2 + \\
& 336 \, x_1 x_2 x_3^2 y_1 y_2 + 48 \, d\gamma x_1 x_2 x_3^2 y_1 y_2 + 42 \, i \, h_1 x_3^3 y_1 y_2 + 6 \, i \, d\gamma h_1 x_3^3 y_1 y_2 - 42 \, i \, h_2 x_3^3 y_1 y_2 - \\
& 6 \, i \, d\gamma h_2 x_3^3 y_1 y_2 - 2520 \, i \, x_2 y_1^2 y_2 - 1284 \, i \, d\gamma x_2 y_1^2 y_2 - 216 \, i \, d\gamma^2 x_2 y_1^2 y_2 - 12 \, i \, d\gamma^3 x_2 y_1^2 y_2 - \\
& 84 \, i \, h_1^2 x_2 y_1^2 y_2 - 12 \, i \, d\gamma h_1^2 x_2 y_1^2 y_2 + 84 \, i \, h_1 h_2 x_2 y_1^2 y_2 + 12 \, i \, d\gamma h_1 h_2 x_2 y_1^2 y_2 - 84 \, i \, h_2^2 x_2 y_1^2 y_2 - \\
& 12 \, i \, d\gamma h_2^2 x_2 y_1^2 y_2 - 84 \, i \, x_2^2 y_1^2 y_2 - 12 \, i \, d\gamma x_2^2 y_1^2 y_2 - 84 \, h_1 x_1 x_3 y_1^2 y_2 - 12 \, d\gamma h_1 x_1 x_3 y_1^2 y_2 + \\
& 210 \, h_2 x_1 x_3 y_1^2 y_2 + 30 \, d\gamma h_2 x_1 x_3 y_1^2 y_2 + 168 \, i \, x_2 x_3^2 y_1^2 y_2 + 24 \, i \, d\gamma x_2 x_3^2 y_1^2 y_2 - 168 \, x_1 x_2 y_1^3 y_2 - \\
& 24 \, d\gamma x_1 x_2 y_1^3 y_2 - 84 \, i \, h_1 x_3 y_1^3 y_2 - 12 \, i \, d\gamma h_1 x_3 y_1^3 y_2 + 210 \, i \, h_2 x_3 y_1^3 y_2 + 30 \, i \, d\gamma h_2 x_3 y_1^3 y_2 - \\
& 84 \, i \, x_2 y_1^4 y_2 - 12 \, i \, d\gamma x_2 y_1^4 y_2 - 1260 \, x_1^2 y_2^2 - 642 \, d\gamma x_1^2 y_2^2 - 108 \, d\gamma^2 x_1^2 y_2^2 - 6 \, d\gamma^3 x_1^2 y_2^2 - \\
& 42 \, h_1^2 x_1^2 y_2^2 - 6 \, d\gamma h_1^2 x_1^2 y_2^2 + 42 \, h_1 h_2 x_1^2 y_2^2 + 6 \, d\gamma h_1 h_2 x_1^2 y_2^2 - 42 \, h_2^2 x_1^2 y_2^2 - 6 \, d\gamma h_2^2 x_1^2 y_2^2 - \\
& 42 \, x_1^4 y_2^2 - 6 \, d\gamma x_1^4 y_2^2 + 210 \, i \, h_1 x_1 x_2 x_3 y_2^2 + 30 \, i \, d\gamma h_1 x_1 x_2 x_3 y_2^2 - 84 \, i \, h_2 x_1 x_2 x_3 y_2^2 - \\
& 12 \, i \, d\gamma h_2 x_1 x_2 x_3 y_2^2 - 840 \, x_3^2 y_2^2 - 428 \, d\gamma x_3^2 y_2^2 - 72 \, d\gamma^2 x_3^2 y_2^2 - 4 \, d\gamma^3 x_3^2 y_2^2 - 196 \, h_1^2 x_3^2 y_2^2 - \\
& 28 \, d\gamma h_1^2 x_3^2 y_2^2 + 238 \, h_1 h_2 x_3^2 y_2^2 + 34 \, d\gamma h_1 h_2 x_3^2 y_2^2 - 70 \, h_2^2 x_3^2 y_2^2 - 10 \, d\gamma h_2^2 x_3^2 y_2^2 + 182 \, x_1^2 x_3^2 y_2^2 + \\
& 26 \, d\gamma x_1^2 x_3^2 y_2^2 - 28 \, x_2^2 x_3^2 y_2^2 - 4 \, d\gamma x_2^2 x_3^2 y_2^2 - 28 \, x_3^4 y_2^2 - 4 \, d\gamma x_3^4 y_2^2 - 2520 \, i \, x_1 y_1 y_2^2 - \\
& 1284 \, i \, d\gamma x_1 y_1 y_2^2 - 216 \, i \, d\gamma^2 x_1 y_1 y_2^2 - 12 \, i \, d\gamma^3 x_1 y_1 y_2^2 - 84 \, i \, h_1^2 x_1 y_1 y_2^2 - 12 \, i \, d\gamma h_1^2 x_1 y_1 y_2^2 + \\
& 84 \, i \, h_1 h_2 x_1 y_1 y_2^2 + 12 \, i \, d\gamma h_1 h_2 x_1 y_1 y_2^2 - 84 \, i \, h_2^2 x_1 y_1 y_2^2 - 12 \, i \, d\gamma h_2^2 x_1 y_1 y_2^2 - 84 \, i \, x_1^3 y_1 y_2^2 -
\end{aligned}$$

$$\begin{aligned}
& 12 \, \text{d}\gamma \, x_1^3 y_1 y_2^2 - 210 \, h_1 x_2 x_3 y_1 y_2^2 - 30 \, \text{d}\gamma \, h_1 x_2 x_3 y_1 y_2^2 + 84 \, h_2 x_2 x_3 y_1 y_2^2 + 12 \, \text{d}\gamma \, h_2 x_2 x_3 y_1 y_2^2 + \\
& 168 \, \text{d}\gamma \, x_1 x_3^2 y_1 y_2^2 + 24 \, \text{d}\gamma \, x_1 x_3^2 y_1 y_2^2 + 1260 \, y_1^2 y_2^2 + 642 \, \text{d}\gamma \, y_1^2 y_2^2 + 108 \, \text{d}\gamma^2 \, y_1^2 y_2^2 + 6 \, \text{d}\gamma^3 \, y_1^2 y_2^2 + \\
& 42 \, h_1^2 y_1^2 y_2^2 + 6 \, \text{d}\gamma \, h_1^2 y_1^2 y_2^2 - 42 \, h_1 h_2 y_1^2 y_2^2 - 6 \, \text{d}\gamma \, h_1 h_2 y_1^2 y_2^2 + 42 \, h_2^2 y_1^2 y_2^2 + 6 \, \text{d}\gamma \, h_2^2 y_1^2 y_2^2 + \\
& 14 \, x_3^2 y_1^2 y_2^2 + 2 \, \text{d}\gamma \, x_3^2 y_1^2 y_2^2 - 84 \, \text{d}\gamma \, x_1 y_1^3 y_2^2 - 12 \, \text{d}\gamma \, x_1 y_1^3 y_2^2 + 42 \, y_1^4 y_2^2 + 6 \, \text{d}\gamma \, y_1^4 y_2^2 + 84 \, \text{d}\gamma \, x_1^2 x_2 y_2^3 + \\
& 12 \, \text{d}\gamma \, x_1^2 x_2 y_2^3 - 210 \, h_1 x_1 x_3 y_2^3 - 30 \, \text{d}\gamma \, h_1 x_1 x_3 y_2^3 + 84 \, h_2 x_1 x_3 y_2^3 + 12 \, \text{d}\gamma \, h_2 x_1 x_3 y_2^3 - \\
& 168 \, x_1 x_2 y_1 y_2^3 - 24 \, \text{d}\gamma \, x_1 x_2 y_1 y_2^3 - 210 \, \text{d}\gamma \, h_1 x_3 y_1 y_2^3 - 30 \, \text{d}\gamma \, h_1 x_3 y_1 y_2^3 + 84 \, \text{d}\gamma \, h_2 x_3 y_1 y_2^3 + \\
& 12 \, \text{d}\gamma \, h_2 x_3 y_1 y_2^3 - 84 \, \text{d}\gamma \, x_2 y_1^3 y_2^3 - 12 \, \text{d}\gamma \, x_2 y_1^3 y_2^3 - 42 \, x_1^2 y_2^4 - 6 \, \text{d}\gamma \, x_1^2 y_2^4 - 14 \, x_3^2 y_2^4 - 2 \, \text{d}\gamma \, x_3^2 y_2^4 - \\
& 84 \, \text{d}\gamma \, x_1 y_1 y_2^4 - 12 \, \text{d}\gamma \, x_1 y_1 y_2^4 + 42 \, y_1^2 y_2^4 + 6 \, \text{d}\gamma \, y_1^2 y_2^4 - 2520 \, h_1 x_1 x_2 y_3 - 1284 \, \text{d}\gamma \, h_1 x_1 x_2 y_3 - \\
& 216 \, \text{d}\gamma^2 \, h_1 x_1 x_2 y_3 - 12 \, \text{d}\gamma^3 \, h_1 x_1 x_2 y_3 - 84 \, h_1^3 x_1 x_2 y_3 - 12 \, \text{d}\gamma \, h_1^3 x_1 x_2 y_3 + 2520 \, h_2 x_1 x_2 y_3 + \\
& 1284 \, \text{d}\gamma \, h_2 x_1 x_2 y_3 + 216 \, \text{d}\gamma^2 \, h_2 x_1 x_2 y_3 + 12 \, \text{d}\gamma^3 \, h_2 x_1 x_2 y_3 + 294 \, h_1^2 h_2 x_1 x_2 y_3 + 42 \, \text{d}\gamma \, h_1^2 h_2 x_1 x_2 y_3 - \\
& 294 \, h_1 h_2^2 x_1 x_2 y_3 - 42 \, \text{d}\gamma \, h_1 h_2^2 x_1 x_2 y_3 + 84 \, h_2^3 x_1 x_2 y_3 + 12 \, \text{d}\gamma \, h_2^3 x_1 x_2 y_3 - 84 \, h_1 x_1^3 x_2 y_3 - \\
& 12 \, \text{d}\gamma \, h_1 x_1^3 x_2 y_3 + 210 \, h_2 x_1^3 x_2 y_3 + 30 \, \text{d}\gamma \, h_2 x_1^3 x_2 y_3 - 210 \, h_1 x_1 x_2^3 y_3 - 30 \, \text{d}\gamma \, h_1 x_1 x_2^3 y_3 + \\
& 84 \, h_2 x_1 x_2^3 y_3 + 12 \, \text{d}\gamma \, h_2 x_1 x_2^3 y_3 - 10080 \, \text{d}\gamma \, x_3 y_3 - 11016 \, \text{d}\gamma \, x_3 y_3 - 4700 \, \text{d}\gamma^2 \, x_3 y_3 - \\
& 980 \, \text{d}\gamma^3 \, x_3 y_3 - 100 \, \text{d}\gamma^4 \, x_3 y_3 - 4 \, \text{d}\gamma^5 \, x_3 y_3 - 4200 \, \text{d}\gamma \, h_1^2 x_3 y_3 - 2140 \, \text{d}\gamma \, h_1^2 x_3 y_3 - \\
& 360 \, \text{d}\gamma^2 \, h_1^2 x_3 y_3 - 20 \, \text{d}\gamma^3 \, h_1^2 x_3 y_3 - 112 \, \text{d}\gamma \, h_1^4 x_3 y_3 - 16 \, \text{d}\gamma \, h_1^4 x_3 y_3 + 6720 \, \text{d}\gamma \, h_1 h_2 x_3 y_3 + \\
& 3424 \, \text{d}\gamma \, h_1 h_2 x_3 y_3 + 576 \, \text{d}\gamma^2 \, h_1 h_2 x_3 y_3 + 32 \, \text{d}\gamma^3 \, h_1 h_2 x_3 y_3 + 560 \, \text{d}\gamma \, h_1^3 h_2 x_3 y_3 + \\
& 80 \, \text{d}\gamma \, h_1^3 h_2 x_3 y_3 - 4200 \, \text{d}\gamma \, h_2^2 x_3 y_3 - 2140 \, \text{d}\gamma \, h_2^2 x_3 y_3 - 360 \, \text{d}\gamma^2 \, h_2^2 x_3 y_3 - 20 \, \text{d}\gamma^3 \, h_2^2 x_3 y_3 - \\
& 924 \, \text{d}\gamma \, h_1^2 h_2^2 x_3 y_3 - 132 \, \text{d}\gamma \, h_1^2 h_2^2 x_3 y_3 + 560 \, \text{d}\gamma \, h_1 h_2^3 x_3 y_3 + 80 \, \text{d}\gamma \, h_1 h_2^3 x_3 y_3 - 112 \, \text{d}\gamma \, h_2^4 x_3 y_3 - \\
& 16 \, \text{d}\gamma \, h_2^4 x_3 y_3 - 1680 \, \text{d}\gamma \, x_1^2 x_3 y_3 - 856 \, \text{d}\gamma \, x_1^2 x_3 y_3 - 144 \, \text{d}\gamma^2 \, x_1^2 x_3 y_3 - 8 \, \text{d}\gamma^3 \, x_1^2 x_3 y_3 - \\
& 140 \, \text{d}\gamma \, h_1^2 x_1^2 x_3 y_3 - 20 \, \text{d}\gamma \, h_1^2 x_1^2 x_3 y_3 + 476 \, \text{d}\gamma \, h_1 h_2 x_1^2 x_3 y_3 + 68 \, \text{d}\gamma \, h_1 h_2 x_1^2 x_3 y_3 - \\
& 392 \, \text{d}\gamma \, h_2^2 x_1^2 x_3 y_3 - 56 \, \text{d}\gamma \, h_2^2 x_1^2 x_3 y_3 - 28 \, \text{d}\gamma \, x_1^4 x_3 y_3 - 4 \, \text{d}\gamma \, x_1^4 x_3 y_3 - 1680 \, \text{d}\gamma \, x_2^2 x_3 y_3 - \\
& 856 \, \text{d}\gamma \, x_2^2 x_3 y_3 - 144 \, \text{d}\gamma^2 \, x_2^2 x_3 y_3 - 8 \, \text{d}\gamma^3 \, x_2^2 x_3 y_3 - 392 \, \text{d}\gamma \, h_1^2 x_2^2 x_3 y_3 - 56 \, \text{d}\gamma \, h_1^2 x_2^2 x_3 y_3 + \\
& 476 \, \text{d}\gamma \, h_1 h_2 x_2^2 x_3 y_3 + 68 \, \text{d}\gamma \, h_1 h_2 x_2^2 x_3 y_3 - 140 \, \text{d}\gamma \, h_2^2 x_2^2 x_3 y_3 - 20 \, \text{d}\gamma \, h_2^2 x_2^2 x_3 y_3 + 196 \, \text{d}\gamma \, x_1^2 x_2^2 x_3 y_3 + \\
& 28 \, \text{d}\gamma \, x_1^2 x_2^2 x_3 y_3 - 28 \, \text{d}\gamma \, x_2^4 x_3 y_3 - 4 \, \text{d}\gamma \, x_2^4 x_3 y_3 - 210 \, h_1 x_1 x_2 x_3^2 y_3 - 30 \, \text{d}\gamma \, h_1 x_1 x_2 x_3^2 y_3 + \\
& 210 \, h_2 x_1 x_2 x_3^2 y_3 + 30 \, \text{d}\gamma \, h_2 x_1 x_2 x_3^2 y_3 - 1680 \, \text{d}\gamma \, x_3^3 y_3 - 856 \, \text{d}\gamma \, x_3^3 y_3 - 144 \, \text{d}\gamma^2 \, x_3^3 y_3 - \\
& 8 \, \text{d}\gamma^3 \, x_3^3 y_3 + 112 \, \text{d}\gamma \, h_1^2 x_3^3 y_3 + 16 \, \text{d}\gamma \, h_1^2 x_3^3 y_3 - 280 \, \text{d}\gamma \, h_1 h_2 x_3^3 y_3 - 40 \, \text{d}\gamma \, h_1 h_2 x_3^3 y_3 + \\
& 112 \, \text{d}\gamma \, h_2^2 x_3^3 y_3 + 16 \, \text{d}\gamma \, h_2^2 x_3^3 y_3 - 56 \, \text{d}\gamma \, x_1^2 x_3^3 y_3 - 8 \, \text{d}\gamma \, x_1^2 x_3^3 y_3 - 56 \, \text{d}\gamma \, x_2^2 x_3^3 y_3 - 8 \, \text{d}\gamma \, x_2^2 x_3^3 y_3 - \\
& 28 \, \text{d}\gamma \, x_3^5 y_3 - 4 \, \text{d}\gamma \, x_3^5 y_3 - 2520 \, \text{d}\gamma \, h_1 x_2 y_1 y_3 - 1284 \, \text{d}\gamma \, h_1 x_2 y_1 y_3 - 216 \, \text{d}\gamma^2 \, h_1 x_2 y_1 y_3 - \\
& 12 \, \text{d}\gamma^3 \, h_1 x_2 y_1 y_3 - 84 \, \text{d}\gamma \, h_1^3 x_2 y_1 y_3 - 12 \, \text{d}\gamma \, h_1^3 x_2 y_1 y_3 + 2520 \, \text{d}\gamma \, h_2 x_2 y_1 y_3 + \\
& 1284 \, \text{d}\gamma \, h_2 x_2 y_1 y_3 + 216 \, \text{d}\gamma^2 \, h_2 x_2 y_1 y_3 + 12 \, \text{d}\gamma^3 \, h_2 x_2 y_1 y_3 + 294 \, \text{d}\gamma \, h_1^2 h_2 x_2 y_1 y_3 + \\
& 42 \, \text{d}\gamma \, h_1^2 h_2 x_2 y_1 y_3 - 294 \, \text{d}\gamma \, h_1 h_2^2 x_2 y_1 y_3 - 42 \, \text{d}\gamma \, h_1 h_2^2 x_2 y_1 y_3 + 84 \, \text{d}\gamma \, h_2^3 x_2 y_1 y_3 + \\
& 12 \, \text{d}\gamma \, h_2^3 x_2 y_1 y_3 - 84 \, \text{d}\gamma \, h_1 x_1^2 x_2 y_1 y_3 - 12 \, \text{d}\gamma \, h_1 x_1^2 x_2 y_1 y_3 + 210 \, \text{d}\gamma \, h_2 x_1^2 x_2 y_1 y_3 + \\
& 30 \, \text{d}\gamma \, h_2 x_1^2 x_2 y_1 y_3 - 210 \, \text{d}\gamma \, h_1 x_2^3 y_1 y_3 - 30 \, \text{d}\gamma \, h_1 x_2^3 y_1 y_3 + 84 \, \text{d}\gamma \, h_2 x_2^3 y_1 y_3 + 12 \, \text{d}\gamma \, h_2 x_2^3 y_1 y_3 + \\
& 546 \, \text{d}\gamma \, h_1 x_2 x_3^2 y_1 y_3 + 78 \, \text{d}\gamma \, h_1 x_2 x_3^2 y_1 y_3 - 546 \, \text{d}\gamma \, h_2 x_2 x_3^2 y_1 y_3 - 78 \, \text{d}\gamma \, h_2 x_2 x_3^2 y_1 y_3 - \\
& 84 \, h_1 x_1 x_2 y_1^2 y_3 - 12 \, \text{d}\gamma \, h_1 x_1 x_2 y_1^2 y_3 + 210 \, h_2 x_1 x_2 y_1^2 y_3 + 30 \, \text{d}\gamma \, h_2 x_1 x_2 y_1^2 y_3 - 1680 \, \text{d}\gamma \, x_3 y_1^2 y_3 - \\
& 856 \, \text{d}\gamma \, x_3 y_1^2 y_3 - 144 \, \text{d}\gamma^2 \, x_3 y_1^2 y_3 - 8 \, \text{d}\gamma^3 \, x_3 y_1^2 y_3 - 140 \, \text{d}\gamma \, h_1^2 x_3 y_1^2 y_3 - 20 \, \text{d}\gamma \, h_1^2 x_3 y_1^2 y_3 + \\
& 476 \, \text{d}\gamma \, h_1 h_2 x_3 y_1^2 y_3 + 68 \, \text{d}\gamma \, h_1 h_2 x_3 y_1^2 y_3 - 392 \, \text{d}\gamma \, h_2^2 x_3 y_1^2 y_3 - 56 \, \text{d}\gamma \, h_2^2 x_3 y_1^2 y_3 - \\
& 56 \, \text{d}\gamma \, x_1^2 x_3 y_1^2 y_3 - 8 \, \text{d}\gamma \, x_1^2 x_3 y_1^2 y_3 + 196 \, \text{d}\gamma \, x_2^2 x_3 y_1^2 y_3 + 28 \, \text{d}\gamma \, x_2^2 x_3 y_1^2 y_3 - 56 \, \text{d}\gamma \, x_3^3 y_1^2 y_3 - \\
& 8 \, \text{d}\gamma \, x_3^3 y_1^2 y_3 - 84 \, \text{d}\gamma \, h_1 x_2 y_1^3 y_3 - 12 \, \text{d}\gamma \, h_1 x_2 y_1^3 y_3 + 210 \, \text{d}\gamma \, h_2 x_2 y_1^3 y_3 + 30 \, \text{d}\gamma \, h_2 x_2 y_1^3 y_3 - \\
& 28 \, \text{d}\gamma \, x_3 y_1^4 y_3 - 4 \, \text{d}\gamma \, x_3 y_1^4 y_3 - 2520 \, \text{d}\gamma \, h_1 x_1 y_2 y_3 - 1284 \, \text{d}\gamma \, h_1 x_1 y_2 y_3 - 216 \, \text{d}\gamma^2 \, h_1 x_1 y_2 y_3 - \\
& 12 \, \text{d}\gamma^3 \, h_1 x_1 y_2 y_3 - 84 \, \text{d}\gamma \, h_1^3 x_1 y_2 y_3 - 12 \, \text{d}\gamma \, h_1^3 x_1 y_2 y_3 + 2520 \, \text{d}\gamma \, h_2 x_1 y_2 y_3 + \\
& 1284 \, \text{d}\gamma \, h_2 x_1 y_2 y_3 + 216 \, \text{d}\gamma^2 \, h_2 x_1 y_2 y_3 + 12 \, \text{d}\gamma^3 \, h_2 x_1 y_2 y_3 + 294 \, \text{d}\gamma \, h_1^2 h_2 x_1 y_2 y_3 + \\
& 42 \, \text{d}\gamma \, h_1^2 h_2 x_1 y_2 y_3 - 294 \, \text{d}\gamma \, h_1 h_2^2 x_1 y_2 y_3 - 42 \, \text{d}\gamma \, h_1 h_2^2 x_1 y_2 y_3 + 84 \, \text{d}\gamma \, h_2^3 x_1 y_2 y_3 + \\
& 12 \, \text{d}\gamma \, h_2^3 x_1 y_2 y_3 - 84 \, \text{d}\gamma \, h_1 x_1^3 y_2 y_3 - 12 \, \text{d}\gamma \, h_1 x_1^3 y_2 y_3 + 210 \, \text{d}\gamma \, h_2 x_1^3 y_2 y_3 + 30 \, \text{d}\gamma \, h_2 x_1^3 y_2 y_3 - \\
& 210 \, \text{d}\gamma \, h_1 x_1 x_2^2 y_2 y_3 - 30 \, \text{d}\gamma \, h_1 x_1 x_2^2 y_2 y_3 + 84 \, \text{d}\gamma \, h_2 x_1 x_2^2 y_2 y_3 + 12 \, \text{d}\gamma \, h_2 x_1 x_2^2 y_2 y_3 + \\
& 546 \, \text{d}\gamma \, h_1 x_1 x_3^2 y_2 y_3 + 78 \, \text{d}\gamma \, h_1 x_1 x_3^2 y_2 y_3 - 546 \, \text{d}\gamma \, h_2 x_1 x_3^2 y_2 y_3 - 78 \, \text{d}\gamma \, h_2 x_1 x_3^2 y_2 y_3 + \\
& 2520 \, h_1 y_1 y_2 y_3 + 1284 \, \text{d}\gamma \, h_1 y_1 y_2 y_3 + 216 \, \text{d}\gamma^2 \, h_1 y_1 y_2 y_3 + 12 \, \text{d}\gamma^3 \, h_1 y_1 y_2 y_3 + 84 \, h_1^3 y_1 y_2 y_3 +
\end{aligned}$$

$$\begin{aligned}
& 12 d\gamma h_1^3 y_1 y_2 y_3 - 2520 h_2 y_1 y_2 y_3 - 1284 d\gamma h_2 y_1 y_2 y_3 - 216 d\gamma^2 h_2 y_1 y_2 y_3 - 12 d\gamma^3 h_2 y_1 y_2 y_3 - \\
& 294 h_1^2 h_2 y_1 y_2 y_3 - 42 d\gamma h_1^2 h_2 y_1 y_2 y_3 + 294 h_1 h_2^2 y_1 y_2 y_3 + 42 d\gamma h_1 h_2^2 y_1 y_2 y_3 - 84 h_2^3 y_1 y_2 y_3 - \\
& 12 d\gamma h_2^3 y_1 y_2 y_3 + 84 h_1 x_1^2 y_1 y_2 y_3 + 12 d\gamma h_1 x_1^2 y_1 y_2 y_3 - 210 h_2 x_1^2 y_1 y_2 y_3 - 30 d\gamma h_2 x_1^2 y_1 y_2 y_3 + \\
& 210 h_1 x_2^2 y_1 y_2 y_3 + 30 d\gamma h_1 x_2^2 y_1 y_2 y_3 - 84 h_2 x_2^2 y_1 y_2 y_3 - 12 d\gamma h_2 x_2^2 y_1 y_2 y_3 + 210 h_1 x_3^2 y_1 y_2 y_3 + \\
& 30 d\gamma h_1 x_3^2 y_1 y_2 y_3 - 210 h_2 x_3^2 y_1 y_2 y_3 - 30 d\gamma h_2 x_3^2 y_1 y_2 y_3 - 84 \pm h_1 x_1 y_1^2 y_2 y_3 - \\
& 12 \pm d\gamma h_1 x_1 y_1^2 y_2 y_3 + 210 \pm h_2 x_1 y_1^2 y_2 y_3 + 30 \pm d\gamma h_2 x_1 y_1^2 y_2 y_3 + 84 h_1 y_1^3 y_2 y_3 + \\
& 12 d\gamma h_1 y_1^3 y_2 y_3 - 210 h_2 y_1^3 y_2 y_3 - 30 d\gamma h_2 y_1^3 y_2 y_3 - 210 h_1 x_1 x_2 y_2^2 y_3 - 30 d\gamma h_1 x_1 x_2 y_2^2 y_3 + \\
& 84 h_2 x_1 x_2 y_2^2 y_3 + 12 d\gamma h_2 x_1 x_2 y_2^2 y_3 - 1680 \pm x_3 y_2^2 y_3 - 856 \pm d\gamma x_3 y_2^2 y_3 - 144 \pm d\gamma^2 x_3 y_2^2 y_3 - \\
& 8 \pm d\gamma^3 x_3 y_2^2 y_3 - 392 \pm h_1^2 x_3 y_2^2 y_3 - 56 \pm d\gamma h_1^2 x_3 y_2^2 y_3 + 476 \pm h_1 h_2 x_3 y_2^2 y_3 + 68 \pm d\gamma h_1 h_2 x_3 y_2^2 y_3 - \\
& 140 \pm h_2^2 x_3 y_2^2 y_3 - 20 \pm d\gamma h_2^2 x_3 y_2^2 y_3 + 196 \pm x_1^2 x_3 y_2^2 y_3 + 28 \pm d\gamma x_1^2 x_3 y_2^2 y_3 - 56 \pm x_2^2 x_3 y_2^2 y_3 - \\
& 8 \pm d\gamma x_2^2 x_3 y_2^2 y_3 - 56 \pm x_3^3 y_2^2 y_3 - 8 \pm d\gamma x_3^3 y_2^2 y_3 - 210 \pm h_1 x_2 y_1 y_2^2 y_3 - 30 \pm d\gamma h_1 x_2 y_1 y_2^2 y_3 + \\
& 84 \pm h_2 x_2 y_1 y_2^2 y_3 + 12 \pm d\gamma h_2 x_2 y_1 y_2^2 y_3 + 196 \pm x_3 y_1^2 y_2^2 y_3 + 28 \pm d\gamma x_3 y_1^2 y_2^2 y_3 - \\
& 210 \pm h_1 x_1 y_2^3 y_3 - 30 \pm d\gamma h_1 x_1 y_2^3 y_3 + 84 \pm h_2 x_1 y_2^3 y_3 + 12 \pm d\gamma h_2 x_1 y_2^3 y_3 + 210 h_1 y_1 y_2^3 y_3 + \\
& 30 d\gamma h_1 y_1 y_2^3 y_3 - 84 h_2 y_1 y_2^3 y_3 - 12 d\gamma h_2 y_1 y_2^3 y_3 - 28 \pm x_3 y_2^4 y_3 - 4 \pm d\gamma x_3 y_2^4 y_3 + 5040 y_3^2 + \\
& 5508 d\gamma y_3^2 + 2350 d\gamma^2 y_3^2 + 490 d\gamma^3 y_3^2 + 50 d\gamma^4 y_3^2 + 2 d\gamma^5 y_3^2 + 2100 h_1^2 y_3^2 + 1070 d\gamma h_1^2 y_3^2 + \\
& 180 d\gamma^2 h_1^2 y_3^2 + 10 d\gamma^3 h_1^2 y_3^2 + 56 h_1^4 y_3^2 + 8 d\gamma h_1^4 y_3^2 - 3360 h_1 h_2 y_3^2 - 1712 d\gamma h_1 h_2 y_3^2 - \\
& 288 d\gamma^2 h_1 h_2 y_3^2 - 16 d\gamma^3 h_1 h_2 y_3^2 - 280 h_1^3 h_2 y_3^2 - 40 d\gamma h_1^3 h_2 y_3^2 + 2100 h_2^2 y_3^2 + 1070 d\gamma h_2^2 y_3^2 + \\
& 180 d\gamma^2 h_2^2 y_3^2 + 10 d\gamma^3 h_2^2 y_3^2 + 462 h_1^2 h_2^2 y_3^2 + 66 d\gamma h_1^2 h_2^2 y_3^2 - 280 h_1 h_2^3 y_3^2 - 40 d\gamma h_1 h_2^3 y_3^2 + \\
& 56 h_2^4 y_3^2 + 8 d\gamma h_2^4 y_3^2 + 840 x_1^2 y_3^2 + 428 d\gamma x_1^2 y_3^2 + 72 d\gamma^2 x_1^2 y_3^2 + 4 d\gamma^3 x_1^2 y_3^2 + 70 h_1^2 x_1^2 y_3^2 + \\
& 10 d\gamma h_1^2 x_1^2 y_3^2 - 238 h_1 h_2 x_1^2 y_3^2 - 34 d\gamma h_1 h_2 x_1^2 y_3^2 + 196 h_2^2 x_1^2 y_3^2 + 28 d\gamma h_2^2 x_1^2 y_3^2 + 14 x_1^4 y_3^2 + \\
& 2 d\gamma x_1^4 y_3^2 + 840 x_2^2 y_3^2 + 428 d\gamma x_2^2 y_3^2 + 72 d\gamma^2 x_2^2 y_3^2 + 4 d\gamma^3 x_2^2 y_3^2 + 196 h_1^2 x_2^2 y_3^2 + 28 d\gamma h_1^2 x_2^2 y_3^2 - \\
& 238 h_1 h_2 x_2^2 y_3^2 - 34 d\gamma h_1 h_2 x_2^2 y_3^2 + 70 h_2^2 x_2^2 y_3^2 + 10 d\gamma h_2^2 x_2^2 y_3^2 - 182 x_1^2 x_2^2 y_3^2 - 26 d\gamma x_1^2 x_2^2 y_3^2 + \\
& 14 x_2^4 y_3^2 + 2 d\gamma x_2^4 y_3^2 - 546 \pm h_1 x_1 x_2 x_3 y_3^2 - 78 \pm d\gamma h_1 x_1 x_2 x_3 y_3^2 + 546 \pm h_2 x_1 x_2 x_3 y_3^2 + \\
& 78 \pm d\gamma h_2 x_1 x_2 x_3 y_3^2 - 14 x_3^4 y_3^2 - 2 d\gamma x_3^4 y_3^2 - 168 \pm x_1 x_2^2 y_1 y_3^2 - 24 \pm d\gamma x_1 x_2^2 y_1 y_3^2 - \\
& 210 h_1 x_2 x_3 y_1 y_3^2 - 30 d\gamma h_1 x_2 x_3 y_1 y_3^2 + 210 h_2 x_2 x_3 y_1 y_3^2 + 30 d\gamma h_2 x_2 x_3 y_1 y_3^2 + 840 y_1^2 y_3^2 + \\
& 428 d\gamma y_1^2 y_3^2 + 72 d\gamma^2 y_1^2 y_3^2 + 4 d\gamma^3 y_1^2 y_3^2 + 70 h_1^2 y_1^2 y_3^2 + 10 d\gamma h_1^2 y_1^2 y_3^2 - 238 h_1 h_2 y_1^2 y_3^2 - \\
& 34 d\gamma h_1 h_2 y_1^2 y_3^2 + 196 h_2^2 y_1^2 y_3^2 + 28 d\gamma h_2^2 y_1^2 y_3^2 + 28 x_1^2 y_1^2 y_3^2 + 4 d\gamma x_1^2 y_1^2 y_3^2 - 14 x_2^2 y_1^2 y_3^2 - \\
& 2 d\gamma x_2^2 y_1^2 y_3^2 + 14 y_1^4 y_3^2 + 2 d\gamma y_1^4 y_3^2 - 168 \pm x_1^2 x_2 y_2 y_3^2 - 24 \pm d\gamma x_1^2 x_2 y_2 y_3^2 - 210 h_1 x_1 x_3 y_2 y_3^2 - \\
& 30 d\gamma h_1 x_1 x_3 y_2 y_3^2 + 210 h_2 x_1 x_3 y_2 y_3^2 + 30 d\gamma h_2 x_1 x_3 y_2 y_3^2 + 336 x_1 x_2 y_1 y_2 y_3^2 + \\
& 48 d\gamma x_1 x_2 y_1 y_2 y_3^2 + 546 \pm h_1 x_3 y_1 y_2 y_3^2 + 78 \pm d\gamma h_1 x_3 y_1 y_2 y_3^2 - 546 \pm h_2 x_3 y_1 y_2 y_3^2 - \\
& 78 \pm d\gamma h_2 x_3 y_1 y_2 y_3^2 + 168 \pm x_2 y_1^2 y_2 y_3^2 + 24 \pm d\gamma x_2 y_1^2 y_2 y_3^2 + 840 y_2^2 y_3^2 + 428 d\gamma y_2^2 y_3^2 + \\
& 72 d\gamma^2 y_2^2 y_3^2 + 4 d\gamma^3 y_2^2 y_3^2 + 196 h_1^2 y_2^2 y_3^2 + 28 d\gamma h_1^2 y_2^2 y_3^2 - 238 h_1 h_2 y_2^2 y_3^2 - 34 d\gamma h_1 h_2 y_2^2 y_3^2 + \\
& 70 h_2^2 y_2^2 y_3^2 + 10 d\gamma h_2^2 y_2^2 y_3^2 - 14 x_1^2 y_2^2 y_3^2 - 2 d\gamma x_1^2 y_2^2 y_3^2 + 28 x_2^2 y_2^2 y_3^2 + 4 d\gamma x_2^2 y_2^2 y_3^2 + \\
& 168 \pm x_1 y_1 y_2^2 y_3^2 + 24 \pm d\gamma x_1 y_1 y_2^2 y_3^2 - 182 y_1^2 y_2^2 y_3^2 - 26 d\gamma y_1^2 y_2^2 y_3^2 + 14 y_2^4 y_3^2 + 2 d\gamma y_2^4 y_3^2 + \\
& 294 h_1 x_1 x_2 y_3^3 + 42 d\gamma h_1 x_1 x_2 y_3^3 - 294 h_2 x_1 x_2 y_3^3 - 42 d\gamma h_2 x_1 x_2 y_3^3 - 1680 \pm x_3 y_3^3 - \\
& 856 \pm d\gamma x_3 y_3^3 - 144 \pm d\gamma^2 x_3 y_3^3 - 8 \pm d\gamma^3 x_3 y_3^3 + 112 \pm h_1^2 x_3 y_3^3 + 16 \pm d\gamma h_1^2 x_3 y_3^3 - \\
& 280 \pm h_1 h_2 x_3 y_3^3 - 40 \pm d\gamma h_1 h_2 x_3 y_3^3 + 112 \pm h_2^2 x_3 y_3^3 + 16 \pm d\gamma h_2^2 x_3 y_3^3 - 56 \pm x_1^2 x_3 y_3^3 - \\
& 8 \pm d\gamma x_1^2 x_3 y_3^3 - 56 \pm x_2^2 x_3 y_3^3 - 8 \pm d\gamma x_2^2 x_3 y_3^3 - 56 \pm x_3^3 y_3^3 - 8 \pm d\gamma x_3^3 y_3^3 + 42 \pm h_1 x_2 y_1 y_3^3 + \\
& 6 \pm d\gamma h_1 x_2 y_1 y_3^3 - 42 \pm h_2 x_2 y_1 y_3^3 - 6 \pm d\gamma h_2 x_2 y_1 y_3^3 - 56 \pm x_3 y_1^2 y_3^3 - 8 \pm d\gamma x_3 y_1^2 y_3^3 + \\
& 42 \pm h_1 x_1 y_2 y_3^3 + 6 \pm d\gamma h_1 x_1 y_2 y_3^3 - 42 \pm h_2 x_1 y_2 y_3^3 - 6 \pm d\gamma h_2 x_1 y_2 y_3^3 - 294 h_1 y_1 y_2 y_3^3 - \\
& 42 d\gamma h_1 y_1 y_2 y_3^3 + 294 h_2 y_1 y_2 y_3^3 + 42 d\gamma h_2 y_1 y_2 y_3^3 - 56 \pm x_3 y_2^2 y_3^3 - 8 \pm d\gamma x_3 y_2^2 y_3^3 + 840 y_3^4 + \\
& 428 d\gamma y_3^4 + 72 d\gamma^2 y_3^4 + 4 d\gamma^3 y_3^4 - 56 h_1^2 y_3^4 - 8 d\gamma h_1^2 y_3^4 + 140 h_1 h_2 y_3^4 + 20 d\gamma h_1 h_2 y_3^4 - 56 h_2^2 y_3^4 - \\
& 8 d\gamma h_2^2 y_3^4 + 28 x_1^2 y_3^4 + 4 d\gamma x_1^2 y_3^4 + 28 x_2^2 y_3^4 + 4 d\gamma x_2^2 y_3^4 + 14 x_3^2 y_3^4 + 2 d\gamma x_3^2 y_3^4 + 28 y_1^2 y_3^4 + \\
& 4 d\gamma y_1^2 y_3^4 + 28 y_2^2 y_3^4 + 4 d\gamma y_2^2 y_3^4 - 28 \pm x_3 y_3^5 - 4 \pm d\gamma x_3 y_3^5 + 14 y_3^6 + 2 d\gamma y_3^6 - A[[1, 8]] // Expand
\end{aligned}$$

Out[ ]= 0

```

In[ ]:= (* YGα1 πλ11,k *)
k = 7;
- ( - 1/2 ( (2 y1 - i 2 x1) D[A[[1, k]], h1] - (2 h1 - h2) D[A[[1, k]], y1] +
i (2 h1 - h2) D[A[[1, k]], x1] + (x2 - i y2) D[A[[1, k]], x3] + (y2 + i x2) D[A[[1, k]], y3] +
(-x3 - i y3) D[A[[1, k]], x2] + (-y3 + i x3) D[A[[1, k]], y2]) ) // Expand

```

Out[ ]:= 0

```

In[ ]:= (* YGα1 πλ11,k *)
k = 8;
- ( - 1/2 ( (2 y1 - i 2 x1) D[A[[1, k]], h1] - (2 h1 - h2) D[A[[1, k]], y1] +
i (2 h1 - h2) D[A[[1, k]], x1] + (x2 - i y2) D[A[[1, k]], x3] + (y2 + i x2) D[A[[1, k]], y3] +
(-x3 - i y3) D[A[[1, k]], x2] + (-y3 + i x3) D[A[[1, k]], y2]) ) // Expand

```

Out[ ]:= 0

```

(* Descending from the highest weight element *)
(* XGα1 π1,1 *)
k = 1;
( 1/2 ( (2 y1 + i 2 x1) D[A[[k, 1]], h1] - (2 h1 - h2) D[A[[k, 1]], y1] -
i (2 h1 - h2) D[A[[k, 1]], x1] + (x2 + i y2) D[A[[k, 1]], x3] + (y2 - i x2) D[A[[k, 1]], y3] +
(-x3 + i y3) D[A[[k, 1]], x2] + (-y3 - i x3) D[A[[k, 1]], y2]) ) // Expand

```

In[ ]:=

```

-5040 x1 - 8028 dγ x1 - 5104 dγ2 x1 - 1665 dγ3 x1 - 295 dγ4 x1 - 27 dγ5 x1 - dγ6 x1 -
4200 h12 x1 - 3190 dγ h12 x1 - 895 dγ2 h12 x1 - 110 dγ3 h12 x1 - 5 dγ4 h12 x1 - 168 h14 x1 -
52 dγ h14 x1 - 4 dγ2 h14 x1 - 7560 i h2 x1 - 8262 i dγ h2 x1 - 3525 i dγ2 h2 x1 - 735 i dγ3 h2 x1 -
75 i dγ4 h2 x1 - 3 i dγ5 h2 x1 + 4200 h1 h2 x1 + 3190 dγ h1 h2 x1 + 895 dγ2 h1 h2 x1 +
110 dγ3 h1 h2 x1 + ... 2192 ... + 28 y23 y33 + 4 dγ y23 y33 - 42 x1 y34 - 13 dγ x1 y34 - dγ2 x1 y34 -
21 i h1 x1 y34 - 3 i dγ h1 x1 y34 + 21 i h2 x1 y34 + 3 i dγ h2 x1 y34 + 14 x2 x3 y34 + 2 dγ x2 x3 y34 +
42 i y1 y34 + 13 i dγ y1 y34 + i dγ2 y1 y34 - 21 h1 y1 y34 - 3 dγ h1 y1 y34 + 21 h2 y1 y34 +
3 dγ h2 y1 y34 + 14 i x3 y2 y34 + 2 i dγ x3 y2 y34 - 14 i x2 y35 - 2 i dγ x2 y35 + 14 y2 y35 + 2 dγ y2 y35

```

large output

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Out[ ]:= 0

```

In[ ]:= (* YGα1 πj,k *)
j = 2; k = 1;
- ( - 1/2 ( (2 y1 - i 2 x1) D[A[[j, k]], h1] - (2 h1 - h2) D[A[[j, k]], y1] +
i (2 h1 - h2) D[A[[j, k]], x1] + (x2 - i y2) D[A[[j, k]], x3] + (y2 + i x2) D[A[[j, k]], y3] +
(-x3 - i y3) D[A[[j, k]], x2] + (-y3 + i x3) D[A[[j, k]], y2]) ) // Expand

```

```

In[ ]:= -10 080 i h1 - 16 056 i dγ h1 - 10 208 i dγ2 h1 - 3330 i dγ3 h1 - 590 i dγ4 h1 - 54 i dγ5 h1 - 2 i dγ6 h1 -
8400 i h13 - 6380 i dγ h13 - 1790 i dγ2 h13 - 220 i dγ3 h13 - 10 i dγ4 h13 - 336 i h15 - 104 i dγ h15 -

```

$$\begin{aligned}
& 8 \, \mathfrak{d} \gamma^2 h_1^5 + 5040 \, \mathfrak{d} h_2 + 8028 \, \mathfrak{d} \gamma h_2 + 5104 \, \mathfrak{d} \gamma^2 h_2 + 1665 \, \mathfrak{d} \gamma^3 h_2 + 295 \, \mathfrak{d} \gamma^4 h_2 + 27 \, \mathfrak{d} \gamma^5 h_2 + \\
& \mathfrak{d} \gamma^6 h_2 + 15 \, 120 \, h_1 h_2 + 16 \, 524 \, \mathfrak{d} \gamma h_1 h_2 + 7050 \, \mathfrak{d} \gamma^2 h_1 h_2 + 1470 \, \mathfrak{d} \gamma^3 h_1 h_2 + 150 \, \mathfrak{d} \gamma^4 h_1 h_2 + \\
& 6 \, \mathfrak{d} \gamma^5 h_1 h_2 + 12 \, 600 \, \mathfrak{d} h_1^2 h_2 + 9570 \, \mathfrak{d} \gamma h_1^2 h_2 + 2685 \, \mathfrak{d} \gamma^2 h_1^2 h_2 + 330 \, \mathfrak{d} \gamma^3 h_1^2 h_2 + 15 \, \mathfrak{d} \gamma^4 h_1^2 h_2 + \\
& 5040 \, h_1^3 h_2 + 2568 \, \mathfrak{d} \gamma h_1^3 h_2 + 432 \, \mathfrak{d} \gamma^2 h_1^3 h_2 + 24 \, \mathfrak{d} \gamma^3 h_1^3 h_2 + 840 \, \mathfrak{d} h_1^4 h_2 + 260 \, \mathfrak{d} \gamma h_1^4 h_2 + \\
& 20 \, \mathfrak{d} \gamma^2 h_1^4 h_2 - 7560 \, h_2^2 - 8262 \, \mathfrak{d} \gamma h_2^2 - 3525 \, \mathfrak{d} \gamma^2 h_2^2 - 735 \, \mathfrak{d} \gamma^3 h_2^2 - 75 \, \mathfrak{d} \gamma^4 h_2^2 - 3 \, \mathfrak{d} \gamma^5 h_2^2 - \\
& 2520 \, \mathfrak{d} h_1 h_2^2 - 1914 \, \mathfrak{d} \gamma h_1 h_2^2 - 537 \, \mathfrak{d} \gamma^2 h_1 h_2^2 - 66 \, \mathfrak{d} \gamma^3 h_1 h_2^2 - 3 \, \mathfrak{d} \gamma^4 h_1 h_2^2 - 7560 \, h_1^2 h_2^2 - \\
& 3852 \, \mathfrak{d} \gamma h_1^2 h_2^2 - 648 \, \mathfrak{d} \gamma^2 h_1^2 h_2^2 - 36 \, \mathfrak{d} \gamma^3 h_1^2 h_2^2 - 84 \, \mathfrak{d} h_1^3 h_2^2 - 26 \, \mathfrak{d} \gamma h_1^3 h_2^2 - 2 \, \mathfrak{d} \gamma^2 h_1^3 h_2^2 - 840 \, \mathfrak{d} h_2^3 - \\
& 638 \, \mathfrak{d} \gamma h_2^3 - 179 \, \mathfrak{d} \gamma^2 h_2^3 - 22 \, \mathfrak{d} \gamma^3 h_2^3 - \mathfrak{d} \gamma^4 h_2^3 + 3780 \, h_1 h_2^3 + 1926 \, \mathfrak{d} \gamma h_1 h_2^3 + 324 \, \mathfrak{d} \gamma^2 h_1 h_2^3 + \\
& 18 \, \mathfrak{d} \gamma^3 h_1 h_2^3 - 714 \, \mathfrak{d} h_1^2 h_2^3 - 221 \, \mathfrak{d} \gamma h_1^2 h_2^3 - 17 \, \mathfrak{d} \gamma^2 h_1^2 h_2^3 - 630 \, h_2^4 - 321 \, \mathfrak{d} \gamma h_2^4 - 54 \, \mathfrak{d} \gamma^2 h_2^4 - \\
& 3 \, \mathfrak{d} \gamma^3 h_2^4 + 462 \, \mathfrak{d} h_1 h_2^4 + 143 \, \mathfrak{d} \gamma h_1 h_2^4 + 11 \, \mathfrak{d} \gamma^2 h_1 h_2^4 - 84 \, \mathfrak{d} h_2^5 - 26 \, \mathfrak{d} \gamma h_2^5 - 2 \, \mathfrak{d} \gamma^2 h_2^5 - \\
& 8400 \, \mathfrak{d} h_1 x_1^2 - 6380 \, \mathfrak{d} \gamma h_1 x_1^2 - 1790 \, \mathfrak{d} \gamma^2 h_1 x_1^2 - 220 \, \mathfrak{d} \gamma^3 h_1 x_1^2 - 10 \, \mathfrak{d} \gamma^4 h_1 x_1^2 - 672 \, \mathfrak{d} h_1^3 x_1^2 - \\
& 208 \, \mathfrak{d} \gamma h_1^3 x_1^2 - 16 \, \mathfrak{d} \gamma^2 h_1^3 x_1^2 + 4200 \, \mathfrak{d} h_2 x_1^2 + 3190 \, \mathfrak{d} \gamma h_2 x_1^2 + 895 \, \mathfrak{d} \gamma^2 h_2 x_1^2 + 110 \, \mathfrak{d} \gamma^3 h_2 x_1^2 + \\
& 5 \, \mathfrak{d} \gamma^4 h_2 x_1^2 + 5040 \, h_1 h_2 x_1^2 + 2568 \, \mathfrak{d} \gamma h_1 h_2 x_1^2 + 432 \, \mathfrak{d} \gamma^2 h_1 h_2 x_1^2 + 24 \, \mathfrak{d} \gamma^3 h_1 h_2 x_1^2 + 1008 \, \mathfrak{d} h_1^2 h_2 x_1^2 + \\
& 312 \, \mathfrak{d} \gamma h_1^2 h_2 x_1^2 + 24 \, \mathfrak{d} \gamma^2 h_1^2 h_2 x_1^2 - 2520 \, h_2^2 x_1^2 - 1284 \, \mathfrak{d} \gamma h_2^2 x_1^2 - 216 \, \mathfrak{d} \gamma^2 h_2^2 x_1^2 - 12 \, \mathfrak{d} \gamma^3 h_2^2 x_1^2 + \\
& 252 \, \mathfrak{d} h_1 h_2^2 x_1^2 + 78 \, \mathfrak{d} \gamma h_1 h_2^2 x_1^2 + 6 \, \mathfrak{d} \gamma^2 h_1 h_2^2 x_1^2 - 294 \, \mathfrak{d} h_2^3 x_1^2 - 91 \, \mathfrak{d} \gamma h_2^3 x_1^2 - 7 \, \mathfrak{d} \gamma^2 h_2^3 x_1^2 - \\
& 336 \, \mathfrak{d} h_1 x_1^4 - 104 \, \mathfrak{d} \gamma h_1 x_1^4 - 8 \, \mathfrak{d} \gamma^2 h_1 x_1^4 + 168 \, \mathfrak{d} h_2 x_1^4 + 52 \, \mathfrak{d} \gamma h_2 x_1^4 + 4 \, \mathfrak{d} \gamma^2 h_2 x_1^4 - 2520 \, x_2^2 - \\
& 2754 \, \mathfrak{d} \gamma x_2^2 - 1175 \, \mathfrak{d} \gamma^2 x_2^2 - 245 \, \mathfrak{d} \gamma^3 x_2^2 - 25 \, \mathfrak{d} \gamma^4 x_2^2 - \mathfrak{d} \gamma^5 x_2^2 - 3360 \, \mathfrak{d} h_1 x_2^2 - 2552 \, \mathfrak{d} \gamma h_1 x_2^2 - \\
& 716 \, \mathfrak{d} \gamma^2 h_1 x_2^2 - 88 \, \mathfrak{d} \gamma^3 h_1 x_2^2 - 4 \, \mathfrak{d} \gamma^4 h_1 x_2^2 - 2310 \, h_1^2 x_2^2 - 1177 \, \mathfrak{d} \gamma h_1^2 x_2^2 - 198 \, \mathfrak{d} \gamma^2 h_1^2 x_2^2 - \\
& 11 \, \mathfrak{d} \gamma^3 h_1^2 x_2^2 - 420 \, \mathfrak{d} h_1^3 x_2^2 - 130 \, \mathfrak{d} \gamma h_1^3 x_2^2 - 10 \, \mathfrak{d} \gamma^2 h_1^3 x_2^2 + 56 \, h_1^4 x_2^2 + 8 \, \mathfrak{d} \gamma h_1^4 x_2^2 - 840 \, \mathfrak{d} h_2 x_2^2 - \\
& 638 \, \mathfrak{d} \gamma h_2 x_2^2 - 179 \, \mathfrak{d} \gamma^2 h_2 x_2^2 - 22 \, \mathfrak{d} \gamma^3 h_2 x_2^2 - \mathfrak{d} \gamma^4 h_2 x_2^2 + 2940 \, h_1 h_2 x_2^2 + 1498 \, \mathfrak{d} \gamma h_1 h_2 x_2^2 + \\
& 252 \, \mathfrak{d} \gamma^2 h_1 h_2 x_2^2 + 14 \, \mathfrak{d} \gamma^3 h_1 h_2 x_2^2 - 630 \, \mathfrak{d} h_1^2 h_2 x_2^2 - 195 \, \mathfrak{d} \gamma h_1^2 h_2 x_2^2 - 15 \, \mathfrak{d} \gamma^2 h_1^2 h_2 x_2^2 + \\
& 56 \, h_1^3 h_2 x_2^2 + 8 \, \mathfrak{d} \gamma h_1^3 h_2 x_2^2 - 420 \, h_2^2 x_2^2 - 214 \, \mathfrak{d} \gamma h_2^2 x_2^2 - 36 \, \mathfrak{d} \gamma^2 h_2^2 x_2^2 - 2 \, \mathfrak{d} \gamma^3 h_2^2 x_2^2 + 756 \, \mathfrak{d} h_1 h_2^2 x_2^2 + \\
& 234 \, \mathfrak{d} \gamma h_1 h_2^2 x_2^2 + 18 \, \mathfrak{d} \gamma^2 h_1 h_2^2 x_2^2 - 42 \, h_1^2 h_2^2 x_2^2 - 6 \, \mathfrak{d} \gamma h_1^2 h_2^2 x_2^2 - 168 \, \mathfrak{d} h_2^3 x_2^2 - 52 \, \mathfrak{d} \gamma h_2^3 x_2^2 - \\
& 4 \, \mathfrak{d} \gamma^2 h_2^3 x_2^2 - 28 \, h_1 h_2^3 x_2^2 - 4 \, \mathfrak{d} \gamma h_1 h_2^3 x_2^2 + 14 \, h_2^4 x_2^2 + 2 \, \mathfrak{d} \gamma h_2^4 x_2^2 - 1050 \, x_1^2 x_2^2 - 535 \, \mathfrak{d} \gamma x_1^2 x_2^2 - \\
& 90 \, \mathfrak{d} \gamma^2 x_1^2 x_2^2 - 5 \, \mathfrak{d} \gamma^3 x_1^2 x_2^2 - 420 \, \mathfrak{d} h_1 x_1^2 x_2^2 - 130 \, \mathfrak{d} \gamma h_1 x_1^2 x_2^2 - 10 \, \mathfrak{d} \gamma^2 h_1 x_1^2 x_2^2 + 28 \, h_1^2 x_1^2 x_2^2 + \\
& 4 \, \mathfrak{d} \gamma h_1^2 x_1^2 x_2^2 - 294 \, \mathfrak{d} h_2 x_1^2 x_2^2 - 91 \, \mathfrak{d} \gamma h_2 x_1^2 x_2^2 - 7 \, \mathfrak{d} \gamma^2 h_2 x_1^2 x_2^2 + 140 \, h_1 h_2 x_1^2 x_2^2 + 20 \, \mathfrak{d} \gamma h_1 h_2 x_1^2 x_2^2 - \\
& 14 \, h_2^2 x_1^2 x_2^2 - 2 \, \mathfrak{d} \gamma h_2^2 x_1^2 x_2^2 - 28 \, x_1^4 x_2^2 - 4 \, \mathfrak{d} \gamma x_1^4 x_2^2 + 210 \, x_2^4 + 107 \, \mathfrak{d} \gamma x_2^4 + 18 \, \mathfrak{d} \gamma^2 x_2^4 + \mathfrak{d} \gamma^3 x_2^4 + \\
& 294 \, \mathfrak{d} h_1 x_2^4 + 91 \, \mathfrak{d} \gamma h_1 x_2^4 + 7 \, \mathfrak{d} \gamma^2 h_1 x_2^4 - 56 \, h_1^2 x_2^4 - 8 \, \mathfrak{d} \gamma h_1^2 x_2^4 - 84 \, \mathfrak{d} h_2 x_2^4 - 26 \, \mathfrak{d} \gamma h_2 x_2^4 - \\
& 2 \, \mathfrak{d} \gamma^2 h_2 x_2^4 - 28 \, h_1 h_2 x_2^4 - 4 \, \mathfrak{d} \gamma h_1 h_2 x_2^4 + 28 \, h_2^2 x_2^4 + 4 \, \mathfrak{d} \gamma h_2^2 x_2^4 - 14 \, x_1^2 x_2^4 - 2 \, \mathfrak{d} \gamma x_1^2 x_2^4 + 14 \, x_2^6 + \\
& 2 \, \mathfrak{d} \gamma x_2^6 + 2520 \, x_3^2 + 2754 \, \mathfrak{d} \gamma x_3^2 + 1175 \, \mathfrak{d} \gamma^2 x_3^2 + 245 \, \mathfrak{d} \gamma^3 x_3^2 + 25 \, \mathfrak{d} \gamma^4 x_3^2 + \mathfrak{d} \gamma^5 x_3^2 - 3360 \, \mathfrak{d} h_1 x_3^2 - \\
& 2552 \, \mathfrak{d} \gamma h_1 x_3^2 - 716 \, \mathfrak{d} \gamma^2 h_1 x_3^2 - 88 \, \mathfrak{d} \gamma^3 h_1 x_3^2 - 4 \, \mathfrak{d} \gamma^4 h_1 x_3^2 + 2310 \, h_1^2 x_3^2 + 1177 \, \mathfrak{d} \gamma h_1^2 x_3^2 + \\
& 198 \, \mathfrak{d} \gamma^2 h_1^2 x_3^2 + 11 \, \mathfrak{d} \gamma^3 h_1^2 x_3^2 - 420 \, \mathfrak{d} h_1^3 x_3^2 - 130 \, \mathfrak{d} \gamma h_1^3 x_3^2 - 10 \, \mathfrak{d} \gamma^2 h_1^3 x_3^2 - 56 \, h_1^4 x_3^2 - 8 \, \mathfrak{d} \gamma h_1^4 x_3^2 + \\
& 4200 \, \mathfrak{d} h_2 x_3^2 + 3190 \, \mathfrak{d} \gamma h_2 x_3^2 + 895 \, \mathfrak{d} \gamma^2 h_2 x_3^2 + 110 \, \mathfrak{d} \gamma^3 h_2 x_3^2 + 5 \, \mathfrak{d} \gamma^4 h_2 x_3^2 - 1680 \, h_1 h_2 x_3^2 - \\
& 856 \, \mathfrak{d} \gamma h_1 h_2 x_3^2 - 144 \, \mathfrak{d} \gamma^2 h_1 h_2 x_3^2 - 8 \, \mathfrak{d} \gamma^3 h_1 h_2 x_3^2 + 1890 \, \mathfrak{d} h_1^2 h_2 x_3^2 + 585 \, \mathfrak{d} \gamma h_1^2 h_2 x_3^2 + \\
& 45 \, \mathfrak{d} \gamma^2 h_1^2 h_2 x_3^2 + 280 \, h_1^3 h_2 x_3^2 + 40 \, \mathfrak{d} \gamma h_1^3 h_2 x_3^2 - 210 \, h_2^2 x_3^2 - 107 \, \mathfrak{d} \gamma h_2^2 x_3^2 - 18 \, \mathfrak{d} \gamma^2 h_2^2 x_3^2 - \\
& \mathfrak{d} \gamma^3 h_2^2 x_3^2 - 1764 \, \mathfrak{d} h_1 h_2^2 x_3^2 - 546 \, \mathfrak{d} \gamma h_1 h_2^2 x_3^2 - 42 \, \mathfrak{d} \gamma^2 h_1 h_2^2 x_3^2 - 462 \, h_1^2 h_2^2 x_3^2 - 66 \, \mathfrak{d} \gamma h_1^2 h_2^2 x_3^2 + \\
& 462 \, \mathfrak{d} h_2^3 x_3^2 + 143 \, \mathfrak{d} \gamma h_2^3 x_3^2 + 11 \, \mathfrak{d} \gamma^2 h_2^3 x_3^2 + 280 \, h_1 h_2^3 x_3^2 + 40 \, \mathfrak{d} \gamma h_1 h_2^3 x_3^2 - 56 \, h_2^4 x_3^2 - 8 \, \mathfrak{d} \gamma h_2^4 x_3^2 + \\
& 1050 \, x_1^2 x_3^2 + 535 \, \mathfrak{d} \gamma x_1^2 x_3^2 + 90 \, \mathfrak{d} \gamma^2 x_1^2 x_3^2 + 5 \, \mathfrak{d} \gamma^3 x_1^2 x_3^2 - 420 \, \mathfrak{d} h_1 x_1^2 x_3^2 - 130 \, \mathfrak{d} \gamma h_1 x_1^2 x_3^2 - \\
& 10 \, \mathfrak{d} \gamma^2 h_1 x_1^2 x_3^2 - 28 \, h_1^2 x_1^2 x_3^2 - 4 \, \mathfrak{d} \gamma h_1^2 x_1^2 x_3^2 + 714 \, \mathfrak{d} h_2 x_1^2 x_3^2 + 221 \, \mathfrak{d} \gamma h_2 x_1^2 x_3^2 + 17 \, \mathfrak{d} \gamma^2 h_2 x_1^2 x_3^2 + \\
& 196 \, h_1 h_2 x_1^2 x_3^2 + 28 \, \mathfrak{d} \gamma h_1 h_2 x_1^2 x_3^2 - 154 \, h_2^2 x_1^2 x_3^2 - 22 \, \mathfrak{d} \gamma h_2^2 x_1^2 x_3^2 + 28 \, x_1^4 x_3^2 + 4 \, \mathfrak{d} \gamma x_1^4 x_3^2 - \\
& 924 \, \mathfrak{d} h_1 x_2^2 x_3^2 - 286 \, \mathfrak{d} \gamma h_1 x_2^2 x_3^2 - 22 \, \mathfrak{d} \gamma^2 h_1 x_2^2 x_3^2 + 462 \, \mathfrak{d} h_2 x_2^2 x_3^2 + 143 \, \mathfrak{d} \gamma h_2 x_2^2 x_3^2 + \\
& 11 \, \mathfrak{d} \gamma^2 h_2 x_2^2 x_3^2 + 84 \, h_1 h_2 x_2^2 x_3^2 + 12 \, \mathfrak{d} \gamma h_1 h_2 x_2^2 x_3^2 - 42 \, h_2^2 x_2^2 x_3^2 - 6 \, \mathfrak{d} \gamma h_2^2 x_2^2 x_3^2 + 14 \, x_2^4 x_3^2 + \\
& 2 \, \mathfrak{d} \gamma x_2^4 x_3^2 - 210 \, x_3^4 - 107 \, \mathfrak{d} \gamma x_3^4 - 18 \, \mathfrak{d} \gamma^2 x_3^4 - \mathfrak{d} \gamma^3 x_3^4 + 294 \, \mathfrak{d} h_1 x_3^4 + 91 \, \mathfrak{d} \gamma h_1 x_3^4 + 7 \, \mathfrak{d} \gamma^2 h_1 x_3^4 + \\
& 56 \, h_1^2 x_3^4 + 8 \, \mathfrak{d} \gamma h_1^2 x_3^4 - 210 \, \mathfrak{d} h_2 x_3^4 - 65 \, \mathfrak{d} \gamma h_2 x_3^4 - 5 \, \mathfrak{d} \gamma^2 h_2 x_3^4 - 140 \, h_1 h_2 x_3^4 - 20 \, \mathfrak{d} \gamma h_1 h_2 x_3^4 + \\
& 56 \, h_2^2 x_3^4 + 8 \, \mathfrak{d} \gamma h_2^2 x_3^4 + 14 \, x_1^2 x_3^4 + 2 \, \mathfrak{d} \gamma x_1^2 x_3^4 - 14 \, x_2^2 x_3^4 - 2 \, \mathfrak{d} \gamma x_2^2 x_3^4 - 14 \, x_3^6 - 2 \, \mathfrak{d} \gamma x_3^6 + \\
& 2520 \, h_1 x_2 x_3 y_1 + 1284 \, \mathfrak{d} \gamma h_1 x_2 x_3 y_1 + 216 \, \mathfrak{d} \gamma^2 h_1 x_2 x_3 y_1 + 12 \, \mathfrak{d} \gamma^3 h_1 x_2 x_3 y_1 - 168 \, h_1^3 x_2 x_3 y_1 - \\
& 24 \, \mathfrak{d} \gamma h_1^3 x_2 x_3 y_1 - 1260 \, h_2 x_2 x_3 y_1 - 642 \, \mathfrak{d} \gamma h_2 x_2 x_3 y_1 - 108 \, \mathfrak{d} \gamma^2 h_2 x_2 x_3 y_1 - 6 \, \mathfrak{d} \gamma^3 h_2 x_2 x_3 y_1 +
\end{aligned}$$

$$\begin{aligned}
& 1512 \pm h_1 h_2 x_2 x_3 y_1 + 468 \pm d\gamma h_1 h_2 x_2 x_3 y_1 + 36 \pm d\gamma^2 h_1 h_2 x_2 x_3 y_1 + 252 h_1^2 h_2 x_2 x_3 y_1 + \\
& 36 d\gamma h_1^2 h_2 x_2 x_3 y_1 - 756 \pm h_2^2 x_2 x_3 y_1 - 234 \pm d\gamma h_2^2 x_2 x_3 y_1 - 18 \pm d\gamma^2 h_2^2 x_2 x_3 y_1 - \\
& 252 h_1 h_2^2 x_2 x_3 y_1 - 36 d\gamma h_1 h_2^2 x_2 x_3 y_1 + 84 h_2^3 x_2 x_3 y_1 + 12 d\gamma h_2^3 x_2 x_3 y_1 - 168 h_1 x_1^2 x_2 x_3 y_1 - \\
& 24 d\gamma h_1 x_1^2 x_2 x_3 y_1 + 84 h_2 x_1^2 x_2 x_3 y_1 + 12 d\gamma h_2 x_1^2 x_2 x_3 y_1 - 756 \pm x_2^3 x_3 y_1 - 234 \pm d\gamma x_2^3 x_3 y_1 - \\
& 18 \pm d\gamma^2 x_2^3 x_3 y_1 + 84 h_1 x_2^3 x_3 y_1 + 12 d\gamma h_1 x_2^3 x_3 y_1 + 84 h_2 x_2^3 x_3 y_1 + 12 d\gamma h_2 x_2^3 x_3 y_1 + \\
& 756 \pm x_2 x_3^3 y_1 + 234 \pm d\gamma x_2 x_3^3 y_1 + 18 \pm d\gamma^2 x_2 x_3^3 y_1 + 84 h_1 x_2 x_3^3 y_1 + 12 d\gamma h_1 x_2 x_3^3 y_1 - \\
& 168 h_2 x_2 x_3^3 y_1 - 24 d\gamma h_2 x_2 x_3^3 y_1 - 8400 \pm h_1 y_1^2 - 6380 \pm d\gamma h_1 y_1^2 - 1790 \pm d\gamma^2 h_1 y_1^2 - \\
& 220 \pm d\gamma^3 h_1 y_1^2 - 10 \pm d\gamma^4 h_1 y_1^2 - 672 \pm h_1^3 y_1^2 - 208 \pm d\gamma h_1^3 y_1^2 - 16 \pm d\gamma^2 h_1^3 y_1^2 + 4200 \pm h_2 y_1^2 + \\
& 3190 \pm d\gamma h_2 y_1^2 + 895 \pm d\gamma^2 h_2 y_1^2 + 110 \pm d\gamma^3 h_2 y_1^2 + 5 \pm d\gamma^4 h_2 y_1^2 + 5040 h_1 h_2 y_1^2 + 2568 d\gamma h_1 h_2 y_1^2 + \\
& 432 d\gamma^2 h_1 h_2 y_1^2 + 24 d\gamma^3 h_1 h_2 y_1^2 + 1008 \pm h_2^2 h_2 y_1^2 + 312 \pm d\gamma h_2^2 h_2 y_1^2 + 24 \pm d\gamma^2 h_2^2 h_2 y_1^2 - \\
& 2520 h_2^2 y_1^2 - 1284 d\gamma h_2^2 y_1^2 - 216 d\gamma^2 h_2^2 y_1^2 - 12 d\gamma^3 h_2^2 y_1^2 + 252 \pm h_1 h_2^2 y_1^2 + 78 \pm d\gamma h_1 h_2^2 y_1^2 + \\
& 6 \pm d\gamma^2 h_1 h_2^2 y_1^2 - 294 \pm h_2^3 y_1^2 - 91 \pm d\gamma h_2^3 y_1^2 - 7 \pm d\gamma^2 h_2^3 y_1^2 - 672 \pm h_1 x_1^2 y_1^2 - 208 \pm d\gamma h_1 x_1^2 y_1^2 - \\
& 16 \pm d\gamma^2 h_1 x_1^2 y_1^2 + 336 \pm h_2 x_1^2 y_1^2 + 104 \pm d\gamma h_2 x_1^2 y_1^2 + 8 \pm d\gamma^2 h_2 x_1^2 y_1^2 - 1050 x_2^2 y_1^2 - 535 d\gamma x_2^2 y_1^2 - \\
& 90 d\gamma^2 x_2^2 y_1^2 - 5 d\gamma^3 x_2^2 y_1^2 - 420 \pm h_1 x_2^2 y_1^2 - 130 \pm d\gamma h_1 x_2^2 y_1^2 - 10 \pm d\gamma^2 h_1 x_2^2 y_1^2 + 28 h_2^2 x_2^2 y_1^2 + \\
& 4 d\gamma h_2^2 x_2^2 y_1^2 - 294 \pm h_2 x_2^2 y_1^2 - 91 \pm d\gamma h_2 x_2^2 y_1^2 - 7 \pm d\gamma^2 h_2 x_2^2 y_1^2 + 140 h_1 h_2 x_2^2 y_1^2 + 20 d\gamma h_1 h_2 x_2^2 y_1^2 - \\
& 14 h_2^2 x_2^2 y_1^2 - 2 d\gamma h_2^2 x_2^2 y_1^2 - 56 x_1^2 x_2^2 y_1^2 - 8 d\gamma x_1^2 x_2^2 y_1^2 - 14 x_2^4 y_1^2 - 2 d\gamma x_2^4 y_1^2 + 1050 x_3^2 y_1^2 + \\
& 535 d\gamma x_3^2 y_1^2 + 90 d\gamma^2 x_3^2 y_1^2 + 5 d\gamma^3 x_3^2 y_1^2 - 420 \pm h_1 x_3^2 y_1^2 - 130 \pm d\gamma h_1 x_3^2 y_1^2 - 10 \pm d\gamma^2 h_1 x_3^2 y_1^2 - \\
& 28 h_2^2 x_3^2 y_1^2 - 4 d\gamma h_2^2 x_3^2 y_1^2 + 714 \pm h_2 x_3^2 y_1^2 + 221 \pm d\gamma h_2 x_3^2 y_1^2 + 17 \pm d\gamma^2 h_2 x_3^2 y_1^2 + 196 h_1 h_2 x_3^2 y_1^2 + \\
& 28 d\gamma h_1 h_2 x_3^2 y_1^2 - 154 h_2^2 x_3^2 y_1^2 - 22 d\gamma h_2^2 x_3^2 y_1^2 + 56 x_1^2 x_3^2 y_1^2 + 8 d\gamma x_1^2 x_3^2 y_1^2 + 14 x_3^4 y_1^2 + 2 d\gamma x_3^4 y_1^2 - \\
& 168 h_1 x_2 x_3 y_1^3 - 24 d\gamma h_1 x_2 x_3 y_1^3 + 84 h_2 x_2 x_3 y_1^3 + 12 d\gamma h_2 x_2 x_3 y_1^3 - 336 \pm h_1 y_1^4 - 104 \pm d\gamma h_1 y_1^4 - \\
& 8 \pm d\gamma^2 h_1 y_1^4 + 168 \pm h_2 y_1^4 + 52 \pm d\gamma h_2 y_1^4 + 4 \pm d\gamma^2 h_2 y_1^4 - 28 x_2^2 y_1^4 - 4 d\gamma x_2^2 y_1^4 + 28 x_3^2 y_1^4 + \\
& 4 d\gamma x_3^2 y_1^4 + 2520 h_1 x_1 x_3 y_2 + 1284 d\gamma h_1 x_1 x_3 y_2 + 216 d\gamma^2 h_1 x_1 x_3 y_2 + 12 d\gamma^3 h_1 x_1 x_3 y_2 - \\
& 168 h_1^3 x_1 x_3 y_2 - 24 d\gamma h_1^3 x_1 x_3 y_2 - 1260 h_2 x_1 x_3 y_2 - 642 d\gamma h_2 x_1 x_3 y_2 - 108 d\gamma^2 h_2 x_1 x_3 y_2 - \\
& 6 d\gamma^3 h_2 x_1 x_3 y_2 + 1512 \pm h_1 h_2 x_1 x_3 y_2 + 468 \pm d\gamma h_1 h_2 x_1 x_3 y_2 + 36 \pm d\gamma^2 h_1 h_2 x_1 x_3 y_2 + \\
& 252 h_1^2 h_2 x_1 x_3 y_2 + 36 d\gamma h_1^2 h_2 x_1 x_3 y_2 - 756 \pm h_2^2 x_1 x_3 y_2 - 234 \pm d\gamma h_2^2 x_1 x_3 y_2 - 18 \pm d\gamma^2 h_2^2 x_1 x_3 y_2 - \\
& 252 h_1 h_2^2 x_1 x_3 y_2 - 36 d\gamma h_1 h_2^2 x_1 x_3 y_2 + 84 h_2^3 x_1 x_3 y_2 + 12 d\gamma h_2^3 x_1 x_3 y_2 - 168 h_1 x_1^3 x_3 y_2 - \\
& 24 d\gamma h_1 x_1^3 x_3 y_2 + 84 h_2 x_1^3 x_3 y_2 + 12 d\gamma h_2 x_1^3 x_3 y_2 - 756 \pm x_1 x_2^2 x_3 y_2 - 234 \pm d\gamma x_1 x_2^2 x_3 y_2 - \\
& 18 \pm d\gamma^2 x_1 x_2^2 x_3 y_2 + 84 h_1 x_1 x_2^2 x_3 y_2 + 12 d\gamma h_1 x_1 x_2^2 x_3 y_2 + 84 h_2 x_1 x_2^2 x_3 y_2 + 12 d\gamma h_2 x_1 x_2^2 x_3 y_2 + \\
& 756 \pm x_1 x_3^3 y_2 + 234 \pm d\gamma x_1 x_3^3 y_2 + 18 \pm d\gamma^2 x_1 x_3^3 y_2 + 84 h_1 x_1 x_3^3 y_2 + 12 d\gamma h_1 x_1 x_3^3 y_2 - \\
& 168 h_2 x_1 x_3^3 y_2 - 24 d\gamma h_2 x_1 x_3^3 y_2 - 168 h_1 x_1 x_3 y_1^2 y_2 - 24 d\gamma h_1 x_1 x_3 y_1^2 y_2 + 84 h_2 x_1 x_3 y_1^2 y_2 + \\
& 12 d\gamma h_2 x_1 x_3 y_1^2 y_2 - 2520 y_2^2 - 2754 d\gamma y_2^2 - 1175 d\gamma^2 y_2^2 - 245 d\gamma^3 y_2^2 - 25 d\gamma^4 y_2^2 - d\gamma^5 y_2^2 - \\
& 3360 \pm h_1 y_2^2 - 2552 \pm d\gamma h_1 y_2^2 - 716 \pm d\gamma^2 h_1 y_2^2 - 88 \pm d\gamma^3 h_1 y_2^2 - 4 \pm d\gamma^4 h_1 y_2^2 - 2310 h_1^2 y_2^2 - \\
& 1177 d\gamma h_1^2 y_2^2 - 198 d\gamma^2 h_1^2 y_2^2 - 11 d\gamma^3 h_1^2 y_2^2 - 420 \pm h_1^3 y_2^2 - 130 \pm d\gamma h_1^3 y_2^2 - 10 \pm d\gamma^2 h_1^3 y_2^2 + \\
& 56 h_2^4 y_2^2 + 8 d\gamma h_2^4 y_2^2 - 840 \pm h_2 y_2^2 - 638 \pm d\gamma h_2 y_2^2 - 179 \pm d\gamma^2 h_2 y_2^2 - 22 \pm d\gamma^3 h_2 y_2^2 - \\
& \pm d\gamma^4 h_2 y_2^2 + 2940 h_1 h_2 y_2^2 + 1498 d\gamma h_1 h_2 y_2^2 + 252 d\gamma^2 h_1 h_2 y_2^2 + 14 d\gamma^3 h_1 h_2 y_2^2 - 630 \pm h_1^2 h_2 y_2^2 - \\
& 195 \pm d\gamma h_1^2 h_2 y_2^2 - 15 \pm d\gamma^2 h_1^2 h_2 y_2^2 + 56 h_1^3 h_2 y_2^2 + 8 d\gamma h_1^3 h_2 y_2^2 - 420 h_2^2 y_2^2 - 214 d\gamma h_2^2 y_2^2 - \\
& 36 d\gamma^2 h_2^2 y_2^2 - 2 d\gamma^3 h_2^2 y_2^2 + 756 \pm h_1 h_2^2 y_2^2 + 234 \pm d\gamma h_1 h_2^2 y_2^2 + 18 \pm d\gamma^2 h_1 h_2^2 y_2^2 - 42 h_1^2 h_2^2 y_2^2 - \\
& 6 d\gamma h_1^2 h_2^2 y_2^2 - 168 \pm h_2^3 y_2^2 - 52 \pm d\gamma h_2^3 y_2^2 - 4 \pm d\gamma^2 h_2^3 y_2^2 - 28 h_1 h_2^3 y_2^2 - 4 d\gamma h_1 h_2^3 y_2^2 + 14 h_2^4 y_2^2 + \\
& 2 d\gamma h_2^4 y_2^2 - 1050 x_1^2 y_2^2 - 535 d\gamma x_1^2 y_2^2 - 90 d\gamma^2 x_1^2 y_2^2 - 5 d\gamma^3 x_1^2 y_2^2 - 420 \pm h_1 x_1^2 y_2^2 - 130 \pm d\gamma h_1 x_1^2 y_2^2 - \\
& 10 \pm d\gamma^2 h_1 x_1^2 y_2^2 + 28 h_2^2 x_1^2 y_2^2 + 4 d\gamma h_2^2 x_1^2 y_2^2 - 294 \pm h_2 x_1^2 y_2^2 - 91 \pm d\gamma h_2 x_1^2 y_2^2 - 7 \pm d\gamma^2 h_2 x_1^2 y_2^2 + \\
& 140 h_1 h_2 x_1^2 y_2^2 + 20 d\gamma h_1 h_2 x_1^2 y_2^2 - 14 h_2^2 x_1^2 y_2^2 - 2 d\gamma h_2^2 x_1^2 y_2^2 - 28 x_1^4 y_2^2 - 4 d\gamma x_1^4 y_2^2 + 420 x_2^2 y_2^2 + \\
& 214 d\gamma x_2^2 y_2^2 + 36 d\gamma^2 x_2^2 y_2^2 + 2 d\gamma^3 x_2^2 y_2^2 + 588 \pm h_1 x_2^2 y_2^2 + 182 \pm d\gamma h_1 x_2^2 y_2^2 + 14 \pm d\gamma^2 h_1 x_2^2 y_2^2 - \\
& 112 h_2^2 x_2^2 y_2^2 - 16 d\gamma h_2^2 x_2^2 y_2^2 - 168 \pm h_2 x_2^2 y_2^2 - 52 \pm d\gamma h_2 x_2^2 y_2^2 - 4 \pm d\gamma^2 h_2 x_2^2 y_2^2 - 56 h_1 h_2 x_2^2 y_2^2 - \\
& 8 d\gamma h_1 h_2 x_2^2 y_2^2 + 56 h_2^2 x_2^2 y_2^2 + 8 d\gamma h_2^2 x_2^2 y_2^2 - 28 x_1^2 x_2^2 y_2^2 - 4 d\gamma x_1^2 x_2^2 y_2^2 + 42 x_2^4 y_2^2 + 6 d\gamma x_2^4 y_2^2 - \\
& 924 \pm h_1 x_3^2 y_2^2 - 286 \pm d\gamma h_1 x_3^2 y_2^2 - 22 \pm d\gamma^2 h_1 x_3^2 y_2^2 + 462 \pm h_2 x_3^2 y_2^2 + 143 \pm d\gamma h_2 x_3^2 y_2^2 + \\
& 11 \pm d\gamma^2 h_2 x_3^2 y_2^2 + 84 h_1 h_2 x_3^2 y_2^2 + 12 d\gamma h_1 h_2 x_3^2 y_2^2 - 42 h_2^2 x_3^2 y_2^2 - 6 d\gamma h_2^2 x_3^2 y_2^2 + 28 x_2^2 x_3^2 y_2^2 + \\
& 4 d\gamma x_2^2 x_3^2 y_2^2 - 14 x_3^4 y_2^2 - 2 d\gamma x_3^4 y_2^2 - 756 \pm x_2 x_3 y_1 y_2^2 - 234 \pm d\gamma x_2 x_3 y_1 y_2^2 - 18 \pm d\gamma^2 x_2 x_3 y_1 y_2^2 +
\end{aligned}$$

$$\begin{aligned}
& 84 h_1 x_2 x_3 y_1 y_2^2 + 12 d\gamma h_1 x_2 x_3 y_1 y_2^2 + 84 h_2 x_2 x_3 y_1 y_2^2 + 12 d\gamma h_2 x_2 x_3 y_1 y_2^2 - 1050 y_1^2 y_2^2 - \\
& 535 d\gamma y_1^2 y_2^2 - 90 d\gamma^2 y_1^2 y_2^2 - 5 d\gamma^3 y_1^2 y_2^2 - 420 \dot{\imath} h_1 y_1^2 y_2^2 - 130 \dot{\imath} d\gamma h_1 y_1^2 y_2^2 - 10 \dot{\imath} d\gamma^2 h_1 y_1^2 y_2^2 + \\
& 28 h_1^2 y_1^2 y_2^2 + 4 d\gamma h_1^2 y_1^2 y_2^2 - 294 \dot{\imath} h_2 y_1^2 y_2^2 - 91 \dot{\imath} d\gamma h_2 y_1^2 y_2^2 - 7 \dot{\imath} d\gamma^2 h_2 y_1^2 y_2^2 + 140 h_1 h_2 y_1^2 y_2^2 + \\
& 20 d\gamma h_1 h_2 y_1^2 y_2^2 - 14 h_2^2 y_1^2 y_2^2 - 2 d\gamma h_2^2 y_1^2 y_2^2 - 56 x_1^2 y_1^2 y_2^2 - 8 d\gamma x_1^2 y_1^2 y_2^2 - 28 x_2^2 y_1^2 y_2^2 - \\
& 4 d\gamma x_2^2 y_1^2 y_2^2 - 28 y_1^4 y_2^2 - 4 d\gamma y_1^4 y_2^2 - 756 \dot{\imath} x_1 x_3 y_2^3 - 234 \dot{\imath} d\gamma x_1 x_3 y_2^3 - 18 \dot{\imath} d\gamma^2 x_1 x_3 y_2^3 + \\
& 84 h_1 x_1 x_3 y_2^3 + 12 d\gamma h_1 x_1 x_3 y_2^3 + 84 h_2 x_1 x_3 y_2^3 + 12 d\gamma h_2 x_1 x_3 y_2^3 + 210 y_2^4 + 107 d\gamma y_2^4 + \\
& 18 d\gamma^2 y_2^4 + d\gamma^3 y_2^4 + 294 \dot{\imath} h_1 y_2^4 + 91 \dot{\imath} d\gamma h_1 y_2^4 + 7 \dot{\imath} d\gamma^2 h_1 y_2^4 - 56 h_1^2 y_2^4 - 8 d\gamma h_1^2 y_2^4 - 84 \dot{\imath} h_2 y_2^4 - \\
& 26 \dot{\imath} d\gamma h_2 y_2^4 - 2 \dot{\imath} d\gamma^2 h_2 y_2^4 - 28 h_1 h_2 y_2^4 - 4 d\gamma h_1 h_2 y_2^4 + 28 h_2^2 y_2^4 + 4 d\gamma h_2^2 y_2^4 - 14 x_1^2 y_2^4 - \\
& 2 d\gamma x_1^2 y_2^4 + 42 x_2^2 y_2^4 + 6 d\gamma x_2^2 y_2^4 + 14 x_3^2 y_2^4 + 2 d\gamma x_3^2 y_2^4 - 14 y_1^2 y_2^4 - 2 d\gamma y_1^2 y_2^4 + 14 y_2^6 + 2 d\gamma y_2^6 - \\
& 2520 h_1 x_1 x_2 y_3 - 1284 d\gamma h_1 x_1 x_2 y_3 - 216 d\gamma^2 h_1 x_1 x_2 y_3 - 12 d\gamma^3 h_1 x_1 x_2 y_3 + 168 h_1^3 x_1 x_2 y_3 + \\
& 24 d\gamma h_1^3 x_1 x_2 y_3 + 1260 h_2 x_1 x_2 y_3 + 642 d\gamma h_2 x_1 x_2 y_3 + 108 d\gamma^2 h_2 x_1 x_2 y_3 + 6 d\gamma^3 h_2 x_1 x_2 y_3 - \\
& 1512 \dot{\imath} h_1 h_2 x_1 x_2 y_3 - 468 \dot{\imath} d\gamma h_1 h_2 x_1 x_2 y_3 - 36 \dot{\imath} d\gamma^2 h_1 h_2 x_1 x_2 y_3 - 252 h_1^2 h_2 x_1 x_2 y_3 - \\
& 36 d\gamma h_1^2 h_2 x_1 x_2 y_3 + 756 \dot{\imath} h_2^2 x_1 x_2 y_3 + 234 \dot{\imath} d\gamma h_2^2 x_1 x_2 y_3 + 18 \dot{\imath} d\gamma^2 h_2^2 x_1 x_2 y_3 + \\
& 252 h_1 h_2^2 x_1 x_2 y_3 + 36 d\gamma h_1 h_2^2 x_1 x_2 y_3 - 84 h_2^3 x_1 x_2 y_3 - 12 d\gamma h_2^3 x_1 x_2 y_3 + 168 h_1 x_1^3 x_2 y_3 + \\
& 24 d\gamma h_1 x_1^3 x_2 y_3 - 84 h_2 x_1^3 x_2 y_3 - 12 d\gamma h_2 x_1^3 x_2 y_3 + 756 \dot{\imath} x_1 x_2^3 y_3 + 234 \dot{\imath} d\gamma x_1 x_2^3 y_3 + \\
& 18 \dot{\imath} d\gamma^2 x_1 x_2^3 y_3 - 84 h_1 x_1 x_2^3 y_3 - 12 d\gamma h_1 x_1 x_2^3 y_3 - 84 h_2 x_1 x_2^3 y_3 - 12 d\gamma h_2 x_1 x_2^3 y_3 - \\
& 756 \dot{\imath} x_1 x_2 x_3^2 y_3 - 234 \dot{\imath} d\gamma x_1 x_2 x_3^2 y_3 - 18 \dot{\imath} d\gamma^2 x_1 x_2 x_3^2 y_3 - 84 h_1 x_1 x_2 x_3^2 y_3 - 12 d\gamma h_1 x_1 x_2 x_3^2 y_3 + \\
& 168 h_2 x_1 x_2 x_3^2 y_3 + 24 d\gamma h_2 x_1 x_2 x_3^2 y_3 + 168 h_1 x_1 x_2 y_1^2 y_3 + 24 d\gamma h_1 x_1 x_2 y_1^2 y_3 - 84 h_2 x_1 x_2 y_1^2 y_3 - \\
& 12 d\gamma h_2 x_1 x_2 y_1^2 y_3 + 2520 h_1 y_1 y_2 y_3 + 1284 d\gamma h_1 y_1 y_2 y_3 + 216 d\gamma^2 h_1 y_1 y_2 y_3 + 12 d\gamma^3 h_1 y_1 y_2 y_3 - \\
& 168 h_1^3 y_1 y_2 y_3 - 24 d\gamma h_1^3 y_1 y_2 y_3 - 1260 h_2 y_1 y_2 y_3 - 642 d\gamma h_2 y_1 y_2 y_3 - 108 d\gamma^2 h_2 y_1 y_2 y_3 - \\
& 6 d\gamma^3 h_2 y_1 y_2 y_3 + 1512 \dot{\imath} h_1 h_2 y_1 y_2 y_3 + 468 \dot{\imath} d\gamma h_1 h_2 y_1 y_2 y_3 + 36 \dot{\imath} d\gamma^2 h_1 h_2 y_1 y_2 y_3 + \\
& 252 h_1^2 h_2 y_1 y_2 y_3 + 36 d\gamma h_1^2 h_2 y_1 y_2 y_3 - 756 \dot{\imath} h_2^2 y_1 y_2 y_3 - 234 \dot{\imath} d\gamma h_2^2 y_1 y_2 y_3 - \\
& 18 \dot{\imath} d\gamma^2 h_2^2 y_1 y_2 y_3 - 252 h_1 h_2^2 y_1 y_2 y_3 - 36 d\gamma h_1 h_2^2 y_1 y_2 y_3 + 84 h_2^3 y_1 y_2 y_3 + 12 d\gamma h_2^3 y_1 y_2 y_3 - \\
& 168 h_1 x_1^2 y_1 y_2 y_3 - 24 d\gamma h_1 x_1^2 y_1 y_2 y_3 + 84 h_2 x_1^2 y_1 y_2 y_3 + 12 d\gamma h_2 x_1^2 y_1 y_2 y_3 - 756 \dot{\imath} x_2^2 y_1 y_2 y_3 - \\
& 234 \dot{\imath} d\gamma x_2^2 y_1 y_2 y_3 - 18 \dot{\imath} d\gamma^2 x_2^2 y_1 y_2 y_3 + 84 h_1 x_2^2 y_1 y_2 y_3 + 12 d\gamma h_1 x_2^2 y_1 y_2 y_3 + 84 h_2 x_2^2 y_1 y_2 y_3 + \\
& 12 d\gamma h_2 x_2^2 y_1 y_2 y_3 + 756 \dot{\imath} x_3^2 y_1 y_2 y_3 + 234 \dot{\imath} d\gamma x_3^2 y_1 y_2 y_3 + 18 \dot{\imath} d\gamma^2 x_3^2 y_1 y_2 y_3 + 84 h_1 x_3^2 y_1 y_2 y_3 + \\
& 12 d\gamma h_1 x_3^2 y_1 y_2 y_3 - 168 h_2 x_3^2 y_1 y_2 y_3 - 24 d\gamma h_2 x_3^2 y_1 y_2 y_3 - 168 h_1 y_1^3 y_2 y_3 - 24 d\gamma h_1 y_1^3 y_2 y_3 + \\
& 84 h_2 y_1^3 y_2 y_3 + 12 d\gamma h_2 y_1^3 y_2 y_3 + 756 \dot{\imath} x_1 x_2 y_2^2 y_3 + 234 \dot{\imath} d\gamma x_1 x_2 y_2^2 y_3 + 18 \dot{\imath} d\gamma^2 x_1 x_2 y_2^2 y_3 - \\
& 84 h_1 x_1 x_2 y_2^2 y_3 - 12 d\gamma h_1 x_1 x_2 y_2^2 y_3 - 84 h_2 x_1 x_2 y_2^2 y_3 - 12 d\gamma h_2 x_1 x_2 y_2^2 y_3 - 756 \dot{\imath} y_1 y_2^3 y_3 - \\
& 234 \dot{\imath} d\gamma y_1 y_2^3 y_3 - 18 \dot{\imath} d\gamma^2 y_1 y_2^3 y_3 + 84 h_1 y_1 y_2^3 y_3 + 12 d\gamma h_1 y_1 y_2^3 y_3 + 84 h_2 y_1 y_2^3 y_3 + \\
& 12 d\gamma h_2 y_1 y_2^3 y_3 + 2520 y_3^2 + 2754 d\gamma y_3^2 + 1175 d\gamma^2 y_3^2 + 245 d\gamma^3 y_3^2 + 25 d\gamma^4 y_3^2 + d\gamma^5 y_3^2 - \\
& 3360 \dot{\imath} h_1 y_3^2 - 2552 \dot{\imath} d\gamma h_1 y_3^2 - 716 \dot{\imath} d\gamma^2 h_1 y_3^2 - 88 \dot{\imath} d\gamma^3 h_1 y_3^2 - 4 \dot{\imath} d\gamma^4 h_1 y_3^2 + 2310 h_1^2 y_3^2 + \\
& 1177 d\gamma h_1^2 y_3^2 + 198 d\gamma^2 h_1^2 y_3^2 + 11 d\gamma^3 h_1^2 y_3^2 - 420 \dot{\imath} h_1^3 y_3^2 - 130 \dot{\imath} d\gamma h_1^3 y_3^2 - 10 \dot{\imath} d\gamma^2 h_1^3 y_3^2 - \\
& 56 h_1^4 y_3^2 - 8 d\gamma h_1^4 y_3^2 + 4200 \dot{\imath} h_2 y_3^2 + 3190 \dot{\imath} d\gamma h_2 y_3^2 + 895 \dot{\imath} d\gamma^2 h_2 y_3^2 + 110 \dot{\imath} d\gamma^3 h_2 y_3^2 + \\
& 5 \dot{\imath} d\gamma^4 h_2 y_3^2 - 1680 h_1 h_2 y_3^2 - 856 d\gamma h_1 h_2 y_3^2 - 144 d\gamma^2 h_1 h_2 y_3^2 - 8 d\gamma^3 h_1 h_2 y_3^2 + 1890 \dot{\imath} h_1^2 h_2 y_3^2 + \\
& 585 \dot{\imath} d\gamma h_1^2 h_2 y_3^2 + 45 \dot{\imath} d\gamma^2 h_1^2 h_2 y_3^2 + 280 h_1^3 h_2 y_3^2 + 40 d\gamma h_1^3 h_2 y_3^2 - 210 h_2^2 y_3^2 - 107 d\gamma h_2^2 y_3^2 - \\
& 18 d\gamma^2 h_2^2 y_3^2 - d\gamma^3 h_2^2 y_3^2 - 1764 \dot{\imath} h_1 h_2^2 y_3^2 - 546 \dot{\imath} d\gamma h_1 h_2^2 y_3^2 - 42 \dot{\imath} d\gamma^2 h_1 h_2^2 y_3^2 - 462 h_1^2 h_2^2 y_3^2 - \\
& 66 d\gamma h_1^2 h_2^2 y_3^2 + 462 \dot{\imath} h_2^3 y_3^2 + 143 \dot{\imath} d\gamma h_2^3 y_3^2 + 11 \dot{\imath} d\gamma^2 h_2^3 y_3^2 + 280 h_1 h_2^3 y_3^2 + 40 d\gamma h_1 h_2^3 y_3^2 - \\
& 56 h_2^4 y_3^2 - 8 d\gamma h_2^4 y_3^2 + 1050 x_1^2 y_3^2 + 535 d\gamma x_1^2 y_3^2 + 90 d\gamma^2 x_1^2 y_3^2 + 5 d\gamma^3 x_1^2 y_3^2 - 420 \dot{\imath} h_1 x_1^2 y_3^2 - \\
& 130 \dot{\imath} d\gamma h_1 x_1^2 y_3^2 - 10 \dot{\imath} d\gamma^2 h_1 x_1^2 y_3^2 - 28 h_1^2 x_1^2 y_3^2 - 4 d\gamma h_1^2 x_1^2 y_3^2 + 714 \dot{\imath} h_2 x_1^2 y_3^2 + \\
& 221 \dot{\imath} d\gamma h_2 x_1^2 y_3^2 + 17 \dot{\imath} d\gamma^2 h_2 x_1^2 y_3^2 + 196 h_1 h_2 x_1^2 y_3^2 + 28 d\gamma h_1 h_2 x_1^2 y_3^2 - 154 h_2^2 x_1^2 y_3^2 - \\
& 22 d\gamma h_2^2 x_1^2 y_3^2 + 28 x_1^4 y_3^2 + 4 d\gamma x_1^4 y_3^2 - 924 \dot{\imath} h_1 x_2^2 y_3^2 - 286 \dot{\imath} d\gamma h_1 x_2^2 y_3^2 - 22 \dot{\imath} d\gamma^2 h_1 x_2^2 y_3^2 + \\
& 462 \dot{\imath} h_2 x_2^2 y_3^2 + 143 \dot{\imath} d\gamma h_2 x_2^2 y_3^2 + 11 \dot{\imath} d\gamma^2 h_2 x_2^2 y_3^2 + 84 h_1 h_2 x_2^2 y_3^2 + 12 d\gamma h_1 h_2 x_2^2 y_3^2 - \\
& 42 h_2^2 x_2^2 y_3^2 - 6 d\gamma h_2^2 x_2^2 y_3^2 + 14 x_2^4 y_3^2 + 2 d\gamma x_2^4 y_3^2 - 420 x_3^2 y_3^2 - 214 d\gamma x_3^2 y_3^2 - 36 d\gamma^2 x_3^2 y_3^2 - \\
& 2 d\gamma^3 x_3^2 y_3^2 + 588 \dot{\imath} h_1 x_3^2 y_3^2 + 182 \dot{\imath} d\gamma h_1 x_3^2 y_3^2 + 14 \dot{\imath} d\gamma^2 h_1 x_3^2 y_3^2 + 112 h_1^2 x_3^2 y_3^2 + 16 d\gamma h_1^2 x_3^2 y_3^2 - \\
& 420 \dot{\imath} h_2 x_3^2 y_3^2 - 130 \dot{\imath} d\gamma h_2 x_3^2 y_3^2 - 10 \dot{\imath} d\gamma^2 h_2 x_3^2 y_3^2 - 280 h_1 h_2 x_3^2 y_3^2 - 40 d\gamma h_1 h_2 x_3^2 y_3^2 + \\
& 112 h_2^2 x_3^2 y_3^2 + 16 d\gamma h_2^2 x_3^2 y_3^2 + 28 x_1^2 x_3^2 y_3^2 + 4 d\gamma x_1^2 x_3^2 y_3^2 - 28 x_2^2 x_3^2 y_3^2 - 4 d\gamma x_2^2 x_3^2 y_3^2 - 42 x_3^4 y_3^2 -
\end{aligned}$$



$$\begin{aligned}
& 6 d\gamma x_3^4 y_3^2 + 756 i x_2 x_3 y_1 y_3^2 + 234 i d\gamma x_2 x_3 y_1 y_3^2 + 18 i d\gamma^2 x_2 x_3 y_1 y_3^2 + 84 h_1 x_2 x_3 y_1 y_3^2 + \\
& 12 d\gamma h_1 x_2 x_3 y_1 y_3^2 - 168 h_2 x_2 x_3 y_1 y_3^2 - 24 d\gamma h_2 x_2 x_3 y_1 y_3^2 + 1050 y_1^2 y_3^2 + 535 d\gamma y_1^2 y_3^2 + 90 d\gamma^2 y_1^2 y_3^2 + \\
& 5 d\gamma^3 y_1^2 y_3^2 - 420 i h_1 y_1^2 y_3^2 - 130 i d\gamma h_1 y_1^2 y_3^2 - 10 i d\gamma^2 h_1 y_1^2 y_3^2 - 28 h_1^2 y_1^2 y_3^2 - 4 d\gamma h_1^2 y_1^2 y_3^2 + \\
& 714 i h_2 y_1^2 y_3^2 + 221 i d\gamma h_2 y_1^2 y_3^2 + 17 i d\gamma^2 h_2 y_1^2 y_3^2 + 196 h_1 h_2 y_1^2 y_3^2 + 28 d\gamma h_1 h_2 y_1^2 y_3^2 - \\
& 154 h_2^2 y_1^2 y_3^2 - 22 d\gamma h_2^2 y_1^2 y_3^2 + 56 x_1^2 y_1^2 y_3^2 + 8 d\gamma x_1^2 y_1^2 y_3^2 + 28 x_3^2 y_1^2 y_3^2 + 4 d\gamma x_3^2 y_1^2 y_3^2 + 28 y_1^4 y_3^2 + \\
& 4 d\gamma y_1^4 y_3^2 + 756 i x_1 x_3 y_2 y_3^2 + 234 i d\gamma x_1 x_3 y_2 y_3^2 + 18 i d\gamma^2 x_1 x_3 y_2 y_3^2 + 84 h_1 x_1 x_3 y_2 y_3^2 + \\
& 12 d\gamma h_1 x_1 x_3 y_2 y_3^2 - 168 h_2 x_1 x_3 y_2 y_3^2 - 24 d\gamma h_2 x_1 x_3 y_2 y_3^2 - 924 i h_1 y_2^2 y_3^2 - 286 i d\gamma h_1 y_2^2 y_3^2 - \\
& 22 i d\gamma^2 h_1 y_2^2 y_3^2 + 462 i h_2 y_2^2 y_3^2 + 143 i d\gamma h_2 y_2^2 y_3^2 + 11 i d\gamma^2 h_2 y_2^2 y_3^2 + 84 h_1 h_2 y_2^2 y_3^2 + \\
& 12 d\gamma h_1 h_2 y_2^2 y_3^2 - 42 h_2^2 y_2^2 y_3^2 - 6 d\gamma h_2^2 y_2^2 y_3^2 + 28 x_2^2 y_2^2 y_3^2 + 4 d\gamma x_2^2 y_2^2 y_3^2 - 28 x_3^2 y_2^2 y_3^2 - 4 d\gamma x_3^2 y_2^2 y_3^2 + \\
& 14 y_2^4 y_3^2 + 2 d\gamma y_2^4 y_3^2 - 756 i x_1 x_2 y_3^3 - 234 i d\gamma x_1 x_2 y_3^3 - 18 i d\gamma^2 x_1 x_2 y_3^3 - 84 h_1 x_1 x_2 y_3^3 - \\
& 12 d\gamma h_1 x_1 x_2 y_3^3 + 168 h_2 x_1 x_2 y_3^3 + 24 d\gamma h_2 x_1 x_2 y_3^3 + 756 i y_1 y_2 y_3^3 + 234 i d\gamma y_1 y_2 y_3^3 + \\
& 18 i d\gamma^2 y_1 y_2 y_3^3 + 84 h_1 y_1 y_2 y_3^3 + 12 d\gamma h_1 y_1 y_2 y_3^3 - 168 h_2 y_1 y_2 y_3^3 - 24 d\gamma h_2 y_1 y_2 y_3^3 - \\
& 210 y_3^4 - 107 d\gamma y_3^4 - 18 d\gamma^2 y_3^4 - d\gamma^3 y_3^4 + 294 i h_1 y_3^4 + 91 i d\gamma h_1 y_3^4 + 7 i d\gamma^2 h_1 y_3^4 + 56 h_1^2 y_3^4 + \\
& 8 d\gamma h_1^2 y_3^4 - 210 i h_2 y_3^4 - 65 i d\gamma h_2 y_3^4 - 5 i d\gamma^2 h_2 y_3^4 - 140 h_1 h_2 y_3^4 - 20 d\gamma h_1 h_2 y_3^4 + \\
& 56 h_2^2 y_3^4 + 8 d\gamma h_2^2 y_3^4 + 14 x_1^2 y_3^4 + 2 d\gamma x_1^2 y_3^4 - 14 x_2^2 y_3^4 - 2 d\gamma x_2^2 y_3^4 - 42 x_3^2 y_3^4 - 6 d\gamma x_3^2 y_3^4 + \\
& 14 y_1^2 y_3^4 + 2 d\gamma y_1^2 y_3^4 - 14 y_2^2 y_3^4 - 2 d\gamma y_2^2 y_3^4 - 14 y_3^6 - 2 d\gamma y_3^6 + (A[[1, 1]] - A[[2, 2]]) // Expand
\end{aligned}$$

Out[ ]:= 0

In[ ]:= A[[1, 1]] - A[[2, 2]] // Expand

$$\begin{aligned}
\text{Out[ ]:= } & 10080 i h_1 + 16056 i d\gamma h_1 + 10208 i d\gamma^2 h_1 + 3330 i d\gamma^3 h_1 + 590 i d\gamma^4 h_1 + 54 i d\gamma^5 h_1 + 2 i d\gamma^6 h_1 + \\
& 8400 i h_1^3 + 6380 i d\gamma h_1^3 + 1790 i d\gamma^2 h_1^3 + 220 i d\gamma^3 h_1^3 + 10 i d\gamma^4 h_1^3 + 336 i h_1^5 + 104 i d\gamma h_1^5 + \\
& 8 i d\gamma^2 h_1^5 - 5040 i h_2 - 8028 i d\gamma h_2 - 5104 i d\gamma^2 h_2 - 1665 i d\gamma^3 h_2 - 295 i d\gamma^4 h_2 - 27 i d\gamma^5 h_2 - \\
& i d\gamma^6 h_2 - 15120 h_1 h_2 - 16524 d\gamma h_1 h_2 - 7050 d\gamma^2 h_1 h_2 - 1470 d\gamma^3 h_1 h_2 - 150 d\gamma^4 h_1 h_2 - 6 d\gamma^5 h_1 h_2 - \\
& 12600 i h_1^2 h_2 - 9570 i d\gamma h_1^2 h_2 - 2685 i d\gamma^2 h_1^2 h_2 - 330 i d\gamma^3 h_1^2 h_2 - 15 i d\gamma^4 h_1^2 h_2 - 5040 h_1^3 h_2 - \\
& 2568 d\gamma h_1^3 h_2 - 432 d\gamma^2 h_1^3 h_2 - 24 d\gamma^3 h_1^3 h_2 - 840 i h_1^4 h_2 - 260 i d\gamma h_1^4 h_2 - 20 i d\gamma^2 h_1^4 h_2 + 7560 h_2^2 + \\
& 8262 d\gamma h_2^2 + 3525 d\gamma^2 h_2^2 + 735 d\gamma^3 h_2^2 + 75 d\gamma^4 h_2^2 + 3 d\gamma^5 h_2^2 + 2520 i h_1 h_2^2 + 1914 i d\gamma h_1 h_2^2 + \\
& 537 i d\gamma^2 h_1 h_2^2 + 66 i d\gamma^3 h_1 h_2^2 + 3 i d\gamma^4 h_1 h_2^2 + 7560 h_1^2 h_2^2 + 3852 d\gamma h_1^2 h_2^2 + 648 d\gamma^2 h_1^2 h_2^2 + \\
& 36 d\gamma^3 h_1^2 h_2^2 + 84 i h_1^3 h_2^2 + 26 i d\gamma h_1^3 h_2^2 + 2 i d\gamma^2 h_1^3 h_2^2 + 840 i h_2^3 + 638 i d\gamma h_2^3 + 179 i d\gamma^2 h_2^3 + \\
& 22 i d\gamma^3 h_2^3 + i d\gamma^4 h_2^3 - 3780 h_1 h_2^3 - 1926 d\gamma h_1 h_2^3 - 324 d\gamma^2 h_1 h_2^3 - 18 d\gamma^3 h_1 h_2^3 + 714 i h_1^2 h_2^3 + \\
& 221 i d\gamma h_1^2 h_2^3 + 17 i d\gamma^2 h_1^2 h_2^3 + 630 h_2^4 + 321 d\gamma h_2^4 + 54 d\gamma^2 h_2^4 + 3 d\gamma^3 h_2^4 - 462 i h_1 h_2^4 - \\
& 143 i d\gamma h_1 h_2^4 - 11 i d\gamma^2 h_1 h_2^4 + 84 i h_2^5 + 26 i d\gamma h_2^5 + 2 i d\gamma^2 h_2^5 + 8400 i h_1 x_1^2 + 6380 i d\gamma h_1 x_1^2 + \\
& 1790 i d\gamma^2 h_1 x_1^2 + 220 i d\gamma^3 h_1 x_1^2 + 10 i d\gamma^4 h_1 x_1^2 + 672 i h_1^3 x_1^2 + 208 i d\gamma h_1^3 x_1^2 + 16 i d\gamma^2 h_1^3 x_1^2 - \\
& 4200 i h_2 x_1^2 - 3190 i d\gamma h_2 x_1^2 - 895 i d\gamma^2 h_2 x_1^2 - 110 i d\gamma^3 h_2 x_1^2 - 5 i d\gamma^4 h_2 x_1^2 - 5040 h_1 h_2 x_1^2 - \\
& 2568 d\gamma h_1 h_2 x_1^2 - 432 d\gamma^2 h_1 h_2 x_1^2 - 24 d\gamma^3 h_1 h_2 x_1^2 - 1008 i h_1^2 h_2 x_1^2 - 312 i d\gamma h_1^2 h_2 x_1^2 - \\
& 24 i d\gamma^2 h_1^2 h_2 x_1^2 + 2520 h_2^2 x_1^2 + 1284 d\gamma h_2^2 x_1^2 + 216 d\gamma^2 h_2^2 x_1^2 + 12 d\gamma^3 h_2^2 x_1^2 - 252 i h_1 h_2^2 x_1^2 - \\
& 78 i d\gamma h_1 h_2^2 x_1^2 - 6 i d\gamma^2 h_1 h_2^2 x_1^2 + 294 i h_2^3 x_1^2 + 91 i d\gamma h_2^3 x_1^2 + 7 i d\gamma^2 h_2^3 x_1^2 + 336 i h_1 x_1^4 + \\
& 104 i d\gamma h_1 x_1^4 + 8 i d\gamma^2 h_1 x_1^4 - 168 i h_2 x_1^4 - 52 i d\gamma h_2 x_1^4 - 4 i d\gamma^2 h_2 x_1^4 + 2520 x_2^2 + 2754 d\gamma x_2^2 + \\
& 1175 d\gamma^2 x_2^2 + 245 d\gamma^3 x_2^2 + 25 d\gamma^4 x_2^2 + d\gamma^5 x_2^2 + 3360 i h_1 x_2^2 + 2552 i d\gamma h_1 x_2^2 + 716 i d\gamma^2 h_1 x_2^2 + \\
& 88 i d\gamma^3 h_1 x_2^2 + 4 i d\gamma^4 h_1 x_2^2 + 2310 h_1^2 x_2^2 + 1177 d\gamma h_1^2 x_2^2 + 198 d\gamma^2 h_1^2 x_2^2 + 11 d\gamma^3 h_1^2 x_2^2 + 420 i h_1^3 x_2^2 + \\
& 130 i d\gamma h_1^3 x_2^2 + 10 i d\gamma^2 h_1^3 x_2^2 - 56 h_1^4 x_2^2 - 8 d\gamma h_1^4 x_2^2 + 840 i h_2 x_2^2 + 638 i d\gamma h_2 x_2^2 + 179 i d\gamma^2 h_2 x_2^2 + \\
& 22 i d\gamma^3 h_2 x_2^2 + i d\gamma^4 h_2 x_2^2 - 2940 h_1 h_2 x_2^2 - 1498 d\gamma h_1 h_2 x_2^2 - 252 d\gamma^2 h_1 h_2 x_2^2 - 14 d\gamma^3 h_1 h_2 x_2^2 + \\
& 630 i h_1^2 h_2 x_2^2 + 195 i d\gamma h_1^2 h_2 x_2^2 + 15 i d\gamma^2 h_1^2 h_2 x_2^2 - 56 h_1^3 h_2 x_2^2 - 8 d\gamma h_1^3 h_2 x_2^2 + 420 h_2^2 x_2^2 + \\
& 214 d\gamma h_2^2 x_2^2 + 36 d\gamma^2 h_2^2 x_2^2 + 2 d\gamma^3 h_2^2 x_2^2 - 756 i h_1 h_2^2 x_2^2 - 234 i d\gamma h_1 h_2^2 x_2^2 - 18 i d\gamma^2 h_1 h_2^2 x_2^2 + \\
& 42 h_1^2 h_2^2 x_2^2 + 6 d\gamma h_1^2 h_2^2 x_2^2 + 168 i h_2^3 x_2^2 + 52 i d\gamma h_2^3 x_2^2 + 4 i d\gamma^2 h_2^3 x_2^2 + 28 h_1 h_2^3 x_2^2 + 4 d\gamma h_1 h_2^3 x_2^2 - \\
& 14 h_2^4 x_2^2 - 2 d\gamma h_2^4 x_2^2 + 1050 x_1^2 x_2^2 + 535 d\gamma x_1^2 x_2^2 + 90 d\gamma^2 x_1^2 x_2^2 + 5 d\gamma^3 x_1^2 x_2^2 + 420 i h_1 x_1^2 x_2^2 + \\
& 130 i d\gamma h_1 x_1^2 x_2^2 + 10 i d\gamma^2 h_1 x_1^2 x_2^2 - 28 h_1^2 x_1^2 x_2^2 - 4 d\gamma h_1^2 x_1^2 x_2^2 + 294 i h_2 x_1^2 x_2^2 + 91 i d\gamma h_2 x_1^2 x_2^2 + \\
& 7 i d\gamma^2 h_2 x_1^2 x_2^2 - 140 h_1 h_2 x_1^2 x_2^2 - 20 d\gamma h_1 h_2 x_1^2 x_2^2 + 14 h_2^2 x_1^2 x_2^2 + 2 d\gamma h_2^2 x_1^2 x_2^2 + 28 x_1^4 x_2^2 + \\
& 4 d\gamma x_1^4 x_2^2 - 210 x_2^4 - 107 d\gamma x_2^4 - 18 d\gamma^2 x_2^4 - d\gamma^3 x_2^4 - 294 i h_1 x_2^4 - 91 i d\gamma h_1 x_2^4 - 7 i d\gamma^2 h_1 x_2^4 +
\end{aligned}$$

$$\begin{aligned}
& 56 h_1^2 x_2^4 + 8 d_Y h_1^2 x_2^4 + 84 \mathbb{I} h_2 x_2^4 + 26 \mathbb{I} d_Y h_2 x_2^4 + 2 \mathbb{I} d_Y^2 h_2 x_2^4 + 28 h_1 h_2 x_2^4 + 4 d_Y h_1 h_2 x_2^4 - \\
& 28 h_2^2 x_2^4 - 4 d_Y h_2^2 x_2^4 + 14 x_1^2 x_2^4 + 2 d_Y x_1^2 x_2^4 - 14 x_2^6 - 2 d_Y x_2^6 - 2520 x_3^2 - 2754 d_Y x_3^2 - 1175 d_Y^2 x_3^2 - \\
& 245 d_Y^3 x_3^2 - 25 d_Y^4 x_3^2 - d_Y^5 x_3^2 + 3360 \mathbb{I} h_1 x_3^2 + 2552 \mathbb{I} d_Y h_1 x_3^2 + 716 \mathbb{I} d_Y^2 h_1 x_3^2 + 88 \mathbb{I} d_Y^3 h_1 x_3^2 + \\
& 4 \mathbb{I} d_Y^4 h_1 x_3^2 - 2310 h_1^2 x_3^2 - 1177 d_Y h_1^2 x_3^2 - 198 d_Y^2 h_1^2 x_3^2 - 11 d_Y^3 h_1^2 x_3^2 + 420 \mathbb{I} h_1^3 x_3^2 + 130 \mathbb{I} d_Y h_1^3 x_3^2 + \\
& 10 \mathbb{I} d_Y^2 h_1^3 x_3^2 + 56 h_1^4 x_3^2 + 8 d_Y h_1^4 x_3^2 - 4200 \mathbb{I} h_2 x_3^2 - 3190 \mathbb{I} d_Y h_2 x_3^2 - 895 \mathbb{I} d_Y^2 h_2 x_3^2 - \\
& 110 \mathbb{I} d_Y^3 h_2 x_3^2 - 5 \mathbb{I} d_Y^4 h_2 x_3^2 + 1680 h_1 h_2 x_3^2 + 856 d_Y h_1 h_2 x_3^2 + 144 d_Y^2 h_1 h_2 x_3^2 + 8 d_Y^3 h_1 h_2 x_3^2 - \\
& 1890 \mathbb{I} h_1^2 h_2 x_3^2 - 585 \mathbb{I} d_Y h_1^2 h_2 x_3^2 - 45 \mathbb{I} d_Y^2 h_1^2 h_2 x_3^2 - 280 h_1^3 h_2 x_3^2 - 40 d_Y h_1^3 h_2 x_3^2 + 210 h_2^2 x_3^2 + \\
& 107 d_Y h_2^2 x_3^2 + 18 d_Y^2 h_2^2 x_3^2 + d_Y^3 h_2^2 x_3^2 + 1764 \mathbb{I} h_1 h_2^2 x_3^2 + 546 \mathbb{I} d_Y h_1 h_2^2 x_3^2 + 42 \mathbb{I} d_Y^2 h_1 h_2^2 x_3^2 + \\
& 462 h_1^2 h_2^2 x_3^2 + 66 d_Y h_1^2 h_2^2 x_3^2 - 462 \mathbb{I} h_2^3 x_3^2 - 143 \mathbb{I} d_Y h_2^3 x_3^2 - 11 \mathbb{I} d_Y^2 h_2^3 x_3^2 - 280 h_1 h_2^3 x_3^2 - \\
& 40 d_Y h_1 h_2^3 x_3^2 + 56 h_2^4 x_3^2 + 8 d_Y h_2^4 x_3^2 - 1050 x_1^2 x_3^2 - 535 d_Y x_1^2 x_3^2 - 90 d_Y^2 x_1^2 x_3^2 - 5 d_Y^3 x_1^2 x_3^2 + \\
& 420 \mathbb{I} h_1 x_1^2 x_3^2 + 130 \mathbb{I} d_Y h_1 x_1^2 x_3^2 + 10 \mathbb{I} d_Y^2 h_1 x_1^2 x_3^2 + 28 h_1^2 x_1^2 x_3^2 + 4 d_Y h_1^2 x_1^2 x_3^2 - 714 \mathbb{I} h_2 x_1^2 x_3^2 - \\
& 221 \mathbb{I} d_Y h_2 x_1^2 x_3^2 - 17 \mathbb{I} d_Y^2 h_2 x_1^2 x_3^2 - 196 h_1 h_2 x_1^2 x_3^2 - 28 d_Y h_1 h_2 x_1^2 x_3^2 + 154 h_2^2 x_1^2 x_3^2 + \\
& 22 d_Y h_2^2 x_1^2 x_3^2 - 28 x_1^4 x_3^2 - 4 d_Y x_1^4 x_3^2 + 924 \mathbb{I} h_1 x_2^2 x_3^2 + 286 \mathbb{I} d_Y h_1 x_2^2 x_3^2 + 22 \mathbb{I} d_Y^2 h_1 x_2^2 x_3^2 - \\
& 462 \mathbb{I} h_2 x_2^2 x_3^2 - 143 \mathbb{I} d_Y h_2 x_2^2 x_3^2 - 11 \mathbb{I} d_Y^2 h_2 x_2^2 x_3^2 - 84 h_1 h_2 x_2^2 x_3^2 - 12 d_Y h_1 h_2 x_2^2 x_3^2 + 42 h_2^2 x_2^2 x_3^2 + \\
& 6 d_Y h_2^2 x_2^2 x_3^2 - 14 x_2^4 x_3^2 - 2 d_Y x_2^4 x_3^2 + 210 x_3^4 + 107 d_Y x_3^4 + 18 d_Y^2 x_3^4 + d_Y^3 x_3^4 - 294 \mathbb{I} h_1 x_3^4 - \\
& 91 \mathbb{I} d_Y h_1 x_3^4 - 7 \mathbb{I} d_Y^2 h_1 x_3^4 - 56 h_1^2 x_3^4 - 8 d_Y h_1^2 x_3^4 + 210 \mathbb{I} h_2 x_3^4 + 65 \mathbb{I} d_Y h_2 x_3^4 + 5 \mathbb{I} d_Y^2 h_2 x_3^4 + \\
& 140 h_1 h_2 x_3^4 + 20 d_Y h_1 h_2 x_3^4 - 56 h_2^2 x_3^4 - 8 d_Y h_2^2 x_3^4 - 14 x_1^2 x_3^4 - 2 d_Y x_1^2 x_3^4 + 14 x_2^2 x_3^4 + 2 d_Y x_2^2 x_3^4 + \\
& 14 x_3^6 + 2 d_Y x_3^6 - 2520 h_1 x_2 x_3 y_1 - 1284 d_Y h_1 x_2 x_3 y_1 - 216 d_Y^2 h_1 x_2 x_3 y_1 - 12 d_Y^3 h_1 x_2 x_3 y_1 + \\
& 168 h_1^3 x_2 x_3 y_1 + 24 d_Y h_1^3 x_2 x_3 y_1 + 1260 h_2 x_2 x_3 y_1 + 642 d_Y h_2 x_2 x_3 y_1 + 108 d_Y^2 h_2 x_2 x_3 y_1 + \\
& 6 d_Y^3 h_2 x_2 x_3 y_1 - 1512 \mathbb{I} h_1 h_2 x_2 x_3 y_1 - 468 \mathbb{I} d_Y h_1 h_2 x_2 x_3 y_1 - 36 \mathbb{I} d_Y^2 h_1 h_2 x_2 x_3 y_1 - \\
& 252 h_1^2 h_2 x_2 x_3 y_1 - 36 d_Y h_1^2 h_2 x_2 x_3 y_1 + 756 \mathbb{I} h_2^2 x_2 x_3 y_1 + 234 \mathbb{I} d_Y h_2^2 x_2 x_3 y_1 + 18 \mathbb{I} d_Y^2 h_2^2 x_2 x_3 y_1 + \\
& 252 h_1 h_2^2 x_2 x_3 y_1 + 36 d_Y h_1 h_2^2 x_2 x_3 y_1 - 84 h_2^3 x_2 x_3 y_1 - 12 d_Y h_2^3 x_2 x_3 y_1 + 168 h_1 x_1^2 x_2 x_3 y_1 + \\
& 24 d_Y h_1 x_1^2 x_2 x_3 y_1 - 84 h_2 x_1^2 x_2 x_3 y_1 - 12 d_Y h_2 x_1^2 x_2 x_3 y_1 + 756 \mathbb{I} x_2^3 x_3 y_1 + 234 \mathbb{I} d_Y x_2^3 x_3 y_1 + \\
& 18 \mathbb{I} d_Y^2 x_2^3 x_3 y_1 - 84 h_1 x_2^3 x_3 y_1 - 12 d_Y h_1 x_2^3 x_3 y_1 - 84 h_2 x_2^3 x_3 y_1 - 12 d_Y h_2 x_2^3 x_3 y_1 - \\
& 756 \mathbb{I} x_2 x_3^3 y_1 - 234 \mathbb{I} d_Y x_2 x_3^3 y_1 - 18 \mathbb{I} d_Y^2 x_2 x_3^3 y_1 - 84 h_1 x_2 x_3^3 y_1 - 12 d_Y h_1 x_2 x_3^3 y_1 + \\
& 168 h_2 x_2 x_3^3 y_1 + 24 d_Y h_2 x_2 x_3^3 y_1 + 8400 \mathbb{I} h_1 y_1^2 + 6380 \mathbb{I} d_Y h_1 y_1^2 + 1790 \mathbb{I} d_Y^2 h_1 y_1^2 + \\
& 220 \mathbb{I} d_Y^3 h_1 y_1^2 + 10 \mathbb{I} d_Y^4 h_1 y_1^2 + 672 \mathbb{I} h_1^3 y_1^2 + 208 \mathbb{I} d_Y h_1^3 y_1^2 + 16 \mathbb{I} d_Y^2 h_1^3 y_1^2 - 4200 \mathbb{I} h_2 y_1^2 - \\
& 3190 \mathbb{I} d_Y h_2 y_1^2 - 895 \mathbb{I} d_Y^2 h_2 y_1^2 - 110 \mathbb{I} d_Y^3 h_2 y_1^2 - 5 \mathbb{I} d_Y^4 h_2 y_1^2 - 5040 h_1 h_2 y_1^2 - 2568 d_Y h_1 h_2 y_1^2 - \\
& 432 d_Y^2 h_1 h_2 y_1^2 - 24 d_Y^3 h_1 h_2 y_1^2 - 1008 \mathbb{I} h_1^2 h_2 y_1^2 - 312 \mathbb{I} d_Y h_1^2 h_2 y_1^2 - 24 \mathbb{I} d_Y^2 h_1^2 h_2 y_1^2 + \\
& 2520 h_2^2 y_1^2 + 1284 d_Y h_2^2 y_1^2 + 216 d_Y^2 h_2^2 y_1^2 + 12 d_Y^3 h_2^2 y_1^2 - 252 \mathbb{I} h_1 h_2^2 y_1^2 - 78 \mathbb{I} d_Y h_1 h_2^2 y_1^2 - \\
& 6 \mathbb{I} d_Y^2 h_1 h_2^2 y_1^2 + 294 \mathbb{I} h_2^3 y_1^2 + 91 \mathbb{I} d_Y h_2^3 y_1^2 + 7 \mathbb{I} d_Y^2 h_2^3 y_1^2 + 672 \mathbb{I} h_1 x_1^2 y_1^2 + 208 \mathbb{I} d_Y h_1 x_1^2 y_1^2 + \\
& 16 \mathbb{I} d_Y^2 h_1 x_1^2 y_1^2 - 336 \mathbb{I} h_2 x_1^2 y_1^2 - 104 \mathbb{I} d_Y h_2 x_1^2 y_1^2 - 8 \mathbb{I} d_Y^2 h_2 x_1^2 y_1^2 + 1050 x_2^2 y_1^2 + 535 d_Y x_2^2 y_1^2 + \\
& 90 d_Y^2 x_2^2 y_1^2 + 5 d_Y^3 x_2^2 y_1^2 + 420 \mathbb{I} h_1 x_2^2 y_1^2 + 130 \mathbb{I} d_Y h_1 x_2^2 y_1^2 + 10 \mathbb{I} d_Y^2 h_1 x_2^2 y_1^2 - 28 h_1^2 x_2^2 y_1^2 - \\
& 4 d_Y h_1^2 x_2^2 y_1^2 + 294 \mathbb{I} h_2 x_2^2 y_1^2 + 91 \mathbb{I} d_Y h_2 x_2^2 y_1^2 + 7 \mathbb{I} d_Y^2 h_2 x_2^2 y_1^2 - 140 h_1 h_2 x_2^2 y_1^2 - 20 d_Y h_1 h_2 x_2^2 y_1^2 + \\
& 14 h_2^2 x_2^2 y_1^2 + 2 d_Y h_2^2 x_2^2 y_1^2 + 56 x_1^2 x_2^2 y_1^2 + 8 d_Y x_1^2 x_2^2 y_1^2 + 14 x_2^4 y_1^2 + 2 d_Y x_2^4 y_1^2 - 1050 x_3^2 y_1^2 - \\
& 535 d_Y x_3^2 y_1^2 - 90 d_Y^2 x_3^2 y_1^2 - 5 d_Y^3 x_3^2 y_1^2 + 420 \mathbb{I} h_1 x_3^2 y_1^2 + 130 \mathbb{I} d_Y h_1 x_3^2 y_1^2 + 10 \mathbb{I} d_Y^2 h_1 x_3^2 y_1^2 + \\
& 28 h_1^2 x_3^2 y_1^2 + 4 d_Y h_1^2 x_3^2 y_1^2 - 714 \mathbb{I} h_2 x_3^2 y_1^2 - 221 \mathbb{I} d_Y h_2 x_3^2 y_1^2 - 17 \mathbb{I} d_Y^2 h_2 x_3^2 y_1^2 - 196 h_1 h_2 x_3^2 y_1^2 - \\
& 28 d_Y h_1 h_2 x_3^2 y_1^2 + 154 h_2^2 x_3^2 y_1^2 + 22 d_Y h_2^2 x_3^2 y_1^2 - 56 x_1^2 x_3^2 y_1^2 - 8 d_Y x_1^2 x_3^2 y_1^2 - 14 x_3^4 y_1^2 - 2 d_Y x_3^4 y_1^2 + \\
& 168 h_1 x_2 x_3 y_1^3 + 24 d_Y h_1 x_2 x_3 y_1^3 - 84 h_2 x_2 x_3 y_1^3 - 12 d_Y h_2 x_2 x_3 y_1^3 + 336 \mathbb{I} h_1 y_1^4 + 104 \mathbb{I} d_Y h_1 y_1^4 + \\
& 8 \mathbb{I} d_Y^2 h_1 y_1^4 - 168 \mathbb{I} h_2 y_1^4 - 52 \mathbb{I} d_Y h_2 y_1^4 - 4 \mathbb{I} d_Y^2 h_2 y_1^4 + 28 x_2^2 y_1^4 + 4 d_Y x_2^2 y_1^4 - 28 x_3^2 y_1^4 - \\
& 4 d_Y x_3^2 y_1^4 - 2520 h_1 x_1 x_3 y_2 - 1284 d_Y h_1 x_1 x_3 y_2 - 216 d_Y^2 h_1 x_1 x_3 y_2 - 12 d_Y^3 h_1 x_1 x_3 y_2 + \\
& 168 h_1^3 x_1 x_3 y_2 + 24 d_Y h_1^3 x_1 x_3 y_2 + 1260 h_2 x_1 x_3 y_2 + 642 d_Y h_2 x_1 x_3 y_2 + 108 d_Y^2 h_2 x_1 x_3 y_2 + \\
& 6 d_Y^3 h_2 x_1 x_3 y_2 - 1512 \mathbb{I} h_1 h_2 x_1 x_3 y_2 - 468 \mathbb{I} d_Y h_1 h_2 x_1 x_3 y_2 - 36 \mathbb{I} d_Y^2 h_1 h_2 x_1 x_3 y_2 - \\
& 252 h_1^2 h_2 x_1 x_3 y_2 - 36 d_Y h_1^2 h_2 x_1 x_3 y_2 + 756 \mathbb{I} h_2^2 x_1 x_3 y_2 + 234 \mathbb{I} d_Y h_2^2 x_1 x_3 y_2 + 18 \mathbb{I} d_Y^2 h_2^2 x_1 x_3 y_2 + \\
& 252 h_1 h_2^2 x_1 x_3 y_2 + 36 d_Y h_1 h_2^2 x_1 x_3 y_2 - 84 h_2^3 x_1 x_3 y_2 - 12 d_Y h_2^3 x_1 x_3 y_2 + 168 h_1 x_1^3 x_3 y_2 + \\
& 24 d_Y h_1 x_1^3 x_3 y_2 - 84 h_2 x_1^3 x_3 y_2 - 12 d_Y h_2 x_1^3 x_3 y_2 + 756 \mathbb{I} x_1 x_2^2 x_3 y_2 + 234 \mathbb{I} d_Y x_1 x_2^2 x_3 y_2 + \\
& 18 \mathbb{I} d_Y^2 x_1 x_2^2 x_3 y_2 - 84 h_1 x_1 x_2^2 x_3 y_2 - 12 d_Y h_1 x_1 x_2^2 x_3 y_2 - 84 h_2 x_1 x_2^2 x_3 y_2 - 12 d_Y h_2 x_1 x_2^2 x_3 y_2 - \\
& 756 \mathbb{I} x_1 x_3^3 y_2 - 234 \mathbb{I} d_Y x_1 x_3^3 y_2 - 18 \mathbb{I} d_Y^2 x_1 x_3^3 y_2 - 84 h_1 x_1 x_3^3 y_2 - 12 d_Y h_1 x_1 x_3^3 y_2 +
\end{aligned}$$

$$\begin{aligned}
& 168 h_2 x_1 x_3^3 y_2 + 24 d_Y h_2 x_1 x_3^3 y_2 + 168 h_1 x_1 x_3 y_1^2 y_2 + 24 d_Y h_1 x_1 x_3 y_1^2 y_2 - 84 h_2 x_1 x_3 y_1^2 y_2 - \\
& 12 d_Y h_2 x_1 x_3 y_1^2 y_2 + 2520 y_2^2 + 2754 d_Y y_2^2 + 1175 d_Y^2 y_2^2 + 245 d_Y^3 y_2^2 + 25 d_Y^4 y_2^2 + d_Y^5 y_2^2 + \\
& 3360 \mathbb{I} h_1 y_2^2 + 2552 \mathbb{I} d_Y h_1 y_2^2 + 716 \mathbb{I} d_Y^2 h_1 y_2^2 + 88 \mathbb{I} d_Y^3 h_1 y_2^2 + 4 \mathbb{I} d_Y^4 h_1 y_2^2 + 2310 h_1^2 y_2^2 + \\
& 1177 d_Y h_1^2 y_2^2 + 198 d_Y^2 h_1^2 y_2^2 + 11 d_Y^3 h_1^2 y_2^2 + 420 \mathbb{I} h_1^3 y_2^2 + 130 \mathbb{I} d_Y h_1^3 y_2^2 + 10 \mathbb{I} d_Y^2 h_1^3 y_2^2 - \\
& 56 h_1^4 y_2^2 - 8 d_Y h_1^4 y_2^2 + 840 \mathbb{I} h_2 y_2^2 + 638 \mathbb{I} d_Y h_2 y_2^2 + 179 \mathbb{I} d_Y^2 h_2 y_2^2 + 22 \mathbb{I} d_Y^3 h_2 y_2^2 + \\
& \mathbb{I} d_Y^4 h_2 y_2^2 - 2940 h_1 h_2 y_2^2 - 1498 d_Y h_1 h_2 y_2^2 - 252 d_Y^2 h_1 h_2 y_2^2 - 14 d_Y^3 h_1 h_2 y_2^2 + 630 \mathbb{I} h_1^2 h_2 y_2^2 + \\
& 195 \mathbb{I} d_Y h_1^2 h_2 y_2^2 + 15 \mathbb{I} d_Y^2 h_1^2 h_2 y_2^2 - 56 h_1^3 h_2 y_2^2 - 8 d_Y h_1^3 h_2 y_2^2 + 420 h_2^2 y_2^2 + 214 d_Y h_2^2 y_2^2 + \\
& 36 d_Y^2 h_2^2 y_2^2 + 2 d_Y^3 h_2^2 y_2^2 - 756 \mathbb{I} h_1 h_2^2 y_2^2 - 234 \mathbb{I} d_Y h_1 h_2^2 y_2^2 - 18 \mathbb{I} d_Y^2 h_1 h_2^2 y_2^2 + 42 h_1^2 h_2^2 y_2^2 + \\
& 6 d_Y h_1^2 h_2^2 y_2^2 + 168 \mathbb{I} h_2^3 y_2^2 + 52 \mathbb{I} d_Y h_2^3 y_2^2 + 4 \mathbb{I} d_Y^2 h_2^3 y_2^2 + 28 h_1 h_2^3 y_2^2 + 4 d_Y h_1 h_2^3 y_2^2 - 14 h_2^4 y_2^2 - \\
& 2 d_Y h_2^4 y_2^2 + 1050 x_1^2 y_2^2 + 535 d_Y x_1^2 y_2^2 + 90 d_Y^2 x_1^2 y_2^2 + 5 d_Y^3 x_1^2 y_2^2 + 420 \mathbb{I} h_1 x_1^2 y_2^2 + 130 \mathbb{I} d_Y h_1 x_1^2 y_2^2 + \\
& 10 \mathbb{I} d_Y^2 h_1 x_1^2 y_2^2 - 28 h_1^2 x_1^2 y_2^2 - 4 d_Y h_1^2 x_1^2 y_2^2 + 294 \mathbb{I} h_2 x_1^2 y_2^2 + 91 \mathbb{I} d_Y h_2 x_1^2 y_2^2 + 7 \mathbb{I} d_Y^2 h_2 x_1^2 y_2^2 - \\
& 140 h_1 h_2 x_1^2 y_2^2 - 20 d_Y h_1 h_2 x_1^2 y_2^2 + 14 h_2^2 x_1^2 y_2^2 + 2 d_Y h_2^2 x_1^2 y_2^2 + 28 x_1^4 y_2^2 + 4 d_Y x_1^4 y_2^2 - 420 x_2^2 y_2^2 - \\
& 214 d_Y x_2^2 y_2^2 - 36 d_Y^2 x_2^2 y_2^2 - 2 d_Y^3 x_2^2 y_2^2 - 588 \mathbb{I} h_1 x_2^2 y_2^2 - 182 \mathbb{I} d_Y h_1 x_2^2 y_2^2 - 14 \mathbb{I} d_Y^2 h_1 x_2^2 y_2^2 + \\
& 112 h_1^2 x_2^2 y_2^2 + 16 d_Y h_1^2 x_2^2 y_2^2 + 168 \mathbb{I} h_2 x_2^2 y_2^2 + 52 \mathbb{I} d_Y h_2 x_2^2 y_2^2 + 4 \mathbb{I} d_Y^2 h_2 x_2^2 y_2^2 + 56 h_1 h_2 x_2^2 y_2^2 + \\
& 8 d_Y h_1 h_2 x_2^2 y_2^2 - 56 h_2^2 x_2^2 y_2^2 - 8 d_Y h_2^2 x_2^2 y_2^2 + 28 x_1^2 x_2^2 y_2^2 + 4 d_Y x_1^2 x_2^2 y_2^2 - 42 x_2^4 y_2^2 - 6 d_Y x_2^4 y_2^2 + \\
& 924 \mathbb{I} h_1 x_2^3 y_2^2 + 286 \mathbb{I} d_Y h_1 x_2^3 y_2^2 + 22 \mathbb{I} d_Y^2 h_1 x_2^3 y_2^2 - 462 \mathbb{I} h_2 x_2^3 y_2^2 - 143 \mathbb{I} d_Y h_2 x_2^3 y_2^2 - \\
& 11 \mathbb{I} d_Y^2 h_2 x_2^3 y_2^2 - 84 h_1 h_2 x_2^3 y_2^2 - 12 d_Y h_1 h_2 x_2^3 y_2^2 + 42 h_2^2 x_2^3 y_2^2 + 6 d_Y h_2^2 x_2^3 y_2^2 - 28 x_2^2 x_3^2 y_2^2 - \\
& 4 d_Y x_2^2 x_3^2 y_2^2 + 14 x_3^4 y_2^2 + 2 d_Y x_3^4 y_2^2 + 756 \mathbb{I} x_2 x_3 y_1 y_2^2 + 234 \mathbb{I} d_Y x_2 x_3 y_1 y_2^2 + 18 \mathbb{I} d_Y^2 x_2 x_3 y_1 y_2^2 - \\
& 84 h_1 x_2 x_3 y_1 y_2^2 - 12 d_Y h_1 x_2 x_3 y_1 y_2^2 - 84 h_2 x_2 x_3 y_1 y_2^2 - 12 d_Y h_2 x_2 x_3 y_1 y_2^2 + 1050 y_1^2 y_2^2 + \\
& 535 d_Y y_1^2 y_2^2 + 90 d_Y^2 y_1^2 y_2^2 + 5 d_Y^3 y_1^2 y_2^2 + 420 \mathbb{I} h_1 y_1^2 y_2^2 + 130 \mathbb{I} d_Y h_1 y_1^2 y_2^2 + 10 \mathbb{I} d_Y^2 h_1 y_1^2 y_2^2 - \\
& 28 h_2^2 y_1^2 y_2^2 - 4 d_Y h_2^2 y_1^2 y_2^2 + 294 \mathbb{I} h_2 y_1^2 y_2^2 + 91 \mathbb{I} d_Y h_2 y_1^2 y_2^2 + 7 \mathbb{I} d_Y^2 h_2 y_1^2 y_2^2 - 140 h_1 h_2 y_1^2 y_2^2 - \\
& 20 d_Y h_1 h_2 y_1^2 y_2^2 + 14 h_2^2 y_1^2 y_2^2 + 2 d_Y h_2^2 y_1^2 y_2^2 + 56 x_1^2 y_1^2 y_2^2 + 8 d_Y x_1^2 y_1^2 y_2^2 + 28 x_2^2 y_1^2 y_2^2 + \\
& 4 d_Y x_2^2 y_1^2 y_2^2 + 28 y_1^4 y_2^2 + 4 d_Y y_1^4 y_2^2 + 756 \mathbb{I} x_1 x_3 y_2^3 + 234 \mathbb{I} d_Y x_1 x_3 y_2^3 + 18 \mathbb{I} d_Y^2 x_1 x_3 y_2^3 - \\
& 84 h_1 x_1 x_3 y_2^3 - 12 d_Y h_1 x_1 x_3 y_2^3 - 84 h_2 x_1 x_3 y_2^3 - 12 d_Y h_2 x_1 x_3 y_2^3 - 210 y_2^4 - 107 d_Y y_2^4 - \\
& 18 d_Y^2 y_2^4 - d_Y^3 y_2^4 - 294 \mathbb{I} h_1 y_2^4 - 91 \mathbb{I} d_Y h_1 y_2^4 - 7 \mathbb{I} d_Y^2 h_1 y_2^4 + 56 h_1^2 y_2^4 + 8 d_Y h_1^2 y_2^4 + 84 \mathbb{I} h_2 y_2^4 + \\
& 26 \mathbb{I} d_Y h_2 y_2^4 + 2 \mathbb{I} d_Y^2 h_2 y_2^4 + 28 h_1 h_2 y_2^4 + 4 d_Y h_1 h_2 y_2^4 - 28 h_2^2 y_2^4 - 4 d_Y h_2^2 y_2^4 + 14 x_1^2 y_2^4 + \\
& 2 d_Y x_1^2 y_2^4 - 42 x_2^2 y_2^4 - 6 d_Y x_2^2 y_2^4 - 14 x_3^2 y_2^4 - 2 d_Y x_3^2 y_2^4 + 14 y_1^2 y_2^4 + 2 d_Y y_1^2 y_2^4 - 14 y_2^6 - 2 d_Y y_2^6 + \\
& 2520 h_1 x_1 x_2 y_3 + 1284 d_Y h_1 x_1 x_2 y_3 + 216 d_Y^2 h_1 x_1 x_2 y_3 + 12 d_Y^3 h_1 x_1 x_2 y_3 - 168 h_1^3 x_1 x_2 y_3 - \\
& 24 d_Y h_1^3 x_1 x_2 y_3 - 1260 h_2 x_1 x_2 y_3 - 642 d_Y h_2 x_1 x_2 y_3 - 108 d_Y^2 h_2 x_1 x_2 y_3 - 6 d_Y^3 h_2 x_1 x_2 y_3 + \\
& 1512 \mathbb{I} h_1 h_2 x_1 x_2 y_3 + 468 \mathbb{I} d_Y h_1 h_2 x_1 x_2 y_3 + 36 \mathbb{I} d_Y^2 h_1 h_2 x_1 x_2 y_3 + 252 h_1^2 h_2 x_1 x_2 y_3 + \\
& 36 d_Y h_1^2 h_2 x_1 x_2 y_3 - 756 \mathbb{I} h_2^2 x_1 x_2 y_3 - 234 \mathbb{I} d_Y h_2^2 x_1 x_2 y_3 - 18 \mathbb{I} d_Y^2 h_2^2 x_1 x_2 y_3 - 252 h_1 h_2^2 x_1 x_2 y_3 - \\
& 36 d_Y h_1 h_2^2 x_1 x_2 y_3 + 84 h_2^3 x_1 x_2 y_3 + 12 d_Y h_2^3 x_1 x_2 y_3 - 168 h_1 x_1^3 x_2 y_3 - 24 d_Y h_1 x_1^3 x_2 y_3 + \\
& 84 h_2 x_1^3 x_2 y_3 + 12 d_Y h_2 x_1^3 x_2 y_3 - 756 \mathbb{I} x_1 x_2^3 y_3 - 234 \mathbb{I} d_Y x_1 x_2^3 y_3 - 18 \mathbb{I} d_Y^2 x_1 x_2^3 y_3 + \\
& 84 h_1 x_1 x_2^3 y_3 + 12 d_Y h_1 x_1 x_2^3 y_3 + 84 h_2 x_1 x_2^3 y_3 + 12 d_Y h_2 x_1 x_2^3 y_3 + 756 \mathbb{I} x_1 x_2 x_3^2 y_3 + \\
& 234 \mathbb{I} d_Y x_1 x_2 x_3^2 y_3 + 18 \mathbb{I} d_Y^2 x_1 x_2 x_3^2 y_3 + 84 h_1 x_1 x_2 x_3^2 y_3 + 12 d_Y h_1 x_1 x_2 x_3^2 y_3 - 168 h_2 x_1 x_2 x_3^2 y_3 - \\
& 24 d_Y h_2 x_1 x_2 x_3^2 y_3 - 168 h_1 x_1 x_2 y_1^2 y_3 - 24 d_Y h_1 x_1 x_2 y_1^2 y_3 + 84 h_2 x_1 x_2 y_1^2 y_3 + 12 d_Y h_2 x_1 x_2 y_1^2 y_3 - \\
& 2520 h_1 y_1 y_2 y_3 - 1284 d_Y h_1 y_1 y_2 y_3 - 216 d_Y^2 h_1 y_1 y_2 y_3 - 12 d_Y^3 h_1 y_1 y_2 y_3 + 168 h_1^3 y_1 y_2 y_3 + \\
& 24 d_Y h_1^3 y_1 y_2 y_3 + 1260 h_2 y_1 y_2 y_3 + 642 d_Y h_2 y_1 y_2 y_3 + 108 d_Y^2 h_2 y_1 y_2 y_3 + 6 d_Y^3 h_2 y_1 y_2 y_3 - \\
& 1512 \mathbb{I} h_1 h_2 y_1 y_2 y_3 - 468 \mathbb{I} d_Y h_1 h_2 y_1 y_2 y_3 - 36 \mathbb{I} d_Y^2 h_1 h_2 y_1 y_2 y_3 - 252 h_1^2 h_2 y_1 y_2 y_3 - \\
& 36 d_Y h_1^2 h_2 y_1 y_2 y_3 + 756 \mathbb{I} h_2^2 y_1 y_2 y_3 + 234 \mathbb{I} d_Y h_2^2 y_1 y_2 y_3 + 18 \mathbb{I} d_Y^2 h_2^2 y_1 y_2 y_3 + \\
& 252 h_1 h_2^2 y_1 y_2 y_3 + 36 d_Y h_1 h_2^2 y_1 y_2 y_3 - 84 h_2^3 y_1 y_2 y_3 - 12 d_Y h_2^3 y_1 y_2 y_3 + 168 h_1 x_1^2 y_1 y_2 y_3 + \\
& 24 d_Y h_1 x_1^2 y_1 y_2 y_3 - 84 h_2 x_1^2 y_1 y_2 y_3 - 12 d_Y h_2 x_1^2 y_1 y_2 y_3 + 756 \mathbb{I} x_2^2 y_1 y_2 y_3 + 234 \mathbb{I} d_Y x_2^2 y_1 y_2 y_3 + \\
& 18 \mathbb{I} d_Y^2 x_2^2 y_1 y_2 y_3 - 84 h_1 x_2^2 y_1 y_2 y_3 - 12 d_Y h_1 x_2^2 y_1 y_2 y_3 - 84 h_2 x_2^2 y_1 y_2 y_3 - 12 d_Y h_2 x_2^2 y_1 y_2 y_3 - \\
& 756 \mathbb{I} x_3^2 y_1 y_2 y_3 - 234 \mathbb{I} d_Y x_3^2 y_1 y_2 y_3 - 18 \mathbb{I} d_Y^2 x_3^2 y_1 y_2 y_3 - 84 h_1 x_3^2 y_1 y_2 y_3 - 12 d_Y h_1 x_3^2 y_1 y_2 y_3 + \\
& 168 h_2 x_3^2 y_1 y_2 y_3 + 24 d_Y h_2 x_3^2 y_1 y_2 y_3 + 168 h_1 y_1^3 y_2 y_3 + 24 d_Y h_1 y_1^3 y_2 y_3 - 84 h_2 y_1^3 y_2 y_3 - \\
& 12 d_Y h_2 y_1^3 y_2 y_3 - 756 \mathbb{I} x_1 x_2 y_2^2 y_3 - 234 \mathbb{I} d_Y x_1 x_2 y_2^2 y_3 - 18 \mathbb{I} d_Y^2 x_1 x_2 y_2^2 y_3 + 84 h_1 x_1 x_2 y_2^2 y_3 + \\
& 12 d_Y h_1 x_1 x_2 y_2^2 y_3 + 84 h_2 x_1 x_2 y_2^2 y_3 + 12 d_Y h_2 x_1 x_2 y_2^2 y_3 + 756 \mathbb{I} y_1 y_2^2 y_3 + 234 \mathbb{I} d_Y y_1 y_2^2 y_3 + \\
& 18 \mathbb{I} d_Y^2 y_1 y_2^2 y_3 - 84 h_1 y_1 y_2^2 y_3 - 12 d_Y h_1 y_1 y_2^2 y_3 - 84 h_2 y_1 y_2^2 y_3 - 12 d_Y h_2 y_1 y_2^2 y_3 - 2520 y_3^2 -
\end{aligned}$$

$$\begin{aligned}
& 2754 d_Y y_3^2 - 1175 d_Y^2 y_3^2 - 245 d_Y^3 y_3^2 - 25 d_Y^4 y_3^2 - d_Y^5 y_3^2 + 3360 \, h_1 y_3^2 + 2552 \, d_Y h_1 y_3^2 + \\
& 716 \, d_Y^2 h_1 y_3^2 + 88 \, d_Y^3 h_1 y_3^2 + 4 \, d_Y^4 h_1 y_3^2 - 2310 \, h_1^2 y_3^2 - 1177 \, d_Y h_1^2 y_3^2 - 198 \, d_Y^2 h_1^2 y_3^2 - \\
& 11 \, d_Y^3 h_1^2 y_3^2 + 420 \, h_1^3 y_3^2 + 130 \, d_Y h_1^3 y_3^2 + 10 \, d_Y^2 h_1^3 y_3^2 + 56 \, h_1^4 y_3^2 + 8 \, d_Y h_1^4 y_3^2 - 4200 \, h_2 y_3^2 - \\
& 3190 \, d_Y h_2 y_3^2 - 895 \, d_Y^2 h_2 y_3^2 - 110 \, d_Y^3 h_2 y_3^2 - 5 \, d_Y^4 h_2 y_3^2 + 1680 \, h_1 h_2 y_3^2 + 856 \, d_Y h_1 h_2 y_3^2 + \\
& 144 \, d_Y^2 h_1 h_2 y_3^2 + 8 \, d_Y^3 h_1 h_2 y_3^2 - 1890 \, h_1^2 h_2 y_3^2 - 585 \, d_Y h_1^2 h_2 y_3^2 - 45 \, d_Y^2 h_1^2 h_2 y_3^2 - \\
& 280 \, h_1^3 h_2 y_3^2 - 40 \, d_Y h_1^3 h_2 y_3^2 + 210 \, h_2^2 y_3^2 + 107 \, d_Y h_2^2 y_3^2 + 18 \, d_Y^2 h_2^2 y_3^2 + d_Y^3 h_2^2 y_3^2 + 1764 \, h_1 h_2^2 y_3^2 + \\
& 546 \, d_Y h_1 h_2^2 y_3^2 + 42 \, d_Y^2 h_1 h_2^2 y_3^2 + 462 \, h_1^2 h_2^2 y_3^2 + 66 \, d_Y h_1^2 h_2^2 y_3^2 - 462 \, h_2^3 y_3^2 - 143 \, d_Y h_2^3 y_3^2 - \\
& 11 \, d_Y^2 h_2^3 y_3^2 - 280 \, h_1 h_2^3 y_3^2 - 40 \, d_Y h_1 h_2^3 y_3^2 + 56 \, h_2^4 y_3^2 + 8 \, d_Y h_2^4 y_3^2 - 1050 \, x_1^2 y_3^2 - 535 \, d_Y x_1^2 y_3^2 - \\
& 90 \, d_Y^2 x_1^2 y_3^2 - 5 \, d_Y^3 x_1^2 y_3^2 + 420 \, h_1 x_1^2 y_3^2 + 130 \, d_Y h_1 x_1^2 y_3^2 + 10 \, d_Y^2 h_1 x_1^2 y_3^2 + 28 \, h_1^2 x_1^2 y_3^2 + \\
& 4 \, d_Y h_1^2 x_1^2 y_3^2 - 714 \, h_2 x_1^2 y_3^2 - 221 \, d_Y h_2 x_1^2 y_3^2 - 17 \, d_Y^2 h_2 x_1^2 y_3^2 - 196 \, h_1 h_2 x_1^2 y_3^2 - \\
& 28 \, d_Y h_1 h_2 x_1^2 y_3^2 + 154 \, h_2^2 x_1^2 y_3^2 + 22 \, d_Y h_2^2 x_1^2 y_3^2 - 28 \, x_1^4 y_3^2 - 4 \, d_Y x_1^4 y_3^2 + 924 \, h_1 x_2^2 y_3^2 + \\
& 286 \, d_Y h_1 x_2^2 y_3^2 + 22 \, d_Y^2 h_1 x_2^2 y_3^2 - 462 \, h_2 x_2^2 y_3^2 - 143 \, d_Y h_2 x_2^2 y_3^2 - 11 \, d_Y^2 h_2 x_2^2 y_3^2 - \\
& 84 \, h_1 h_2 x_2^2 y_3^2 - 12 \, d_Y h_1 h_2 x_2^2 y_3^2 + 42 \, h_2^2 x_2^2 y_3^2 + 6 \, d_Y h_2^2 x_2^2 y_3^2 - 14 \, x_2^4 y_3^2 - 2 \, d_Y x_2^4 y_3^2 + 420 \, x_3^2 y_3^2 + \\
& 214 \, d_Y x_3^2 y_3^2 + 36 \, d_Y^2 x_3^2 y_3^2 + 2 \, d_Y^3 x_3^2 y_3^2 - 588 \, h_1 x_3^2 y_3^2 - 182 \, d_Y h_1 x_3^2 y_3^2 - 14 \, d_Y^2 h_1 x_3^2 y_3^2 - \\
& 112 \, h_1^2 x_3^2 y_3^2 - 16 \, d_Y h_1^2 x_3^2 y_3^2 + 420 \, h_2 x_3^2 y_3^2 + 130 \, d_Y h_2 x_3^2 y_3^2 + 10 \, d_Y^2 h_2 x_3^2 y_3^2 + 280 \, h_1 h_2 x_3^2 y_3^2 + \\
& 40 \, d_Y h_1 h_2 x_3^2 y_3^2 - 112 \, h_2^2 x_3^2 y_3^2 - 16 \, d_Y h_2^2 x_3^2 y_3^2 - 28 \, x_1^2 x_3^2 y_3^2 - 4 \, d_Y x_1^2 x_3^2 y_3^2 + 28 \, x_2^2 x_3^2 y_3^2 + \\
& 4 \, d_Y x_2^2 x_3^2 y_3^2 + 42 \, x_3^4 y_3^2 + 6 \, d_Y x_3^4 y_3^2 - 756 \, x_2 x_3 y_1 y_3^2 - 234 \, d_Y x_2 x_3 y_1 y_3^2 - 18 \, d_Y^2 x_2 x_3 y_1 y_3^2 - \\
& 84 \, h_1 x_2 x_3 y_1 y_3^2 - 12 \, d_Y h_1 x_2 x_3 y_1 y_3^2 + 168 \, h_2 x_2 x_3 y_1 y_3^2 + 24 \, d_Y h_2 x_2 x_3 y_1 y_3^2 - 1050 \, y_1^2 y_3^2 - \\
& 535 \, d_Y y_1^2 y_3^2 - 90 \, d_Y^2 y_1^2 y_3^2 - 5 \, d_Y^3 y_1^2 y_3^2 + 420 \, h_1 y_1^2 y_3^2 + 130 \, d_Y h_1 y_1^2 y_3^2 + 10 \, d_Y^2 h_1 y_1^2 y_3^2 + \\
& 28 \, h_1^2 y_1^2 y_3^2 + 4 \, d_Y h_1^2 y_1^2 y_3^2 - 714 \, h_2 y_1^2 y_3^2 - 221 \, d_Y h_2 y_1^2 y_3^2 - 17 \, d_Y^2 h_2 y_1^2 y_3^2 - 196 \, h_1 h_2 y_1^2 y_3^2 - \\
& 28 \, d_Y h_1 h_2 y_1^2 y_3^2 + 154 \, h_2^2 y_1^2 y_3^2 + 22 \, d_Y h_2^2 y_1^2 y_3^2 - 56 \, x_1^2 y_1^2 y_3^2 - 8 \, d_Y x_1^2 y_1^2 y_3^2 - 28 \, x_3^2 y_1^2 y_3^2 - \\
& 4 \, d_Y x_3^2 y_1^2 y_3^2 - 28 \, y_1^4 y_3^2 - 4 \, d_Y y_1^4 y_3^2 - 756 \, x_1 x_3 y_2 y_3^2 - 234 \, d_Y x_1 x_3 y_2 y_3^2 - 18 \, d_Y^2 x_1 x_3 y_2 y_3^2 - \\
& 84 \, h_1 x_1 x_3 y_2 y_3^2 - 12 \, d_Y h_1 x_1 x_3 y_2 y_3^2 + 168 \, h_2 x_1 x_3 y_2 y_3^2 + 24 \, d_Y h_2 x_1 x_3 y_2 y_3^2 + 924 \, h_1 y_2^2 y_3^2 + \\
& 286 \, d_Y h_1 y_2^2 y_3^2 + 22 \, d_Y^2 h_1 y_2^2 y_3^2 - 462 \, h_2 y_2^2 y_3^2 - 143 \, d_Y h_2 y_2^2 y_3^2 - 11 \, d_Y^2 h_2 y_2^2 y_3^2 - \\
& 84 \, h_1 h_2 y_2^2 y_3^2 - 12 \, d_Y h_1 h_2 y_2^2 y_3^2 + 42 \, h_2^2 y_2^2 y_3^2 + 6 \, d_Y h_2^2 y_2^2 y_3^2 - 28 \, x_2^2 y_2^2 y_3^2 - 4 \, d_Y x_2^2 y_2^2 y_3^2 + \\
& 28 \, x_3^2 y_2^2 y_3^2 + 4 \, d_Y x_3^2 y_2^2 y_3^2 - 14 \, y_2^4 y_3^2 - 2 \, d_Y y_2^4 y_3^2 + 756 \, x_1 x_2 y_3^3 + 234 \, d_Y x_1 x_2 y_3^3 + \\
& 18 \, d_Y^2 x_1 x_2 y_3^3 + 84 \, h_1 x_1 x_2 y_3^3 + 12 \, d_Y h_1 x_1 x_2 y_3^3 - 168 \, h_2 x_1 x_2 y_3^3 - 24 \, d_Y h_2 x_1 x_2 y_3^3 - \\
& 756 \, y_1 y_2 y_3^3 - 234 \, d_Y y_1 y_2 y_3^3 - 18 \, d_Y^2 y_1 y_2 y_3^3 - 84 \, h_1 y_1 y_2 y_3^3 - 12 \, d_Y h_1 y_1 y_2 y_3^3 + \\
& 168 \, h_2 y_1 y_2 y_3^3 + 24 \, d_Y h_2 y_1 y_2 y_3^3 + 210 \, y_3^4 + 107 \, d_Y y_3^4 + 18 \, d_Y^2 y_3^4 + d_Y^3 y_3^4 - 294 \, h_1 y_3^4 - \\
& 91 \, d_Y h_1 y_3^4 - 7 \, d_Y^2 h_1 y_3^4 - 56 \, h_2 y_3^4 - 8 \, d_Y h_2 y_3^4 + 210 \, h_2 y_3^4 + 65 \, d_Y h_2 y_3^4 + 5 \, d_Y^2 h_2 y_3^4 + \\
& 140 \, h_1 h_2 y_3^4 + 20 \, d_Y h_1 h_2 y_3^4 - 56 \, h_2^2 y_3^4 - 8 \, d_Y h_2^2 y_3^4 - 14 \, x_1^2 y_3^4 - 2 \, d_Y x_1^2 y_3^4 + 14 \, x_2^2 y_3^4 + \\
& 2 \, d_Y x_2^2 y_3^4 + 42 \, x_3^2 y_3^4 + 6 \, d_Y x_3^2 y_3^4 - 14 \, y_1^2 y_3^4 - 2 \, d_Y y_1^2 y_3^4 + 14 \, y_2^2 y_3^4 + 2 \, d_Y y_2^2 y_3^4 + 14 \, y_3^6 + 2 \, d_Y y_3^6
\end{aligned}$$

$$In[ ]:= (* Y_{\alpha_2}^6 \pi_{1,1} *)$$

$$\begin{aligned}
& - \left( -\frac{1}{2} \left( (2 y_2 - h_2 x_2) D[A[[1, 1]], h_2] + (h_1 - 2 h_2) D[A[[1, 1]], y_2] - \right. \right. \\
& \quad h_1 (h_1 - 2 h_2) D[A[[1, 1]], x_2] + (x_3 + h_1 y_3) D[A[[1, 1]], x_1] + (y_3 - h_1 x_3) D[A[[1, 1]], y_1] + \\
& \quad \left. \left. (-x_1 + h_1 y_1) D[A[[1, 1]], x_3] + (-y_1 - h_1 x_1) D[A[[1, 1]], y_3] \right) \right) // \text{Expand}
\end{aligned}$$

In[ ]:=

$5040 x_2 + 8028 d_Y x_2 + 5104 d_Y^2 x_2 + 1665 d_Y^3 x_2 + 295 d_Y^4 x_2 + 27 d_Y^5 x_2 + d_Y^6 x_2 + 7560 i h_1 x_2 +$   
 $8262 i d_Y h_1 x_2 + 3525 i d_Y^2 h_1 x_2 + 735 i d_Y^3 h_1 x_2 + 75 i d_Y^4 h_1 x_2 + 3 i d_Y^5 h_1 x_2 - 840 h_1^2 x_2 -$   
 $638 d_Y h_1^2 x_2 - 179 d_Y^2 h_1^2 x_2 - 22 d_Y^3 h_1^2 x_2 - d_Y^4 h_1^2 x_2 + 630 i h_1^3 x_2 + 321 i d_Y h_1^3 x_2 +$   
 $54 i d_Y^2 h_1^3 x_2 + \dots 2081 \dots + 8 d_Y y_1 y_2^2 y_3^3 + 42 x_2 y_3^4 + 13 d_Y x_2 y_3^4 + d_Y^2 x_2 y_3^4 -$   
 $21 i h_1 x_2 y_3^4 - 3 i d_Y h_1 x_2 y_3^4 + 21 i h_2 x_2 y_3^4 + 3 i d_Y h_2 x_2 y_3^4 - 14 x_1 x_3 y_3^4 - 2 d_Y x_1 x_3 y_3^4 +$   
 $14 i x_3 y_1 y_3^4 + 2 i d_Y x_3 y_1 y_3^4 + 42 i y_2 y_3^4 + 13 i d_Y y_2 y_3^4 + i d_Y^2 y_2 y_3^4 + 21 h_1 y_2 y_3^4 +$   
 $3 d_Y h_1 y_2 y_3^4 - 21 h_2 y_2 y_3^4 - 3 d_Y h_2 y_2 y_3^4 - 14 i x_1 y_3^5 - 2 i d_Y x_1 y_3^5 - 14 y_1 y_3^5 - 2 d_Y y_1 y_3^5$

large output

show less

show more

show all

set size limit...

Out[ ]:= 0

In[ ]:=

$(\star Y_{\alpha_2}^6 \pi_{1,1}$   
 restrict to  $h_2, x_2, y_2$   
 $\star)$   
 $-\left(-\frac{1}{2} \left( (2 y_2 - i 2 x_2) D[A[[1, 1]], h_2] + (-2 h_2) D[A[[1, 1]], y_2] - i (-2 h_2) D[A[[1, 1]], x_2] \right) \right) //$   
 Expand

In[ ]:=

$5040 x_2 + 8028 d_Y x_2 + 5104 d_Y^2 x_2 + 1665 d_Y^3 x_2 + 295 d_Y^4 x_2 + 27 d_Y^5 x_2 + d_Y^6 x_2 + 4200 h_2^2 x_2 +$   
 $3190 d_Y h_2^2 x_2 + 895 d_Y^2 h_2^2 x_2 + 110 d_Y^3 h_2^2 x_2 + 5 d_Y^4 h_2^2 x_2 + 168 h_2^4 x_2 + 52 d_Y h_2^4 x_2 + 4 d_Y^2 h_2^4 x_2 +$   
 $4200 x_2^3 + 3190 d_Y x_2^3 + 895 d_Y^2 x_2^3 + 110 d_Y^3 x_2^3 + 5 d_Y^4 x_2^3 + 336 h_2^2 x_2^3 + 104 d_Y h_2^2 x_2^3 + 8 d_Y^2 h_2^2 x_2^3 +$   
 $168 x_2^5 + 52 d_Y x_2^5 + 4 d_Y^2 x_2^5 + 5040 i y_2 + 8028 i d_Y y_2 + 5104 i d_Y^2 y_2 + 1665 i d_Y^3 y_2 +$   
 $295 i d_Y^4 y_2 + 27 i d_Y^5 y_2 + i d_Y^6 y_2 + 4200 i h_2^2 y_2 + 3190 i d_Y h_2^2 y_2 + 895 i d_Y^2 h_2^2 y_2 +$   
 $110 i d_Y^3 h_2^2 y_2 + 5 i d_Y^4 h_2^2 y_2 + 168 i h_2^4 y_2 + 52 i d_Y h_2^4 y_2 + 4 i d_Y^2 h_2^4 y_2 + 4200 i x_2^2 y_2 +$   
 $3190 i d_Y x_2^2 y_2 + 895 i d_Y^2 x_2^2 y_2 + 110 i d_Y^3 x_2^2 y_2 + 5 i d_Y^4 x_2^2 y_2 + 336 i h_2^2 x_2^2 y_2 + 104 i d_Y h_2^2 x_2^2 y_2 +$   
 $8 i d_Y^2 h_2^2 x_2^2 y_2 + 168 i x_2^4 y_2 + 52 i d_Y x_2^4 y_2 + 4 i d_Y^2 x_2^4 y_2 + 4200 x_2 y_2^2 + 3190 d_Y x_2 y_2^2 +$   
 $895 d_Y^2 x_2 y_2^2 + 110 d_Y^3 x_2 y_2^2 + 5 d_Y^4 x_2 y_2^2 + 336 h_2^2 x_2 y_2^2 + 104 d_Y h_2^2 x_2 y_2^2 + 8 d_Y^2 h_2^2 x_2 y_2^2 +$   
 $336 x_2^3 y_2^2 + 104 d_Y x_2^3 y_2^2 + 8 d_Y^2 x_2^3 y_2^2 + 4200 i y_3^2 + 3190 i d_Y y_3^2 + 895 i d_Y^2 y_3^2 + 110 i d_Y^3 y_3^2 +$   
 $5 i d_Y^4 y_3^2 + 336 i h_2^2 y_3^2 + 104 i d_Y h_2^2 y_3^2 + 8 i d_Y^2 h_2^2 y_3^2 + 336 i x_2^2 y_3^2 + 104 i d_Y x_2^2 y_3^2 + 8 i d_Y^2 x_2^2 y_3^2 +$   
 $168 x_2 y_2^4 + 52 d_Y x_2 y_2^4 + 4 d_Y^2 x_2 y_2^4 + 168 i y_2^5 + 52 i d_Y y_2^5 + 4 i d_Y^2 y_2^5 - A[[1, 2]] // Expand$

Out[ ]:= 0

In[ ]:=

$(\star Y_{\alpha_2}^6 \pi_{1,k} \star)$   
 $k = 2;$   
 $-\left(-\frac{1}{2} \left( (2 y_2 - i 2 x_2) D[A[[1, k]], h_2] + (h_1 - 2 h_2) D[A[[1, k]], y_2] - \right.\right.$   
 $i (h_1 - 2 h_2) D[A[[1, k]], x_2] + (x_3 + i y_3) D[A[[1, k]], x_1] + (y_3 - i x_3) D[A[[1, k]], y_1] +$   
 $\left. (-x_1 + i y_1) D[A[[1, k]], x_3] + (-y_1 - i x_1) D[A[[1, k]], y_3] \right) // Expand$

In[ ]:=

```

7560 x1 x2 + 8262 dγ x1 x2 + 3525 dγ² x1 x2 + 735 dγ³ x1 x2 + 75 dγ⁴ x1 x2 + 3 dγ⁵ x1 x2 +
2520 ĩ h1 x1 x2 + 1914 ĩ dγ h1 x1 x2 + 537 ĩ dγ² h1 x1 x2 + 66 ĩ dγ³ h1 x1 x2 +
3 ĩ dγ⁴ h1 x1 x2 + 1890 h1² x1 x2 + 963 dγ h1² x1 x2 + 162 dγ² h1² x1 x2 + 9 dγ³ h1² x1 x2 +
126 ĩ h1³ x1 x2 + 39 ĩ dγ h1³ x1 x2 + 3 ĩ dγ² h1³ x1 x2 + 42 h1⁴ x1 x2 + 6 dγ h1⁴ x1 x2 +
5040 ĩ h2 x1 x2 + 3828 ĩ dγ h2 x1 x2 + 1074 ĩ dγ² h2 x1 x2 + 132 ĩ dγ³ h2 x1 x2 +
... 2382 ... + 19 dγ h1 y2² y3³ - 98 h2 y2² y3³ - 14 dγ h2 y2² y3³ + 84 x1 x2 y3⁴ + 12 dγ x1 x2 y3⁴ +
42 x3 y3⁴ + 13 dγ x3 y3⁴ + dγ² x3 y3⁴ + 7 ĩ h1 x3 y3⁴ + ĩ dγ h1 x3 y3⁴ + 7 ĩ h2 x3 y3⁴ +
ĩ dγ h2 x3 y3⁴ - 42 ĩ x2 y1 y3⁴ - 6 ĩ dγ x2 y1 y3⁴ - 42 ĩ x1 y2 y3⁴ - 6 ĩ dγ x1 y2 y3⁴ - 84 y1 y2 y3⁴ -
12 dγ y1 y2 y3⁴ + 42 ĩ y3⁵ + 13 ĩ dγ y3⁵ + ĩ dγ² y3⁵ - 7 h1 y3⁵ - dγ h1 y3⁵ - 7 h2 y3⁵ - dγ h2 y3⁵

```

large output

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Out[ ]:= 0

In[ ]:= (\* Y<sub>α<sub>2</sub></sub> π<sub>1,k</sub> \*)

k = 3;

```

- ( - 1/2 ( (2 y2 - ĩ 2 x2) D[A[[1, k]], h2] + (h1 - 2 h2) D[A[[1, k]], y2] -
ĩ (h1 - 2 h2) D[A[[1, k]], x2] + (x3 + ĩ y3) D[A[[1, k]], x1] + (y3 - ĩ x3) D[A[[1, k]], y1] +
(-x1 + ĩ y1) D[A[[1, k]], x3] + (-y1 - ĩ x1) D[A[[1, k]], y3] ) ) // Expand

```

Out[ ]:= 0

In[ ]:= (\* Y<sub>α<sub>2</sub></sub> π<sub>1,k</sub> \*)

k = 4;

```

- ( - 1/2 ( (2 y2 - ĩ 2 x2) D[A[[1, k]], h2] + (h1 - 2 h2) D[A[[1, k]], y2] -
ĩ (h1 - 2 h2) D[A[[1, k]], x2] + (x3 + ĩ y3) D[A[[1, k]], x1] + (y3 - ĩ x3) D[A[[1, k]], y1] +
(-x1 + ĩ y1) D[A[[1, k]], x3] + (-y1 - ĩ x1) D[A[[1, k]], y3] ) ) // Expand

```

In[ ]:=

```

5040 x1 x2² + 3828 dγ x1 x2² + 1074 dγ² x1 x2² + 132 dγ³ x1 x2² + 6 dγ⁴ x1 x2² + 2520 ĩ h1 x1 x2² +
1284 ĩ dγ h1 x1 x2² + 216 ĩ dγ² h1 x1 x2² + 12 ĩ dγ³ h1 x1 x2² + 252 h1² x1 x2² + 78 dγ h1² x1 x2² +
6 dγ² h1² x1 x2² + 84 ĩ h1³ x1 x2² + 12 ĩ dγ h1³ x1 x2² - 252 h1 h2 x1 x2² - 78 dγ h1 h2 x1 x2² -
6 dγ² h1 h2 x1 x2² + 42 ĩ h1² h2 x1 x2² + 6 ĩ dγ h1² h2 x1 x2² + 252 h2² x1 x2² + 78 dγ h2² x1 x2² +
6 dγ² h2² x1 x2² - 42 ĩ h1 h2² x1 x2² - 6 ĩ dγ h1 h2² x1 x2² + ... 2068 ... + 42 ĩ h1 x1 y3⁴ +
6 ĩ dγ h1 x1 y3⁴ - 42 ĩ h2 x1 y3⁴ - 6 ĩ dγ h2 x1 y3⁴ + 28 x2 x3 y3⁴ + 4 dγ x2 x3 y3⁴ + 252 ĩ y1 y3⁴ +
78 ĩ dγ y1 y3⁴ + 6 ĩ dγ² y1 y3⁴ + 42 h1 y1 y3⁴ + 6 dγ h1 y1 y3⁴ - 42 h2 y1 y3⁴ - 6 dγ h2 y1 y3⁴ +
28 ĩ x3 y2 y3⁴ + 4 ĩ dγ x3 y2 y3⁴ + 28 ĩ x2 y3⁵ + 4 ĩ dγ x2 y3⁵ - 28 y2 y3⁵ - 4 dγ y2 y3⁵

```

large output

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Out[ ]:= 0

$\text{In}[*]:= (* Y_{\alpha_2}^6 \pi_{1,k} *)$

$k = 5;$

$$- \left( -\frac{1}{2} \left( (2 y_2 - \text{I} 2 x_2) D[A[[1, k]], h_2] + (h_1 - 2 h_2) D[A[[1, k]], y_2] - \right. \right. \\ \left. \text{I} (h_1 - 2 h_2) D[A[[1, k]], x_2] + (x_3 + \text{I} y_3) D[A[[1, k]], x_1] + (y_3 - \text{I} x_3) D[A[[1, k]], y_1] + \right. \\ \left. (-x_1 + \text{I} y_1) D[A[[1, k]], x_3] + (-y_1 - \text{I} x_1) D[A[[1, k]], y_3] \right) // \text{Expand}$$

$\text{In}[*]:=$

$$2520 x_1 x_2^2 + 1914 d_Y x_1 x_2^2 + 537 d_Y^2 x_1 x_2^2 + 66 d_Y^3 x_1 x_2^2 + 3 d_Y^4 x_1 x_2^2 + 1260 \text{I} h_1 x_1 x_2^2 + \\ 642 \text{I} d_Y h_1 x_1 x_2^2 + 108 \text{I} d_Y^2 h_1 x_1 x_2^2 + 6 \text{I} d_Y^3 h_1 x_1 x_2^2 + 126 h_1^2 x_1 x_2^2 + 39 d_Y h_1^2 x_1 x_2^2 + \\ 3 d_Y^2 h_1^2 x_1 x_2^2 + 42 \text{I} h_1^3 x_1 x_2^2 + 6 \text{I} d_Y h_1^3 x_1 x_2^2 - 126 h_1 h_2 x_1 x_2^2 - 39 d_Y h_1 h_2 x_1 x_2^2 - \\ 3 d_Y^2 h_1 h_2 x_1 x_2^2 + 21 \text{I} h_1^2 h_2 x_1 x_2^2 + 3 \text{I} d_Y h_1^2 h_2 x_1 x_2^2 + 126 h_2^2 x_1 x_2^2 + 39 d_Y h_2^2 x_1 x_2^2 + \\ 3 d_Y^2 h_2^2 x_1 x_2^2 - 21 \text{I} h_1 h_2^2 x_1 x_2^2 - 3 \text{I} d_Y h_1 h_2^2 x_1 x_2^2 + 126 x_1^3 x_2^2 + \dots 2067 \dots + \\ 21 \text{I} h_1 x_1 y_3^4 + 3 \text{I} d_Y h_1 x_1 y_3^4 - 21 \text{I} h_2 x_1 y_3^4 - 3 \text{I} d_Y h_2 x_1 y_3^4 + 14 x_2 x_3 y_3^4 + 2 d_Y x_2 x_3 y_3^4 + \\ 126 \text{I} y_1 y_3^4 + 39 \text{I} d_Y y_1 y_3^4 + 3 \text{I} d_Y^2 y_1 y_3^4 + 21 h_1 y_1 y_3^4 + 3 d_Y h_1 y_1 y_3^4 - 21 h_2 y_1 y_3^4 - \\ 3 d_Y h_2 y_1 y_3^4 + 14 \text{I} x_3 y_2 y_3^4 + 2 \text{I} d_Y x_3 y_2 y_3^4 + 14 \text{I} x_2 y_3^5 + 2 \text{I} d_Y x_2 y_3^5 - 14 y_2 y_3^5 - 2 d_Y y_2 y_3^5$$

large output

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$\text{Out}[*]= 0$

$\text{In}[*]:= (* Y_{\alpha_2}^6 \pi_{1,k} *)$

$k = 6;$

$$- \left( -\frac{1}{2} \left( (2 y_2 - \text{I} 2 x_2) D[A[[1, k]], h_2] + (h_1 - 2 h_2) D[A[[1, k]], y_2] - \right. \right. \\ \left. \text{I} (h_1 - 2 h_2) D[A[[1, k]], x_2] + (x_3 + \text{I} y_3) D[A[[1, k]], x_1] + (y_3 - \text{I} x_3) D[A[[1, k]], y_1] + \right. \\ \left. (-x_1 + \text{I} y_1) D[A[[1, k]], x_3] + (-y_1 - \text{I} x_1) D[A[[1, k]], y_3] \right) // \text{Expand}$$

$\text{Out}[*]= 0$

$\text{In}[*]:= (* Y_{\alpha_2}^6 \pi_{1,k} *)$

$k = 7;$

$$- \left( -\frac{1}{2} \left( (2 y_2 - \text{I} 2 x_2) D[A[[1, k]], h_2] + (h_1 - 2 h_2) D[A[[1, k]], y_2] - \right. \right. \\ \left. \text{I} (h_1 - 2 h_2) D[A[[1, k]], x_2] + (x_3 + \text{I} y_3) D[A[[1, k]], x_1] + (y_3 - \text{I} x_3) D[A[[1, k]], y_1] + \right. \\ \left. (-x_1 + \text{I} y_1) D[A[[1, k]], x_3] + (-y_1 - \text{I} x_1) D[A[[1, k]], y_3] \right) // \text{Expand}$$

$$\text{In}[*]:= 1260 x_1^2 x_2^2 + 642 d_Y x_1^2 x_2^2 + 108 d_Y^2 x_1^2 x_2^2 + 6 d_Y^3 x_1^2 x_2^2 + 42 h_1^2 x_1^2 x_2^2 + 6 d_Y h_1^2 x_1^2 x_2^2 - 42 h_1 h_2 x_1^2 x_2^2 - \\ 6 d_Y h_1 h_2 x_1^2 x_2^2 + 42 h_2^2 x_1^2 x_2^2 + 6 d_Y h_2^2 x_1^2 x_2^2 + 42 x_1^4 x_2^2 + 6 d_Y x_1^4 x_2^2 + 42 x_1^2 x_2^4 + 6 d_Y x_1^2 x_2^4 + \\ 2520 \text{I} h_1 x_1 x_2 x_3 + 1284 \text{I} d_Y h_1 x_1 x_2 x_3 + 216 \text{I} d_Y^2 h_1 x_1 x_2 x_3 + 12 \text{I} d_Y^3 h_1 x_1 x_2 x_3 + \\ 84 \text{I} h_1^3 x_1 x_2 x_3 + 12 \text{I} d_Y h_1^3 x_1 x_2 x_3 - 2520 \text{I} h_2 x_1 x_2 x_3 - 1284 \text{I} d_Y h_2 x_1 x_2 x_3 - 216 \text{I} d_Y^2 h_2 x_1 x_2 x_3 - \\ 12 \text{I} d_Y^3 h_2 x_1 x_2 x_3 - 294 \text{I} h_1^2 h_2 x_1 x_2 x_3 - 42 \text{I} d_Y h_1^2 h_2 x_1 x_2 x_3 + 294 \text{I} h_1 h_2^2 x_1 x_2 x_3 + \\ 42 \text{I} d_Y h_1 h_2^2 x_1 x_2 x_3 - 84 \text{I} h_2^3 x_1 x_2 x_3 - 12 \text{I} d_Y h_2^3 x_1 x_2 x_3 + 84 \text{I} h_1 x_1^3 x_2 x_3 + 12 \text{I} d_Y h_1 x_1^3 x_2 x_3 - \\ 210 \text{I} h_2 x_1^3 x_2 x_3 - 30 \text{I} d_Y h_2 x_1^3 x_2 x_3 + 210 \text{I} h_1 x_1 x_2^3 x_3 + 30 \text{I} d_Y h_1 x_1 x_2^3 x_3 - 84 \text{I} h_2 x_1 x_2^3 x_3 - \\ 12 \text{I} d_Y h_2 x_1 x_2^3 x_3 - 5040 x_3^2 - 5508 d_Y x_3^2 - 2350 d_Y^2 x_3^2 - 490 d_Y^3 x_3^2 - 50 d_Y^4 x_3^2 - 2 d_Y^5 x_3^2 - \\ 2100 h_1^2 x_3^2 - 1070 d_Y h_1^2 x_3^2 - 180 d_Y^2 h_1^2 x_3^2 - 10 d_Y^3 h_1^2 x_3^2 - 56 h_1^4 x_3^2 - 8 d_Y h_1^4 x_3^2 + 3360 h_1 h_2 x_3^2 + \\ 1712 d_Y h_1 h_2 x_3^2 + 288 d_Y^2 h_1 h_2 x_3^2 + 16 d_Y^3 h_1 h_2 x_3^2 + 280 h_1^3 h_2 x_3^2 + 40 d_Y h_1^3 h_2 x_3^2 - 2100 h_2^2 x_3^2 - \\ 1070 d_Y h_2^2 x_3^2 - 180 d_Y^2 h_2^2 x_3^2 - 10 d_Y^3 h_2^2 x_3^2 - 462 h_1^2 h_2^2 x_3^2 - 66 d_Y h_1^2 h_2^2 x_3^2 + 280 h_1 h_2^3 x_3^2 +$$

$$\begin{aligned}
& 40 d\gamma h_1 h_2 x_3^3 - 56 h_2^4 x_3^2 - 8 d\gamma h_2^4 x_3^2 - 840 x_1^2 x_3^2 - 428 d\gamma x_1^2 x_3^2 - 72 d\gamma^2 x_1^2 x_3^2 - 4 d\gamma^3 x_1^2 x_3^2 - \\
& 70 h_1^2 x_1^2 x_3^2 - 10 d\gamma h_1^2 x_1^2 x_3^2 + 238 h_1 h_2 x_1^2 x_3^2 + 34 d\gamma h_1 h_2 x_1^2 x_3^2 - 196 h_2^2 x_1^2 x_3^2 - 28 d\gamma h_2^2 x_1^2 x_3^2 - \\
& 14 x_1^4 x_3^2 - 2 d\gamma x_1^4 x_3^2 - 840 x_2^2 x_3^2 - 428 d\gamma x_2^2 x_3^2 - 72 d\gamma^2 x_2^2 x_3^2 - 4 d\gamma^3 x_2^2 x_3^2 - 196 h_1^2 x_2^2 x_3^2 - \\
& 28 d\gamma h_1^2 x_2^2 x_3^2 + 238 h_1 h_2 x_2^2 x_3^2 + 34 d\gamma h_1 h_2 x_2^2 x_3^2 - 70 h_2^2 x_2^2 x_3^2 - 10 d\gamma h_2^2 x_2^2 x_3^2 + 14 x_1^2 x_2^2 x_3^2 + \\
& 2 d\gamma x_1^2 x_2^2 x_3^2 - 14 x_2^4 x_3^2 - 2 d\gamma x_2^4 x_3^2 - 42 \pm h_1 x_1 x_2 x_3^3 - 6 \pm d\gamma h_1 x_1 x_2 x_3^3 + 42 \pm h_2 x_1 x_2 x_3^3 + \\
& 6 \pm d\gamma h_2 x_1 x_2 x_3^3 - 840 x_3^4 - 428 d\gamma x_3^4 - 72 d\gamma^2 x_3^4 - 4 d\gamma^3 x_3^4 + 56 h_1^2 x_3^4 + 8 d\gamma h_1^2 x_3^4 - 140 h_1 h_2 x_3^4 - \\
& 20 d\gamma h_1 h_2 x_3^4 + 56 h_2^2 x_3^4 + 8 d\gamma h_2^2 x_3^4 - 28 x_1^2 x_3^4 - 4 d\gamma x_1^2 x_3^4 - 28 x_2^2 x_3^4 - 4 d\gamma x_2^2 x_3^4 - 14 x_3^6 - \\
& 2 d\gamma x_3^6 + 2520 \pm x_1 x_2^2 y_1 + 1284 \pm d\gamma x_1 x_2^2 y_1 + 216 \pm d\gamma^2 x_1 x_2^2 y_1 + 12 \pm d\gamma^3 x_1 x_2^2 y_1 + \\
& 84 \pm h_1^2 x_1 x_2^2 y_1 + 12 \pm d\gamma h_1^2 x_1 x_2^2 y_1 - 84 \pm h_1 h_2 x_1 x_2^2 y_1 - 12 \pm d\gamma h_1 h_2 x_1 x_2^2 y_1 + 84 \pm h_2^2 x_1 x_2^2 y_1 + \\
& 12 \pm d\gamma h_2^2 x_1 x_2^2 y_1 + 84 \pm x_1^3 x_2^2 y_1 + 12 \pm d\gamma x_1^3 x_2^2 y_1 + 84 \pm x_1 x_2^4 y_1 + 12 \pm d\gamma x_1 x_2^4 y_1 - \\
& 2520 h_1 x_2 x_3 y_1 - 1284 d\gamma h_1 x_2 x_3 y_1 - 216 d\gamma^2 h_1 x_2 x_3 y_1 - 12 d\gamma^3 h_1 x_2 x_3 y_1 - 84 h_1^3 x_2 x_3 y_1 - \\
& 12 d\gamma h_1^3 x_2 x_3 y_1 + 2520 h_2 x_2 x_3 y_1 + 1284 d\gamma h_2 x_2 x_3 y_1 + 216 d\gamma^2 h_2 x_2 x_3 y_1 + 12 d\gamma^3 h_2 x_2 x_3 y_1 + \\
& 294 h_1^2 h_2 x_2 x_3 y_1 + 42 d\gamma h_1^2 h_2 x_2 x_3 y_1 - 294 h_1 h_2^2 x_2 x_3 y_1 - 42 d\gamma h_1 h_2^2 x_2 x_3 y_1 + 84 h_2^3 x_2 x_3 y_1 + \\
& 12 d\gamma h_2^3 x_2 x_3 y_1 - 84 h_1 x_1^2 x_2 x_3 y_1 - 12 d\gamma h_1 x_1^2 x_2 x_3 y_1 + 210 h_2 x_1^2 x_2 x_3 y_1 + 30 d\gamma h_2 x_1^2 x_2 x_3 y_1 - \\
& 210 h_1 x_2^3 x_3 y_1 - 30 d\gamma h_1 x_2^3 x_3 y_1 + 84 h_2 x_2^3 x_3 y_1 + 12 d\gamma h_2 x_2^3 x_3 y_1 - 168 \pm x_1 x_2^2 x_3^2 y_1 - \\
& 24 \pm d\gamma x_1 x_2^2 x_3^2 y_1 + 294 h_1 x_2 x_3^3 y_1 + 42 d\gamma h_1 x_2 x_3^3 y_1 - 294 h_2 x_2 x_3^3 y_1 - 42 d\gamma h_2 x_2 x_3^3 y_1 - \\
& 1260 x_2^2 y_1^2 - 642 d\gamma x_2^2 y_1^2 - 108 d\gamma^2 x_2^2 y_1^2 - 6 d\gamma^3 x_2^2 y_1^2 - 42 h_1^2 x_2^2 y_1^2 - 6 d\gamma h_1^2 x_2^2 y_1^2 + 42 h_1 h_2 x_2^2 y_1^2 + \\
& 6 d\gamma h_1 h_2 x_2^2 y_1^2 - 42 h_2^2 x_2^2 y_1^2 - 6 d\gamma h_2^2 x_2^2 y_1^2 - 42 x_1^4 y_1^2 - 6 d\gamma x_1^4 y_1^2 + 84 \pm h_1 x_1 x_2 x_3 y_1^2 + \\
& 12 \pm d\gamma h_1 x_1 x_2 x_3 y_1^2 - 210 \pm h_2 x_1 x_2 x_3 y_1^2 - 30 \pm d\gamma h_2 x_1 x_2 x_3 y_1^2 - 840 x_3^2 y_1^2 - 428 d\gamma x_3^2 y_1^2 - \\
& 72 d\gamma^2 x_3^2 y_1^2 - 4 d\gamma^3 x_3^2 y_1^2 - 70 h_1^2 x_3^2 y_1^2 - 10 d\gamma h_1^2 x_3^2 y_1^2 + 238 h_1 h_2 x_3^2 y_1^2 + 34 d\gamma h_1 h_2 x_3^2 y_1^2 - \\
& 196 h_2^2 x_3^2 y_1^2 - 28 d\gamma h_2^2 x_3^2 y_1^2 - 28 x_1^2 x_3^2 y_1^2 - 4 d\gamma x_1^2 x_3^2 y_1^2 + 182 x_2^2 x_3^2 y_1^2 + 26 d\gamma x_2^2 x_3^2 y_1^2 - 28 x_3^4 y_1^2 - \\
& 4 d\gamma x_3^4 y_1^2 + 84 \pm x_1 x_2^2 y_1^3 + 12 \pm d\gamma x_1 x_2^2 y_1^3 - 84 h_1 x_2 x_3 y_1^3 - 12 d\gamma h_1 x_2 x_3 y_1^3 + 210 h_2 x_2 x_3 y_1^3 + \\
& 30 d\gamma h_2 x_2 x_3 y_1^3 - 42 x_2^4 y_1^3 - 6 d\gamma x_2^4 y_1^3 - 14 x_3^2 y_1^4 - 2 d\gamma x_3^2 y_1^4 + 2520 \pm x_1^2 x_2 y_2 + 1284 \pm d\gamma x_1^2 x_2 y_2 + \\
& 216 \pm d\gamma^2 x_1^2 x_2 y_2 + 12 \pm d\gamma^3 x_1^2 x_2 y_2 + 84 \pm h_1^2 x_1^2 x_2 y_2 + 12 \pm d\gamma h_1^2 x_1^2 x_2 y_2 - 84 \pm h_1 h_2 x_1^2 x_2 y_2 - \\
& 12 \pm d\gamma h_1 h_2 x_1^2 x_2 y_2 + 84 \pm h_2^2 x_1^2 x_2 y_2 + 12 \pm d\gamma h_2^2 x_1^2 x_2 y_2 + 84 \pm x_1^4 x_2 y_2 + 12 \pm d\gamma x_1^4 x_2 y_2 + \\
& 84 \pm x_1^2 x_2^2 y_2 + 12 \pm d\gamma x_1^2 x_2^2 y_2 - 2520 h_1 x_1 x_3 y_2 - 1284 d\gamma h_1 x_1 x_3 y_2 - 216 d\gamma^2 h_1 x_1 x_3 y_2 - \\
& 12 d\gamma^3 h_1 x_1 x_3 y_2 - 84 h_1^3 x_1 x_3 y_2 - 12 d\gamma h_1^3 x_1 x_3 y_2 + 2520 h_2 x_1 x_3 y_2 + 1284 d\gamma h_2 x_1 x_3 y_2 + \\
& 216 d\gamma^2 h_2 x_1 x_3 y_2 + 12 d\gamma^3 h_2 x_1 x_3 y_2 + 294 h_1^2 h_2 x_1 x_3 y_2 + 42 d\gamma h_1^2 h_2 x_1 x_3 y_2 - 294 h_1 h_2^2 x_1 x_3 y_2 - \\
& 42 d\gamma h_1 h_2^2 x_1 x_3 y_2 + 84 h_2^3 x_1 x_3 y_2 + 12 d\gamma h_2^3 x_1 x_3 y_2 - 84 h_1 x_1^3 x_3 y_2 - 12 d\gamma h_1 x_1^3 x_3 y_2 + \\
& 210 h_2 x_1^3 x_3 y_2 + 30 d\gamma h_2 x_1^3 x_3 y_2 - 210 h_1 x_1 x_2^2 x_3 y_2 - 30 d\gamma h_1 x_1 x_2^2 x_3 y_2 + 84 h_2 x_1 x_2^2 x_3 y_2 + \\
& 12 d\gamma h_2 x_1 x_2^2 x_3 y_2 - 168 \pm x_1^2 x_2 x_3^2 y_2 - 24 \pm d\gamma x_1^2 x_2 x_3^2 y_2 + 294 h_1 x_1 x_3^3 y_2 + 42 d\gamma h_1 x_1 x_3^3 y_2 - \\
& 294 h_2 x_1 x_3^3 y_2 - 42 d\gamma h_2 x_1 x_3^3 y_2 - 5040 x_1 x_2 y_1 y_2 - 2568 d\gamma x_1 x_2 y_1 y_2 - 432 d\gamma^2 x_1 x_2 y_1 y_2 - \\
& 24 d\gamma^3 x_1 x_2 y_1 y_2 - 168 h_1^2 x_1 x_2 y_1 y_2 - 24 d\gamma h_1^2 x_1 x_2 y_1 y_2 + 168 h_1 h_2 x_1 x_2 y_1 y_2 + \\
& 24 d\gamma h_1 h_2 x_1 x_2 y_1 y_2 - 168 h_2^2 x_1 x_2 y_1 y_2 - 24 d\gamma h_2^2 x_1 x_2 y_1 y_2 - 168 x_1^3 x_2 y_1 y_2 - 24 d\gamma x_1^3 x_2 y_1 y_2 - \\
& 168 x_1 x_2^3 y_1 y_2 - 24 d\gamma x_1 x_2^3 y_1 y_2 - 2520 \pm h_1 x_3 y_1 y_2 - 1284 \pm d\gamma h_1 x_3 y_1 y_2 - 216 \pm d\gamma^2 h_1 x_3 y_1 y_2 - \\
& 12 \pm d\gamma^3 h_1 x_3 y_1 y_2 - 84 \pm h_1^3 x_3 y_1 y_2 - 12 \pm d\gamma h_1^3 x_3 y_1 y_2 + 2520 \pm h_2 x_3 y_1 y_2 + 1284 \pm d\gamma h_2 x_3 y_1 y_2 + \\
& 216 \pm d\gamma^2 h_2 x_3 y_1 y_2 + 12 \pm d\gamma^3 h_2 x_3 y_1 y_2 + 294 \pm h_1^2 h_2 x_3 y_1 y_2 + 42 \pm d\gamma h_1^2 h_2 x_3 y_1 y_2 - \\
& 294 \pm h_1 h_2^2 x_3 y_1 y_2 - 42 \pm d\gamma h_1 h_2^2 x_3 y_1 y_2 + 84 \pm h_2^3 x_3 y_1 y_2 + 12 \pm d\gamma h_2^3 x_3 y_1 y_2 - \\
& 84 \pm h_1 x_1^2 x_3 y_1 y_2 - 12 \pm d\gamma h_1 x_1^2 x_3 y_1 y_2 + 210 \pm h_2 x_1^2 x_3 y_1 y_2 + 30 \pm d\gamma h_2 x_1^2 x_3 y_1 y_2 - \\
& 210 \pm h_1 x_2^2 x_3 y_1 y_2 - 30 \pm d\gamma h_1 x_2^2 x_3 y_1 y_2 + 84 \pm h_2 x_2^2 x_3 y_1 y_2 + 12 \pm d\gamma h_2 x_2^2 x_3 y_1 y_2 + \\
& 336 x_1 x_2 x_3^2 y_1 y_2 + 48 d\gamma x_1 x_2 x_3^2 y_1 y_2 + 42 \pm h_1 x_3^3 y_1 y_2 + 6 \pm d\gamma h_1 x_3^3 y_1 y_2 - 42 \pm h_2 x_3^3 y_1 y_2 - \\
& 6 \pm d\gamma h_2 x_3^3 y_1 y_2 - 2520 \pm x_2 y_1^2 y_2 - 1284 \pm d\gamma x_2 y_1^2 y_2 - 216 \pm d\gamma^2 x_2 y_1^2 y_2 - 12 \pm d\gamma^3 x_2 y_1^2 y_2 - \\
& 84 \pm h_1^2 x_2 y_1^2 y_2 - 12 \pm d\gamma h_1^2 x_2 y_1^2 y_2 + 84 \pm h_1 h_2 x_2 y_1^2 y_2 + 12 \pm d\gamma h_1 h_2 x_2 y_1^2 y_2 - 84 \pm h_2^2 x_2 y_1^2 y_2 - \\
& 12 \pm d\gamma h_2^2 x_2 y_1^2 y_2 - 84 \pm x_2^3 y_1^2 y_2 - 12 \pm d\gamma x_2^3 y_1^2 y_2 - 84 h_1 x_1 x_3 y_1^2 y_2 - 12 d\gamma h_1 x_1 x_3 y_1^2 y_2 + \\
& 210 h_2 x_1 x_3 y_1^2 y_2 + 30 d\gamma h_2 x_1 x_3 y_1^2 y_2 + 168 \pm x_2 x_3^2 y_1^2 y_2 + 24 \pm d\gamma x_2 x_3^2 y_1^2 y_2 - 168 x_1 x_2 y_1^3 y_2 - \\
& 24 d\gamma x_1 x_2 y_1^3 y_2 - 84 \pm h_1 x_3 y_1^3 y_2 - 12 \pm d\gamma h_1 x_3 y_1^3 y_2 + 210 \pm h_2 x_3 y_1^3 y_2 + 30 \pm d\gamma h_2 x_3 y_1^3 y_2 - \\
& 84 \pm x_2 y_1^4 y_2 - 12 \pm d\gamma x_2 y_1^4 y_2 - 1260 x_1^2 y_2^2 - 642 d\gamma x_1^2 y_2^2 - 108 d\gamma^2 x_1^2 y_2^2 - 6 d\gamma^3 x_1^2 y_2^2 -
\end{aligned}$$



$$\begin{aligned}
& 42 h_1^2 x_1^2 y_2^2 - 6 d\gamma h_1^2 x_1^2 y_2^2 + 42 h_1 h_2 x_1^2 y_2^2 + 6 d\gamma h_1 h_2 x_1^2 y_2^2 - 42 h_2^2 x_1^2 y_2^2 - 6 d\gamma h_2^2 x_1^2 y_2^2 - \\
& 42 x_1^4 y_2^2 - 6 d\gamma x_1^4 y_2^2 + 210 h_1 x_1 x_2 x_3 y_2^2 + 30 d\gamma h_1 x_1 x_2 x_3 y_2^2 - 84 h_2 x_1 x_2 x_3 y_2^2 - \\
& 12 d\gamma h_2 x_1 x_2 x_3 y_2^2 - 840 x_3^2 y_2^2 - 428 d\gamma x_3^2 y_2^2 - 72 d\gamma^2 x_3^2 y_2^2 - 4 d\gamma^3 x_3^2 y_2^2 - 196 h_1^2 x_3^2 y_2^2 - \\
& 28 d\gamma h_1^2 x_3^2 y_2^2 + 238 h_1 h_2 x_3^2 y_2^2 + 34 d\gamma h_1 h_2 x_3^2 y_2^2 - 70 h_2^2 x_3^2 y_2^2 - 10 d\gamma h_2^2 x_3^2 y_2^2 + 182 x_1^2 x_3^2 y_2^2 + \\
& 26 d\gamma x_1^2 x_3^2 y_2^2 - 28 x_2^2 x_3^2 y_2^2 - 4 d\gamma x_2^2 x_3^2 y_2^2 - 28 x_3^4 y_2^2 - 4 d\gamma x_3^4 y_2^2 - 2520 h_1 x_1 y_1 y_2^2 - \\
& 1284 d\gamma x_1 y_1 y_2^2 - 216 d\gamma^2 x_1 y_1 y_2^2 - 12 d\gamma^3 x_1 y_1 y_2^2 - 84 h_1^2 x_1 y_1 y_2^2 - 12 d\gamma h_1^2 x_1 y_1 y_2^2 + \\
& 84 h_1 h_2 x_1 y_1 y_2^2 + 12 d\gamma h_1 h_2 x_1 y_1 y_2^2 - 84 h_2^2 x_1 y_1 y_2^2 - 12 d\gamma h_2^2 x_1 y_1 y_2^2 - 84 h_1^3 x_1 y_1 y_2^2 - \\
& 12 d\gamma h_1^3 x_1 y_1 y_2^2 - 210 h_1 x_2 x_3 y_1 y_2^2 - 30 d\gamma h_1 x_2 x_3 y_1 y_2^2 + 84 h_2 x_2 x_3 y_1 y_2^2 + 12 d\gamma h_2 x_2 x_3 y_1 y_2^2 + \\
& 168 h_1 x_1 x_3 y_1 y_2^2 + 24 d\gamma h_1 x_1 x_3 y_1 y_2^2 + 1260 y_1^2 y_2^2 + 642 d\gamma y_1^2 y_2^2 + 108 d\gamma^2 y_1^2 y_2^2 + 6 d\gamma^3 y_1^2 y_2^2 + \\
& 42 h_1^2 y_1^2 y_2^2 + 6 d\gamma h_1^2 y_1^2 y_2^2 - 42 h_1 h_2 y_1^2 y_2^2 - 6 d\gamma h_1 h_2 y_1^2 y_2^2 + 42 h_2^2 y_1^2 y_2^2 + 6 d\gamma h_2^2 y_1^2 y_2^2 + \\
& 14 x_3^2 y_1^2 y_2^2 + 2 d\gamma x_3^2 y_1^2 y_2^2 - 84 h_1 x_1^3 y_2^2 - 12 d\gamma h_1 x_1^3 y_2^2 + 42 y_1^4 y_2^2 + 6 d\gamma y_1^4 y_2^2 + 84 h_1^2 x_2 y_2^3 + \\
& 12 d\gamma h_1^2 x_2 y_2^3 - 210 h_1 x_1 x_3 y_2^3 - 30 d\gamma h_1 x_1 x_3 y_2^3 + 84 h_2 x_1 x_3 y_2^3 + 12 d\gamma h_2 x_1 x_3 y_2^3 - \\
& 168 x_1 x_2 y_1 y_2^2 - 24 d\gamma x_1 x_2 y_1 y_2^2 - 210 h_1 x_3 y_1 y_2^2 - 30 d\gamma h_1 x_3 y_1 y_2^2 + 84 h_2 x_3 y_1 y_2^2 + \\
& 12 d\gamma h_2 x_3 y_1 y_2^2 - 84 h_1 x_2 y_1 y_2^2 - 12 d\gamma h_1 x_2 y_1 y_2^2 - 42 x_1^2 y_2^4 - 6 d\gamma x_1^2 y_2^4 - 14 x_3^2 y_2^4 - 2 d\gamma x_3^2 y_2^4 - \\
& 84 h_1 x_1 y_1 y_2^4 - 12 d\gamma h_1 x_1 y_1 y_2^4 + 42 y_1^4 y_2^4 + 6 d\gamma y_1^4 y_2^4 - 2520 h_1 x_1 x_2 y_3 - 1284 d\gamma h_1 x_1 x_2 y_3 - \\
& 216 d\gamma^2 h_1 x_1 x_2 y_3 - 12 d\gamma^3 h_1 x_1 x_2 y_3 - 84 h_1^3 x_1 x_2 y_3 - 12 d\gamma h_1^3 x_1 x_2 y_3 + 2520 h_2 x_1 x_2 y_3 + \\
& 1284 d\gamma h_2 x_1 x_2 y_3 + 216 d\gamma^2 h_2 x_1 x_2 y_3 + 12 d\gamma^3 h_2 x_1 x_2 y_3 + 294 h_1^2 h_2 x_1 x_2 y_3 + 42 d\gamma h_1^2 h_2 x_1 x_2 y_3 - \\
& 294 h_1 h_2^2 x_1 x_2 y_3 - 42 d\gamma h_1 h_2^2 x_1 x_2 y_3 + 84 h_2^3 x_1 x_2 y_3 + 12 d\gamma h_2^3 x_1 x_2 y_3 - 84 h_1 x_1^3 x_2 y_3 - \\
& 12 d\gamma h_1 x_1^3 x_2 y_3 + 210 h_2 x_1^3 x_2 y_3 + 30 d\gamma h_2 x_1^3 x_2 y_3 - 210 h_1 x_1 x_2^3 y_3 - 30 d\gamma h_1 x_1 x_2^3 y_3 + \\
& 84 h_2 x_1 x_2^3 y_3 + 12 d\gamma h_2 x_1 x_2^3 y_3 - 10080 h_1 x_3 y_3 - 11016 d\gamma h_1 x_3 y_3 - 4700 d\gamma^2 h_1 x_3 y_3 - \\
& 980 d\gamma^3 h_1 x_3 y_3 - 100 d\gamma^4 h_1 x_3 y_3 - 4 d\gamma^5 h_1 x_3 y_3 - 4200 h_1^2 x_3 y_3 - 2140 d\gamma h_1^2 x_3 y_3 - \\
& 360 d\gamma^2 h_1^2 x_3 y_3 - 20 d\gamma^3 h_1^2 x_3 y_3 - 112 h_1^4 x_3 y_3 - 16 d\gamma h_1^4 x_3 y_3 + 6720 h_1 h_2 x_3 y_3 + \\
& 3424 d\gamma h_1 h_2 x_3 y_3 + 576 d\gamma^2 h_1 h_2 x_3 y_3 + 32 d\gamma^3 h_1 h_2 x_3 y_3 + 560 h_1^3 h_2 x_3 y_3 + \\
& 80 d\gamma h_1^3 h_2 x_3 y_3 - 4200 h_1^2 x_3 y_3 - 2140 d\gamma h_1^2 x_3 y_3 - 360 d\gamma^2 h_1^2 x_3 y_3 - 20 d\gamma^3 h_1^2 x_3 y_3 - \\
& 924 h_1^4 x_3 y_3 - 132 d\gamma h_1^4 x_3 y_3 + 560 h_1 h_2^3 x_3 y_3 + 80 d\gamma h_1 h_2^3 x_3 y_3 - 112 h_2^4 x_3 y_3 - \\
& 16 d\gamma h_2^4 x_3 y_3 - 1680 h_1^2 x_3 y_3 - 856 d\gamma h_1^2 x_3 y_3 - 144 d\gamma^2 h_1^2 x_3 y_3 - 8 d\gamma^3 h_1^2 x_3 y_3 - \\
& 140 h_1^3 x_1^2 x_3 y_3 - 20 d\gamma h_1^3 x_1^2 x_3 y_3 + 476 h_1 h_2 x_1^2 x_3 y_3 + 68 d\gamma h_1 h_2 x_1^2 x_3 y_3 - \\
& 392 h_2^2 x_1^2 x_3 y_3 - 56 d\gamma h_2^2 x_1^2 x_3 y_3 - 28 h_1^4 x_3 y_3 - 4 d\gamma h_1^4 x_3 y_3 - 1680 h_1^2 x_2^3 y_3 - \\
& 856 d\gamma h_1^2 x_2^3 y_3 - 144 d\gamma^2 h_1^2 x_2^3 y_3 - 8 d\gamma^3 h_1^2 x_2^3 y_3 - 392 h_1^3 x_2^2 x_3 y_3 - 56 d\gamma h_1^3 x_2^2 x_3 y_3 + \\
& 476 h_1 h_2 x_2^2 x_3 y_3 + 68 d\gamma h_1 h_2 x_2^2 x_3 y_3 - 140 h_2^2 x_2^2 x_3 y_3 - 20 d\gamma h_2^2 x_2^2 x_3 y_3 + 196 h_1^2 x_1^2 x_2^2 x_3 y_3 + \\
& 28 d\gamma h_1^2 x_1^2 x_2^2 x_3 y_3 - 28 h_2^4 x_3 y_3 - 4 d\gamma h_2^4 x_3 y_3 - 210 h_1 x_1 x_2 x_3^2 y_3 - 30 d\gamma h_1 x_1 x_2 x_3^2 y_3 + \\
& 210 h_2 x_1 x_2 x_3^2 y_3 + 30 d\gamma h_2 x_1 x_2 x_3^2 y_3 - 1680 h_1^3 x_3 y_3 - 856 d\gamma h_1^3 x_3 y_3 - 144 d\gamma^2 h_1^3 x_3 y_3 - \\
& 8 d\gamma^3 h_1^3 x_3 y_3 + 112 h_1^2 x_3^3 y_3 + 16 d\gamma h_1^2 x_3^3 y_3 - 280 h_1 h_2 x_3^3 y_3 - 40 d\gamma h_1 h_2 x_3^3 y_3 + \\
& 112 h_2^2 x_3^3 y_3 + 16 d\gamma h_2^2 x_3^3 y_3 - 56 h_1^2 x_1^3 x_3 y_3 - 8 d\gamma h_1^2 x_1^3 x_3 y_3 - 56 h_2^2 x_3^3 y_3 - 8 d\gamma h_2^2 x_3^3 y_3 - \\
& 28 h_1^5 x_3 y_3 - 4 d\gamma h_1^5 x_3 y_3 - 2520 h_1 x_2 y_1 y_3 - 1284 d\gamma h_1 x_2 y_1 y_3 - 216 d\gamma^2 h_1 x_2 y_1 y_3 - \\
& 12 d\gamma^3 h_1 x_2 y_1 y_3 - 84 h_1^3 x_2 y_1 y_3 - 12 d\gamma h_1^3 x_2 y_1 y_3 + 2520 h_2 x_2 y_1 y_3 + \\
& 1284 d\gamma h_2 x_2 y_1 y_3 + 216 d\gamma^2 h_2 x_2 y_1 y_3 + 12 d\gamma^3 h_2 x_2 y_1 y_3 + 294 h_1^2 h_2 x_2 y_1 y_3 + \\
& 42 d\gamma h_1^2 h_2 x_2 y_1 y_3 - 294 h_1 h_2^2 x_2 y_1 y_3 - 42 d\gamma h_1 h_2^2 x_2 y_1 y_3 + 84 h_2^3 x_2 y_1 y_3 + \\
& 12 d\gamma h_2^3 x_2 y_1 y_3 - 84 h_1 x_1^2 x_2 y_1 y_3 - 12 d\gamma h_1 x_1^2 x_2 y_1 y_3 + 210 h_2 x_1^2 x_2 y_1 y_3 + \\
& 30 d\gamma h_2 x_1^2 x_2 y_1 y_3 - 210 h_1 x_2^3 y_1 y_3 - 30 d\gamma h_1 x_2^3 y_1 y_3 + 84 h_2 x_2^3 y_1 y_3 + 12 d\gamma h_2 x_2^3 y_1 y_3 + \\
& 546 h_1 x_2 x_3^2 y_1 y_3 + 78 d\gamma h_1 x_2 x_3^2 y_1 y_3 - 546 h_2 x_2 x_3^2 y_1 y_3 - 78 d\gamma h_2 x_2 x_3^2 y_1 y_3 - \\
& 84 h_1 x_1 x_2 y_1^2 y_3 - 12 d\gamma h_1 x_1 x_2 y_1^2 y_3 + 210 h_2 x_1 x_2 y_1^2 y_3 + 30 d\gamma h_2 x_1 x_2 y_1^2 y_3 - 1680 h_1^3 x_3 y_1^2 y_3 - \\
& 856 d\gamma h_1^3 x_3 y_1^2 y_3 - 144 d\gamma^2 h_1^3 x_3 y_1^2 y_3 - 8 d\gamma^3 h_1^3 x_3 y_1^2 y_3 - 140 h_2^2 x_3 y_1^2 y_3 - 20 d\gamma h_2^2 x_3 y_1^2 y_3 + \\
& 476 h_1 h_2 x_3 y_1^2 y_3 + 68 d\gamma h_1 h_2 x_3 y_1^2 y_3 - 392 h_2^2 x_3 y_1^2 y_3 - 56 d\gamma h_2^2 x_3 y_1^2 y_3 - \\
& 56 h_1^2 x_3 y_1^2 y_3 - 8 d\gamma h_1^2 x_3 y_1^2 y_3 + 196 h_2^2 x_3 y_1^2 y_3 + 28 d\gamma h_2^2 x_3 y_1^2 y_3 - 56 h_3^3 y_1^2 y_3 - \\
& 8 d\gamma h_3^3 y_1^2 y_3 - 84 h_1 x_2 y_1^3 y_3 - 12 d\gamma h_1 x_2 y_1^3 y_3 + 210 h_2 x_2 y_1^3 y_3 + 30 d\gamma h_2 x_2 y_1^3 y_3 - \\
& 28 h_3^4 y_1^3 y_3 - 4 d\gamma h_3^4 y_1^3 y_3 - 2520 h_1 x_1 y_2 y_3 - 1284 d\gamma h_1 x_1 y_2 y_3 - 216 d\gamma^2 h_1 x_1 y_2 y_3 -
\end{aligned}$$

$$\begin{aligned}
& 12 \, \mathfrak{d} \gamma^3 h_1 x_1 y_2 y_3 - 84 \, \mathfrak{d} h_1^3 x_1 y_2 y_3 - 12 \, \mathfrak{d} \gamma h_1^3 x_1 y_2 y_3 + 2520 \, \mathfrak{d} h_2 x_1 y_2 y_3 + \\
& 1284 \, \mathfrak{d} \gamma h_2 x_1 y_2 y_3 + 216 \, \mathfrak{d} \gamma^2 h_2 x_1 y_2 y_3 + 12 \, \mathfrak{d} \gamma^3 h_2 x_1 y_2 y_3 + 294 \, \mathfrak{d} h_1^2 h_2 x_1 y_2 y_3 + \\
& 42 \, \mathfrak{d} \gamma h_1^2 h_2 x_1 y_2 y_3 - 294 \, \mathfrak{d} h_1 h_2^2 x_1 y_2 y_3 - 42 \, \mathfrak{d} \gamma h_1 h_2^2 x_1 y_2 y_3 + 84 \, \mathfrak{d} h_2^3 x_1 y_2 y_3 + \\
& 12 \, \mathfrak{d} \gamma h_2^3 x_1 y_2 y_3 - 84 \, \mathfrak{d} h_1 x_1^3 y_2 y_3 - 12 \, \mathfrak{d} \gamma h_1 x_1^3 y_2 y_3 + 210 \, \mathfrak{d} h_2 x_1^3 y_2 y_3 + 30 \, \mathfrak{d} \gamma h_2 x_1^3 y_2 y_3 - \\
& 210 \, \mathfrak{d} h_1 x_1 x_2^2 y_2 y_3 - 30 \, \mathfrak{d} \gamma h_1 x_1 x_2^2 y_2 y_3 + 84 \, \mathfrak{d} h_2 x_1 x_2^2 y_2 y_3 + 12 \, \mathfrak{d} \gamma h_2 x_1 x_2^2 y_2 y_3 + \\
& 546 \, \mathfrak{d} h_1 x_1 x_2^2 y_2 y_3 + 78 \, \mathfrak{d} \gamma h_1 x_1 x_2^2 y_2 y_3 - 546 \, \mathfrak{d} h_2 x_1 x_2^2 y_2 y_3 - 78 \, \mathfrak{d} \gamma h_2 x_1 x_2^2 y_2 y_3 + \\
& 2520 \, \mathfrak{d} h_1 y_1 y_2 y_3 + 1284 \, \mathfrak{d} \gamma h_1 y_1 y_2 y_3 + 216 \, \mathfrak{d} \gamma^2 h_1 y_1 y_2 y_3 + 12 \, \mathfrak{d} \gamma^3 h_1 y_1 y_2 y_3 + 84 \, \mathfrak{d} h_1^3 y_1 y_2 y_3 + \\
& 12 \, \mathfrak{d} \gamma h_1^3 y_1 y_2 y_3 - 2520 \, \mathfrak{d} h_2 y_1 y_2 y_3 - 1284 \, \mathfrak{d} \gamma h_2 y_1 y_2 y_3 - 216 \, \mathfrak{d} \gamma^2 h_2 y_1 y_2 y_3 - 12 \, \mathfrak{d} \gamma^3 h_2 y_1 y_2 y_3 - \\
& 294 \, \mathfrak{d} h_1^2 h_2 y_1 y_2 y_3 - 42 \, \mathfrak{d} \gamma h_1^2 h_2 y_1 y_2 y_3 + 294 \, \mathfrak{d} h_1 h_2^2 y_1 y_2 y_3 + 42 \, \mathfrak{d} \gamma h_1 h_2^2 y_1 y_2 y_3 - 84 \, \mathfrak{d} h_2^3 y_1 y_2 y_3 - \\
& 12 \, \mathfrak{d} \gamma h_2^3 y_1 y_2 y_3 + 84 \, \mathfrak{d} h_1 x_1^2 y_1 y_2 y_3 + 12 \, \mathfrak{d} \gamma h_1 x_1^2 y_1 y_2 y_3 - 210 \, \mathfrak{d} h_2 x_1^2 y_1 y_2 y_3 - 30 \, \mathfrak{d} \gamma h_2 x_1^2 y_1 y_2 y_3 + \\
& 210 \, \mathfrak{d} h_1 x_2^2 y_1 y_2 y_3 + 30 \, \mathfrak{d} \gamma h_1 x_2^2 y_1 y_2 y_3 - 84 \, \mathfrak{d} h_2 x_2^2 y_1 y_2 y_3 - 12 \, \mathfrak{d} \gamma h_2 x_2^2 y_1 y_2 y_3 + 210 \, \mathfrak{d} h_1 x_2^2 y_1 y_2 y_3 + \\
& 30 \, \mathfrak{d} \gamma h_1 x_2^2 y_1 y_2 y_3 - 210 \, \mathfrak{d} h_2 x_2^2 y_1 y_2 y_3 - 30 \, \mathfrak{d} \gamma h_2 x_2^2 y_1 y_2 y_3 - 84 \, \mathfrak{d} h_1 x_1 y_1^2 y_2 y_3 - \\
& 12 \, \mathfrak{d} \gamma h_1 x_1 y_1^2 y_2 y_3 + 210 \, \mathfrak{d} h_2 x_1 y_1^2 y_2 y_3 + 30 \, \mathfrak{d} \gamma h_2 x_1 y_1^2 y_2 y_3 + 84 \, \mathfrak{d} h_1 y_1^3 y_2 y_3 + \\
& 12 \, \mathfrak{d} \gamma h_1 y_1^3 y_2 y_3 - 210 \, \mathfrak{d} h_2 y_1^3 y_2 y_3 - 30 \, \mathfrak{d} \gamma h_2 y_1^3 y_2 y_3 - 210 \, \mathfrak{d} h_1 x_1 x_2 y_2^2 y_3 - 30 \, \mathfrak{d} \gamma h_1 x_1 x_2 y_2^2 y_3 + \\
& 84 \, \mathfrak{d} h_2 x_1 x_2 y_2^2 y_3 + 12 \, \mathfrak{d} \gamma h_2 x_1 x_2 y_2^2 y_3 - 1680 \, \mathfrak{d} x_3 y_2^2 y_3 - 856 \, \mathfrak{d} \gamma x_3 y_2^2 y_3 - 144 \, \mathfrak{d} \gamma^2 x_3 y_2^2 y_3 - \\
& 8 \, \mathfrak{d} \gamma^3 x_3 y_2^2 y_3 - 392 \, \mathfrak{d} h_1^2 x_3 y_2^2 y_3 - 56 \, \mathfrak{d} \gamma h_1^2 x_3 y_2^2 y_3 + 476 \, \mathfrak{d} h_1 h_2 x_3 y_2^2 y_3 + 68 \, \mathfrak{d} \gamma h_1 h_2 x_3 y_2^2 y_3 - \\
& 140 \, \mathfrak{d} h_2^2 x_3 y_2^2 y_3 - 20 \, \mathfrak{d} \gamma h_2^2 x_3 y_2^2 y_3 + 196 \, \mathfrak{d} x_1^2 x_3 y_2^2 y_3 + 28 \, \mathfrak{d} \gamma x_1^2 x_3 y_2^2 y_3 - 56 \, \mathfrak{d} x_2^2 x_3 y_2^2 y_3 - \\
& 8 \, \mathfrak{d} \gamma x_2^2 x_3 y_2^2 y_3 - 56 \, \mathfrak{d} x_3^2 y_2^2 y_3 - 8 \, \mathfrak{d} \gamma x_3^2 y_2^2 y_3 - 210 \, \mathfrak{d} h_1 x_2 y_1 y_2^2 y_3 - 30 \, \mathfrak{d} \gamma h_1 x_2 y_1 y_2^2 y_3 + \\
& 84 \, \mathfrak{d} h_2 x_2 y_1 y_2^2 y_3 + 12 \, \mathfrak{d} \gamma h_2 x_2 y_1 y_2^2 y_3 + 196 \, \mathfrak{d} x_3 y_1^2 y_2 y_3 + 28 \, \mathfrak{d} \gamma x_3 y_1^2 y_2 y_3 - \\
& 210 \, \mathfrak{d} h_1 x_1 y_2^3 y_3 - 30 \, \mathfrak{d} \gamma h_1 x_1 y_2^3 y_3 + 84 \, \mathfrak{d} h_2 x_1 y_2^3 y_3 + 12 \, \mathfrak{d} \gamma h_2 x_1 y_2^3 y_3 + 210 \, \mathfrak{d} h_1 y_1 y_2^3 y_3 + \\
& 30 \, \mathfrak{d} \gamma h_1 y_1 y_2^3 y_3 - 84 \, \mathfrak{d} h_2 y_1 y_2^3 y_3 - 12 \, \mathfrak{d} \gamma h_2 y_1 y_2^3 y_3 - 28 \, \mathfrak{d} x_3 y_2^4 y_3 - 4 \, \mathfrak{d} \gamma x_3 y_2^4 y_3 + 5040 \, \mathfrak{d} y_3^2 + \\
& 5508 \, \mathfrak{d} \gamma y_3^2 + 2350 \, \mathfrak{d} \gamma^2 y_3^2 + 490 \, \mathfrak{d} \gamma^3 y_3^2 + 50 \, \mathfrak{d} \gamma^4 y_3^2 + 2 \, \mathfrak{d} \gamma^5 y_3^2 + 2100 \, \mathfrak{d} h_1^2 y_3^2 + 1070 \, \mathfrak{d} \gamma h_1^2 y_3^2 + \\
& 180 \, \mathfrak{d} \gamma^2 h_1^2 y_3^2 + 10 \, \mathfrak{d} \gamma^3 h_1^2 y_3^2 + 56 \, \mathfrak{d} h_1^4 y_3^2 + 8 \, \mathfrak{d} \gamma h_1^4 y_3^2 - 3360 \, \mathfrak{d} h_1 h_2 y_3^2 - 1712 \, \mathfrak{d} \gamma h_1 h_2 y_3^2 - \\
& 288 \, \mathfrak{d} \gamma^2 h_1 h_2 y_3^2 - 16 \, \mathfrak{d} \gamma^3 h_1 h_2 y_3^2 - 280 \, \mathfrak{d} h_1^3 h_2 y_3^2 - 40 \, \mathfrak{d} \gamma h_1^3 h_2 y_3^2 + 2100 \, \mathfrak{d} h_2^2 y_3^2 + 1070 \, \mathfrak{d} \gamma h_2^2 y_3^2 + \\
& 180 \, \mathfrak{d} \gamma^2 h_2^2 y_3^2 + 10 \, \mathfrak{d} \gamma^3 h_2^2 y_3^2 + 462 \, \mathfrak{d} h_1^2 h_2^2 y_3^2 + 66 \, \mathfrak{d} \gamma h_1^2 h_2^2 y_3^2 - 280 \, \mathfrak{d} h_1 h_2^3 y_3^2 - 40 \, \mathfrak{d} \gamma h_1 h_2^3 y_3^2 + \\
& 56 \, \mathfrak{d} h_2^4 y_3^2 + 8 \, \mathfrak{d} \gamma h_2^4 y_3^2 + 840 \, \mathfrak{d} x_1^2 y_3^2 + 428 \, \mathfrak{d} \gamma x_1^2 y_3^2 + 72 \, \mathfrak{d} \gamma^2 x_1^2 y_3^2 + 4 \, \mathfrak{d} \gamma^3 x_1^2 y_3^2 + 70 \, \mathfrak{d} h_1^2 x_1^2 y_3^2 + \\
& 10 \, \mathfrak{d} \gamma h_1^2 x_1^2 y_3^2 - 238 \, \mathfrak{d} h_1 h_2 x_1^2 y_3^2 - 34 \, \mathfrak{d} \gamma h_1 h_2 x_1^2 y_3^2 + 196 \, \mathfrak{d} h_2^2 x_1^2 y_3^2 + 28 \, \mathfrak{d} \gamma h_2^2 x_1^2 y_3^2 + 14 \, \mathfrak{d} x_1^4 y_3^2 + \\
& 2 \, \mathfrak{d} \gamma x_1^4 y_3^2 + 840 \, \mathfrak{d} x_2^2 y_3^2 + 428 \, \mathfrak{d} \gamma x_2^2 y_3^2 + 72 \, \mathfrak{d} \gamma^2 x_2^2 y_3^2 + 4 \, \mathfrak{d} \gamma^3 x_2^2 y_3^2 + 196 \, \mathfrak{d} h_1^2 x_2^2 y_3^2 + 28 \, \mathfrak{d} \gamma h_1^2 x_2^2 y_3^2 - \\
& 238 \, \mathfrak{d} h_1 h_2 x_2^2 y_3^2 - 34 \, \mathfrak{d} \gamma h_1 h_2 x_2^2 y_3^2 + 70 \, \mathfrak{d} h_2^2 x_2^2 y_3^2 + 10 \, \mathfrak{d} \gamma h_2^2 x_2^2 y_3^2 - 182 \, \mathfrak{d} x_1^2 x_2^2 y_3^2 - 26 \, \mathfrak{d} \gamma x_1^2 x_2^2 y_3^2 + \\
& 14 \, \mathfrak{d} x_2^4 y_3^2 + 2 \, \mathfrak{d} \gamma x_2^4 y_3^2 - 546 \, \mathfrak{d} h_1 x_1 x_2 x_3 y_3^2 - 78 \, \mathfrak{d} \gamma h_1 x_1 x_2 x_3 y_3^2 + 546 \, \mathfrak{d} h_2 x_1 x_2 x_3 y_3^2 + \\
& 78 \, \mathfrak{d} \gamma h_2 x_1 x_2 x_3 y_3^2 - 14 \, \mathfrak{d} x_3^4 y_3^2 - 2 \, \mathfrak{d} \gamma x_3^4 y_3^2 - 168 \, \mathfrak{d} x_1 x_2^2 y_1 y_3^2 - 24 \, \mathfrak{d} \gamma x_1 x_2^2 y_1 y_3^2 - \\
& 210 \, \mathfrak{d} h_1 x_2 x_3 y_1 y_3^2 - 30 \, \mathfrak{d} \gamma h_1 x_2 x_3 y_1 y_3^2 + 210 \, \mathfrak{d} h_2 x_2 x_3 y_1 y_3^2 + 30 \, \mathfrak{d} \gamma h_2 x_2 x_3 y_1 y_3^2 + 840 \, \mathfrak{d} y_1^2 y_3^2 + \\
& 428 \, \mathfrak{d} \gamma y_1^2 y_3^2 + 72 \, \mathfrak{d} \gamma^2 y_1^2 y_3^2 + 4 \, \mathfrak{d} \gamma^3 y_1^2 y_3^2 + 70 \, \mathfrak{d} h_1^2 y_1^2 y_3^2 + 10 \, \mathfrak{d} \gamma h_1^2 y_1^2 y_3^2 - 238 \, \mathfrak{d} h_1 h_2 y_1^2 y_3^2 - \\
& 34 \, \mathfrak{d} \gamma h_1 h_2 y_1^2 y_3^2 + 196 \, \mathfrak{d} h_2^2 y_1^2 y_3^2 + 28 \, \mathfrak{d} \gamma h_2^2 y_1^2 y_3^2 + 28 \, \mathfrak{d} x_1^2 y_1^2 y_3^2 + 4 \, \mathfrak{d} \gamma x_1^2 y_1^2 y_3^2 - 14 \, \mathfrak{d} x_2^2 y_1^2 y_3^2 - \\
& 2 \, \mathfrak{d} \gamma x_2^2 y_1^2 y_3^2 + 14 \, \mathfrak{d} y_1^4 y_3^2 + 2 \, \mathfrak{d} \gamma y_1^4 y_3^2 - 168 \, \mathfrak{d} x_1^2 x_2 y_2 y_3^2 - 24 \, \mathfrak{d} \gamma x_1^2 x_2 y_2 y_3^2 - 210 \, \mathfrak{d} h_1 x_1 x_3 y_2 y_3^2 - \\
& 30 \, \mathfrak{d} \gamma h_1 x_1 x_3 y_2 y_3^2 + 210 \, \mathfrak{d} h_2 x_1 x_3 y_2 y_3^2 + 30 \, \mathfrak{d} \gamma h_2 x_1 x_3 y_2 y_3^2 + 336 \, \mathfrak{d} x_1 x_2 y_1 y_2 y_3^2 + \\
& 48 \, \mathfrak{d} \gamma x_1 x_2 y_1 y_2 y_3^2 + 546 \, \mathfrak{d} h_1 x_3 y_1 y_2 y_3^2 + 78 \, \mathfrak{d} \gamma h_1 x_3 y_1 y_2 y_3^2 - 546 \, \mathfrak{d} h_2 x_3 y_1 y_2 y_3^2 - \\
& 78 \, \mathfrak{d} \gamma h_2 x_3 y_1 y_2 y_3^2 + 168 \, \mathfrak{d} x_2 y_1^2 y_2 y_3^2 + 24 \, \mathfrak{d} \gamma x_2 y_1^2 y_2 y_3^2 + 840 \, \mathfrak{d} y_2^2 y_3^2 + 428 \, \mathfrak{d} \gamma y_2^2 y_3^2 + \\
& 72 \, \mathfrak{d} \gamma^2 y_2^2 y_3^2 + 4 \, \mathfrak{d} \gamma^3 y_2^2 y_3^2 + 196 \, \mathfrak{d} h_1^2 y_2^2 y_3^2 + 28 \, \mathfrak{d} \gamma h_1^2 y_2^2 y_3^2 - 238 \, \mathfrak{d} h_1 h_2 y_2^2 y_3^2 - 34 \, \mathfrak{d} \gamma h_1 h_2 y_2^2 y_3^2 + \\
& 70 \, \mathfrak{d} h_2^2 y_2^2 y_3^2 + 10 \, \mathfrak{d} \gamma h_2^2 y_2^2 y_3^2 - 14 \, \mathfrak{d} x_1^2 y_2^2 y_3^2 - 2 \, \mathfrak{d} \gamma x_1^2 y_2^2 y_3^2 + 28 \, \mathfrak{d} x_2^2 y_2^2 y_3^2 + 4 \, \mathfrak{d} \gamma x_2^2 y_2^2 y_3^2 + \\
& 168 \, \mathfrak{d} x_1 y_1 y_2^2 y_3^2 + 24 \, \mathfrak{d} \gamma x_1 y_1 y_2^2 y_3^2 - 182 \, \mathfrak{d} y_1^2 y_2^2 y_3^2 - 26 \, \mathfrak{d} \gamma y_1^2 y_2^2 y_3^2 + 14 \, \mathfrak{d} y_2^4 y_3^2 + 2 \, \mathfrak{d} \gamma y_2^4 y_3^2 + \\
& 294 \, \mathfrak{d} h_1 x_1 x_2 y_3^3 + 42 \, \mathfrak{d} \gamma h_1 x_1 x_2 y_3^3 - 294 \, \mathfrak{d} h_2 x_1 x_2 y_3^3 - 42 \, \mathfrak{d} \gamma h_2 x_1 x_2 y_3^3 - 1680 \, \mathfrak{d} x_3 y_3^3 - \\
& 856 \, \mathfrak{d} \gamma x_3 y_3^3 - 144 \, \mathfrak{d} \gamma^2 x_3 y_3^3 - 8 \, \mathfrak{d} \gamma^3 x_3 y_3^3 + 112 \, \mathfrak{d} h_1^2 x_3 y_3^3 + 16 \, \mathfrak{d} \gamma h_1^2 x_3 y_3^3 - \\
& 280 \, \mathfrak{d} h_1 h_2 x_3 y_3^3 - 40 \, \mathfrak{d} \gamma h_1 h_2 x_3 y_3^3 + 112 \, \mathfrak{d} h_2^2 x_3 y_3^3 + 16 \, \mathfrak{d} \gamma h_2^2 x_3 y_3^3 - 56 \, \mathfrak{d} x_1^2 x_3 y_3^3 - \\
& 8 \, \mathfrak{d} \gamma x_1^2 x_3 y_3^3 - 56 \, \mathfrak{d} x_2^2 x_3 y_3^3 - 8 \, \mathfrak{d} \gamma x_2^2 x_3 y_3^3 - 56 \, \mathfrak{d} x_3^3 y_3^3 - 8 \, \mathfrak{d} \gamma x_3^3 y_3^3 + 42 \, \mathfrak{d} h_1 x_2 y_1 y_3^3 + \\
& 6 \, \mathfrak{d} \gamma h_1 x_2 y_1 y_3^3 - 42 \, \mathfrak{d} h_2 x_2 y_1 y_3^3 - 6 \, \mathfrak{d} \gamma h_2 x_2 y_1 y_3^3 - 56 \, \mathfrak{d} x_3 y_1^2 y_3^3 - 8 \, \mathfrak{d} \gamma x_3 y_1^2 y_3^3 + \\
& 42 \, \mathfrak{d} h_1 x_1 y_2 y_3^3 + 6 \, \mathfrak{d} \gamma h_1 x_1 y_2 y_3^3 - 42 \, \mathfrak{d} h_2 x_1 y_2 y_3^3 - 6 \, \mathfrak{d} \gamma h_2 x_1 y_2 y_3^3 - 294 \, \mathfrak{d} h_1 y_1 y_2 y_3^3 -
\end{aligned}$$

$$\begin{aligned}
& 42 d\gamma h_1 y_1 y_2 y_3^3 + 294 h_2 y_1 y_2 y_3^3 + 42 d\gamma h_2 y_1 y_2 y_3^3 - 56 i x_3 y_2^2 y_3^3 - 8 i d\gamma x_3 y_2^2 y_3^3 + 840 y_3^4 + \\
& 428 d\gamma y_3^4 + 72 d\gamma^2 y_3^4 + 4 d\gamma^3 y_3^4 - 56 h_1^2 y_3^4 - 8 d\gamma h_1^2 y_3^4 + 140 h_1 h_2 y_3^4 + 20 d\gamma h_1 h_2 y_3^4 - 56 h_2^2 y_3^4 - \\
& 8 d\gamma h_2^2 y_3^4 + 28 x_1^2 y_3^4 + 4 d\gamma x_1^2 y_3^4 + 28 x_2^2 y_3^4 + 4 d\gamma x_2^2 y_3^4 + 14 x_3^2 y_3^4 + 2 d\gamma x_3^2 y_3^4 + 28 y_1^2 y_3^4 + \\
& 4 d\gamma y_1^2 y_3^4 + 28 y_2^2 y_3^4 + 4 d\gamma y_2^2 y_3^4 - 28 i x_3 y_3^5 - 4 i d\gamma x_3 y_3^5 + 14 y_3^6 + 2 d\gamma y_3^6 - A[[1, 8]] // \text{Expand}
\end{aligned}$$

Out[ ]= 0

$$In[ ]:= (\star Y_{\alpha_2}^6 \pi_{1,k} \star)$$

$$k = 8;$$

$$\begin{aligned}
& - \left( -\frac{1}{2} ( (2 y_2 - i 2 x_2) D[A[[1, k]], h_2] + (h_1 - 2 h_2) D[A[[1, k]], y_2] - \right. \\
& \quad i (h_1 - 2 h_2) D[A[[1, k]], x_2] + (x_3 + i y_3) D[A[[1, k]], x_1] + (y_3 - i x_3) D[A[[1, k]], y_1] + \\
& \quad \left. (-x_1 + i y_1) D[A[[1, k]], x_3] + (-y_1 - i x_1) D[A[[1, k]], y_3] ) \right) // \text{Expand}
\end{aligned}$$

Out[ ]= 0