In[1]:=
```
Series[x / (1 - Exp[-x]), {x, 0, 6}]
```

Out[1]=
$$1 + \frac{x}{2} + \frac{x^2}{12} - \frac{x^4}{720} + \frac{x^6}{30\,240} + O[x]^7$$

In[2]:=
```
p = 1 + x / 2 + x^2 / 12 - x^4 / 720 + x^6 / 30 240
```

Out[2]=
$$1 + \frac{x}{2} + \frac{x^2}{12} - \frac{x^4}{720} + \frac{x^6}{30\,240}$$

In[3]:=
```
Expand[(p /. {x → a}) * (p /. {x → b})]
```

Out[3]=
$$1 + \frac{a}{2} + \frac{a^2}{12} - \frac{a^4}{720} + \frac{a^6}{30\,240} + \frac{b}{2} + \frac{a\,b}{4} + \frac{a^2\,b}{24} - \frac{a^4\,b}{1440} + \frac{a^6\,b}{60\,480} + \frac{b^2}{12} + \frac{a\,b^2}{24} + \frac{a^2\,b^2}{144} - \frac{a^4\,b^2}{8640} + \frac{a^6\,b^2}{362\,880} - \frac{b^4}{720} - \frac{a\,b^4}{1440} - \frac{a^2\,b^4}{8640} + \frac{a^4\,b^4}{518\,400} - \frac{a^6\,b^4}{21\,772\,800} + \frac{b^6}{30\,240} + \frac{a\,b^6}{60\,480} + \frac{a^2\,b^6}{362\,880} - \frac{a^4\,b^6}{21\,772\,800} + \frac{a^6\,b^6}{914\,457\,600}$$

In[4]:=
```
q = 1 + (1 / 2) * (a + b) + (1 / 12) * (a^2 + b^2 + 3 * a * b) + (1 / 24) * (a^2 * b + a * b^2) -
  (1 / 720) * (a^4 - 5 * a^2 * b^2 + b^4) - (1 / 1440) * (a^4 * b + a * b^4) +
  (1 / 30 240) * (a^6 - (30 240 / 8640) * a^4 * b^2 - (30 240 / 8640) * a^2 * b^4 + b^6)
```

Out[4]=
$$1 + \frac{a+b}{2} + \frac{1}{12}\left(a^2 + 3\,a\,b + b^2\right) + \frac{1}{24}\left(a^2\,b + a\,b^2\right) + \frac{1}{720}\left(-a^4 + 5\,a^2\,b^2 - b^4\right) + \frac{-a^4\,b - a\,b^4}{1440} + \frac{a^6 - \frac{7\,a^4\,b^2}{2} - \frac{7\,a^2\,b^4}{2} + b^6}{30\,240}$$

In[5]:=
```
q1 = Expand[q /. {a → c, b → d}]
```

Out[5]=
$$1 + \frac{c}{2} + \frac{c^2}{12} - \frac{c^4}{720} + \frac{c^6}{30\,240} + \frac{d}{2} + \frac{c\,d}{4} + \frac{c^2\,d}{24} - \frac{c^4\,d}{1440} + \frac{d^2}{12} + \frac{c\,d^2}{24} + \frac{c^2\,d^2}{144} - \frac{c^4\,d^2}{8640} - \frac{d^4}{720} - \frac{c\,d^4}{1440} - \frac{c^2\,d^4}{8640} + \frac{d^6}{30\,240}$$

In[6]:=
```
q2 = Expand[q /. {a → e, b → f}]
```

Out[6]=
$$1 + \frac{e}{2} + \frac{e^2}{12} - \frac{e^4}{720} + \frac{e^6}{30\,240} + \frac{f}{2} + \frac{e\,f}{4} + \frac{e^2\,f}{24} - \frac{e^4\,f}{1440} + \frac{f^2}{12} + \frac{e\,f^2}{24} + \frac{e^2\,f^2}{144} - \frac{e^4\,f^2}{8640} - \frac{f^4}{720} - \frac{e\,f^4}{1440} - \frac{e^2\,f^4}{8640} + \frac{f^6}{30\,240}$$

In[7]:=
```
Expand[q * q1 * q2]
```

Out[7]=
$$1 + \frac{a}{2} + \frac{a^2}{12} - \frac{a^4}{720} + \frac{a^6}{30\,240} + \frac{b}{2} + \frac{a\,b}{4} + \cdots 7287 \cdots + \frac{b^2\,d^6\,f^6}{10\,973\,491\,200} + \frac{a\,b^2\,d^6\,f^6}{21\,946\,982\,400} + \frac{a^2\,b^2\,d^6\,f^6}{131\,681\,894\,400} - \frac{a^4\,b^2\,d^6\,f^6}{7\,900\,913\,664\,000} - \frac{b^4\,d^6\,f^6}{658\,409\,472\,000} - \frac{a\,b^4\,d^6\,f^6}{1\,316\,818\,944\,000} - \frac{a^2\,b^4\,d^6\,f^6}{7\,900\,913\,664\,000} + \frac{b^6\,d^6\,f^6}{27\,653\,197\,824\,000}$$

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In[8]:=
```
SeriesCoefficient[%7, {a, 0, 6},
 {b, 0, 0}, {c, 0, 0}, {d, 0, 0}, {e, 0, 0}, {f, 0, 0}]
```

Out[8]=
$$\frac{1}{30\,240}$$

In[9]:=
```
SeriesCoefficient[%7, {a, 0, 5},
 {b, 0, 1}, {c, 0, 0}, {d, 0, 0}, {e, 0, 0}, {f, 0, 0}]
```

Out[9]= 0

In[10]:=
```
SeriesCoefficient[%7, {a, 0, 4},
 {b, 0, 2}, {c, 0, 0}, {d, 0, 0}, {e, 0, 0}, {f, 0, 0}]
```

Out[10]= $-\frac{1}{8640}$

In[11]:=
```
SeriesCoefficient[%7, {a, 0, 4},
 {b, 0, 1}, {c, 0, 1}, {d, 0, 0}, {e, 0, 0}, {f, 0, 0}]
```

Out[11]= $-\frac{1}{2880}$

In[12]:=
```
SeriesCoefficient[%7, {a, 0, 3},
 {b, 0, 3}, {c, 0, 0}, {d, 0, 0}, {e, 0, 0}, {f, 0, 0}]
```

Out[12]= 0

In[13]:=
```
SeriesCoefficient[%7, {a, 0, 3},
 {b, 0, 2}, {c, 0, 1}, {d, 0, 0}, {e, 0, 0}, {f, 0, 0}]
```

Out[13]= 0

In[14]:=
```
SeriesCoefficient[%7, {a, 0, 3},
 {b, 0, 1}, {c, 0, 1}, {d, 0, 1}, {e, 0, 0}, {f, 0, 0}]
```

Out[14]= 0

In[15]:=
```
SeriesCoefficient[%7, {a, 0, 2},
 {b, 0, 2}, {c, 0, 2}, {d, 0, 0}, {e, 0, 0}, {f, 0, 0}]
```

Out[15]= $\frac{1}{1728}$

In[16]:=
```
SeriesCoefficient[%7, {a, 0, 2},
 {b, 0, 2}, {c, 0, 1}, {d, 0, 1}, {e, 0, 0}, {f, 0, 0}]
```

Out[16]= $\frac{1}{576}$

In[17]:=
```
SeriesCoefficient[%7, {a, 0, 2},
 {b, 0, 1}, {c, 0, 1}, {d, 0, 1}, {e, 0, 1}, {f, 0, 0}]
```

Out[17]= $\frac{1}{192}$

In[18]:=
```
SeriesCoefficient[%7, {a, 0, 1},
 {b, 0, 1}, {c, 0, 1}, {d, 0, 1}, {e, 0, 1}, {f, 0, 1}]
```

Out[18]=
$$\frac{1}{64}$$

In[19]:=
```
AugmentedSymmetricPolynomial[{6}, {a, b, c, d, e, f}]
```

Out[19]=
$$a^6 + b^6 + c^6 + d^6 + e^6 + f^6$$

In[20]:=
```
AugmentedSymmetricPolynomial[{2, 4}, {a, b, c, d, e, f}]
```

Out[20]=
$$a^4 b^2 + a^2 b^4 + a^4 c^2 + b^4 c^2 + a^2 c^4 + b^2 c^4 + a^4 d^2 + b^4 d^2 + c^4 d^2 + a^2 d^4 + b^2 d^4 + c^2 d^4 + a^4 e^2 + b^4 e^2 + c^4 e^2 + d^4 e^2 + a^2 e^4 + b^2 e^4 + c^2 e^4 + d^2 e^4 + a^4 f^2 + b^4 f^2 + c^4 f^2 + d^4 f^2 + e^4 f^2 + a^2 f^4 + b^2 f^4 + c^2 f^4 + d^2 f^4 + e^2 f^4$$

In[21]:=
```
AugmentedSymmetricPolynomial[{1, 1, 4}, {a, b, c, d, e, f}]
```

Out[21]=
$$2 a^4 b c + 2 a b^4 c + 2 a b c^4 + 2 a^4 b d + 2 a b^4 d + 2 a^4 c d + 2 b^4 c d + 2 a c^4 d + 2 b c^4 d + 2 a b d^4 + 2 a c d^4 + 2 b c d^4 + 2 a^4 b e + 2 a b^4 e + 2 a^4 c e + 2 b^4 c e + 2 a c^4 e + 2 b c^4 e + 2 a^4 d e + 2 b^4 d e + 2 c^4 d e + 2 a d^4 e + 2 b d^4 e + 2 c d^4 e + 2 a b e^4 + 2 a c e^4 + 2 b c e^4 + 2 a d e^4 + 2 b d e^4 + 2 c d e^4 + 2 a^4 b f + 2 a b^4 f + 2 a^4 c f + 2 b^4 c f + 2 a c^4 f + 2 b c^4 f + 2 a^4 d f + 2 b^4 d f + 2 c^4 d f + 2 a d^4 f + 2 b d^4 f + 2 c d^4 f + 2 a^4 e f + 2 b^4 e f + 2 c^4 e f + 2 d^4 e f + 2 a e^4 f + 2 b e^4 f + 2 c e^4 f + 2 d e^4 f + 2 a b f^4 + 2 a c f^4 + 2 b c f^4 + 2 a d f^4 + 2 b d f^4 + 2 c d f^4 + 2 a e f^4 + 2 b e f^4 + 2 c e f^4 + 2 d e f^4$$

In[22]:=
```
AugmentedSymmetricPolynomial[{2, 2, 2}, {a, b, c, d, e, f}]
```

Out[22]=
$$6 a^2 b^2 c^2 + 6 a^2 b^2 d^2 + 6 a^2 c^2 d^2 + 6 b^2 c^2 d^2 + 6 a^2 b^2 e^2 + 6 a^2 c^2 e^2 + 6 b^2 c^2 e^2 + 6 a^2 d^2 e^2 + 6 b^2 d^2 e^2 + 6 c^2 d^2 e^2 + 6 a^2 b^2 f^2 + 6 a^2 c^2 f^2 + 6 b^2 c^2 f^2 + 6 a^2 d^2 f^2 + 6 b^2 d^2 f^2 + 6 c^2 d^2 f^2 + 6 a^2 e^2 f^2 + 6 b^2 e^2 f^2 + 6 c^2 e^2 f^2 + 6 d^2 e^2 f^2$$

In[23]:=
```
AugmentedSymmetricPolynomial[{1, 1, 2, 2}, {a, b, c, d, e, f}]
```

Out[23]=
$$4 a^2 b^2 c d + 4 a^2 b c^2 d + 4 a b^2 c^2 d + 4 a^2 b c d^2 + 4 a b^2 c d^2 + 4 a b c^2 d^2 + 4 a^2 b^2 c e + 4 a^2 b c^2 e + 4 a b^2 c^2 e + 4 a^2 b^2 d e + 4 a^2 c^2 d e + 4 b^2 c^2 d e + 4 a^2 b d^2 e + 4 a b^2 d^2 e + 4 a^2 c d^2 e + 4 b^2 c d^2 e + 4 a c^2 d^2 e + 4 b c^2 d^2 e + 4 a^2 b c e^2 + 4 a b^2 c e^2 + 4 a b c^2 e^2 + 4 a^2 b d e^2 + 4 a b^2 d e^2 + 4 a^2 c d e^2 + 4 b^2 c d e^2 + 4 a c^2 d e^2 + 4 b c^2 d e^2 + 4 a b d^2 e^2 + 4 a c d^2 e^2 + 4 b c d^2 e^2 + 4 a^2 b^2 c f + 4 a^2 b c^2 f + 4 a b^2 c^2 f + 4 a^2 b^2 d f + 4 a^2 c^2 d f + 4 b^2 c^2 d f + 4 a^2 b d^2 f + 4 a b^2 d^2 f + 4 a^2 c d^2 f + 4 b^2 c d^2 f + 4 a c^2 d^2 f + 4 b c^2 d^2 f + 4 a^2 b^2 e f + 4 a^2 c^2 e f + 4 b^2 c^2 e f + 4 a^2 d^2 e f + 4 b^2 d^2 e f + 4 c^2 d^2 e f + 4 a^2 b e^2 f + 4 a b^2 e^2 f + 4 a^2 c e^2 f + 4 b^2 c e^2 f + 4 a c^2 e^2 f + 4 b c^2 e^2 f + 4 a^2 d e^2 f + 4 b^2 d e^2 f + 4 c^2 d e^2 f + 4 a d^2 e^2 f + 4 b d^2 e^2 f + 4 c d^2 e^2 f + 4 a^2 b c f^2 + 4 a b^2 c f^2 + 4 a b c^2 f^2 + 4 a^2 b d f^2 + 4 a b^2 d f^2 + 4 a^2 c d f^2 + 4 b^2 c d f^2 + 4 a c^2 d f^2 + 4 b c^2 d f^2 + 4 a b d^2 f^2 + 4 a c d^2 f^2 + 4 b c d^2 f^2 + 4 a^2 b e f^2 + 4 a b^2 e f^2 + 4 a^2 c e f^2 + 4 b^2 c e f^2 + 4 a c^2 e f^2 + 4 b c^2 e f^2 + 4 a^2 d e f^2 + 4 b^2 d e f^2 + 4 c^2 d e f^2 + 4 a d^2 e f^2 + 4 b d^2 e f^2 + 4 c d^2 e f^2 + 4 a b e^2 f^2 + 4 a c e^2 f^2 + 4 b c e^2 f^2 + 4 a d e^2 f^2 + 4 b d e^2 f^2 + 4 c d e^2 f^2$$

In[24]:=
```
AugmentedSymmetricPolynomial[{1, 1, 1, 1, 2}, {a, b, c, d, e, f}]
```

Out[24]=
$$24\,a^2\,b\,c\,d\,e + 24\,a\,b^2\,c\,d\,e + 24\,a\,b\,c^2\,d\,e + 24\,a\,b\,c\,d^2\,e + 24\,a\,b\,c\,d\,e^2 + 24\,a^2\,b\,c\,d\,f + 24\,a\,b^2\,c\,d\,f + 24\,a\,b\,c^2\,d\,f + 24\,a\,b\,c\,d^2\,f + 24\,a^2\,b\,c\,e\,f + 24\,a\,b^2\,c\,e\,f + 24\,a\,b\,c^2\,e\,f + 24\,a^2\,b\,d\,e\,f + 24\,a\,b^2\,d\,e\,f + 24\,a^2\,c\,d\,e\,f + 24\,b^2\,c\,d\,e\,f + 24\,a\,c^2\,d\,e\,f + 24\,b\,c^2\,d\,e\,f + 24\,a\,b\,d^2\,e\,f + 24\,a\,c\,d^2\,e\,f + 24\,b\,c\,d^2\,e\,f + 24\,a\,b\,c\,d\,e^2\,f + 24\,a\,b\,c\,d\,f^2 + 24\,a\,b\,c\,e\,f^2 + 24\,a\,b\,d\,e\,f^2 + 24\,a\,c\,d\,e\,f^2 + 24\,b\,c\,d\,e\,f^2$$

In[25]:=
```
AugmentedSymmetricPolynomial[{1, 1, 1, 1, 1, 1}, {a, b, c, d, e, f}]
```

Out[25]=
$$720\,a\,b\,c\,d\,e\,f$$

In[26]:=
```
SymmetricReduction[%19, {a, b, c, d, e, f}, {c1, c2, c3, c4, c5, c6}]
```

Out[26]=
$$\{c1^6 - 6\,c1^4\,c2 + 9\,c1^2\,c2^2 - 2\,c2^3 + 6\,c1^3\,c3 - 12\,c1\,c2\,c3 + 3\,c3^2 - 6\,c1^2\,c4 + 6\,c2\,c4 + 6\,c1\,c5 - 6\,c6,\ 0\}$$

In[27]:=
```
t6 = First[%26]
```

Out[27]=
$$c1^6 - 6\,c1^4\,c2 + 9\,c1^2\,c2^2 - 2\,c2^3 + 6\,c1^3\,c3 - 12\,c1\,c2\,c3 + 3\,c3^2 - 6\,c1^2\,c4 + 6\,c2\,c4 + 6\,c1\,c5 - 6\,c6$$

In[28]:=
```
SymmetricReduction[%20, {a, b, c, d, e, f}, {c1, c2, c3, c4, c5, c6}]
```

Out[28]=
$$\{c1^2\,c2^2 - 2\,c2^3 - 2\,c1^3\,c3 + 4\,c1\,c2\,c3 - 3\,c3^2 + 2\,c1^2\,c4 + 2\,c2\,c4 - 6\,c1\,c5 + 6\,c6,\ 0\}$$

In[29]:=
```
t42 = First[%28]
```

Out[29]=
$$c1^2\,c2^2 - 2\,c2^3 - 2\,c1^3\,c3 + 4\,c1\,c2\,c3 - 3\,c3^2 + 2\,c1^2\,c4 + 2\,c2\,c4 - 6\,c1\,c5 + 6\,c6$$

In[30]:=
```
SymmetricReduction[(1 / 2) * (%21), {a, b, c, d, e, f}, {c1, c2, c3, c4, c5, c6}]
```

Out[30]=
$$\{c1^3\,c3 - 3\,c1\,c2\,c3 + 3\,c3^2 - c1^2\,c4 + 2\,c2\,c4 + c1\,c5 - 6\,c6,\ 0\}$$

In[31]:=
```
t411 = First[%30]
```

Out[31]=
$$c1^3\,c3 - 3\,c1\,c2\,c3 + 3\,c3^2 - c1^2\,c4 + 2\,c2\,c4 + c1\,c5 - 6\,c6$$

In[32]:=
```
SymmetricReduction[(1 / 6) * (%22), {a, b, c, d, e, f}, {c1, c2, c3, c4, c5, c6}]
```

Out[32]=
$$\{c3^2 - 2\,c2\,c4 + 2\,c1\,c5 - 2\,c6,\ 0\}$$

In[33]:=
```
t222 = First[%32]
```

Out[33]=
$$c3^2 - 2\,c2\,c4 + 2\,c1\,c5 - 2\,c6$$

In[34]:=
```
SymmetricReduction[(1 / 4) * (%23), {a, b, c, d, e, f}, {c1, c2, c3, c4, c5, c6}]
```

Out[34]=
$$\{c2\,c4 - 4\,c1\,c5 + 9\,c6,\ 0\}$$

In[35]:=
```
t2211 = First[%34]
```
Out[35]=
$$c2\ c4 - 4\ c1\ c5 + 9\ c6$$

In[36]:=
```
SymmetricReduction[(1 / 24) * (%24), {a, b, c, d, e, f}, {c1, c2, c3, c4, c5, c6}]
```
Out[36]=
$$\{c1\ c5 - 6\ c6,\ 0\}$$

In[37]:=
```
t21111 = First[%36]
```
Out[37]=
$$c1\ c5 - 6\ c6$$

In[38]:=
```
SymmetricReduction[(1 / 720) * (%25), {a, b, c, d, e, f}, {c1, c2, c3, c4, c5, c6}]
```
Out[38]=
$$\{c6,\ 0\}$$

In[39]:=
```
t111111 = First[%38]
```
Out[39]=
$$c6$$

In[40]:=
```
Expand[t6 - (30 240 / 8640) * t42 - (30 240 / 2880) * t411 + (30 240 / 1728) * t222 +
   (30 240 / 576) * t2211 + (30 240 / 192) * t21111 + (30 240 / 64) * t111111]
```
Out[40]=
$$c1^6 - 6\ c1^4\ c2 + \frac{11\ c1^2\ c2^2}{2} + 5\ c2^3 + \frac{5\ c1^3\ c3}{2} + \frac{11\ c1\ c2\ c3}{2} - \frac{c3^2}{2} - \frac{5\ c1^2\ c4}{2} - \frac{9\ c2\ c4}{2} - c1\ c5 + c6$$

In[41]:=
```
SeriesCoefficient[%7, {a, 0, 5},
 {b, 0, 0}, {c, 0, 0}, {d, 0, 0}, {e, 0, 0}, {f, 0, 0}]
```
Out[41]=
$$0$$

In[42]:=
```
SeriesCoefficient[%7, {a, 0, 4},
 {b, 0, 1}, {c, 0, 0}, {d, 0, 0}, {e, 0, 0}, {f, 0, 0}]
```
Out[42]=
$$-\frac{1}{1440}$$

In[43]:=
```
SeriesCoefficient[%7, {a, 0, 3},
 {b, 0, 2}, {c, 0, 0}, {d, 0, 0}, {e, 0, 0}, {f, 0, 0}]
```
Out[43]=
$$0$$

In[44]:=
```
SeriesCoefficient[%7, {a, 0, 3},
 {b, 0, 1}, {c, 0, 1}, {d, 0, 0}, {e, 0, 0}, {f, 0, 0}]
```
Out[44]=
$$0$$

In[45]:=
```
SeriesCoefficient[%7, {a, 0, 2},
 {b, 0, 2}, {c, 0, 1}, {d, 0, 0}, {e, 0, 0}, {f, 0, 0}]
```

Out[45]=
$$\frac{1}{288}$$

In[46]:=
```
SeriesCoefficient[%7, {a, 0, 2},
 {b, 0, 1}, {c, 0, 1}, {d, 0, 1}, {e, 0, 0}, {f, 0, 0}]
```

Out[46]=
$$\frac{1}{96}$$

In[47]:=
```
SeriesCoefficient[%7, {a, 0, 1},
 {b, 0, 1}, {c, 0, 1}, {d, 0, 1}, {e, 0, 1}, {f, 0, 0}]
```

Out[47]=
$$\frac{1}{32}$$

In[48]:=
```
AugmentedSymmetricPolynomial[{1, 4}, {a, b, c, d, e, f}]
```

Out[48]=
$$a^4 b + a b^4 + a^4 c + b^4 c + a c^4 + b c^4 + a^4 d + b^4 d + c^4 d + a d^4 + b d^4 + c d^4 + a^4 e + b^4 e + c^4 e + d^4 e + a e^4 + b e^4 + c e^4 + d e^4 + a^4 f + b^4 f + c^4 f + d^4 f + e^4 f + a f^4 + b f^4 + c f^4 + d f^4 + e f^4$$

In[49]:=
```
AugmentedSymmetricPolynomial[{1, 2, 2}, {a, b, c, d, e, f}]
```

Out[49]=
$$2 a^2 b^2 c + 2 a^2 b c^2 + 2 a b^2 c^2 + 2 a^2 b^2 d + 2 a^2 c^2 d + 2 b^2 c^2 d + 2 a^2 b d^2 + 2 a b^2 d^2 + 2 a^2 c d^2 + 2 b^2 c d^2 + 2 a c^2 d^2 + 2 b c^2 d^2 + 2 a^2 b^2 e + 2 a^2 c^2 e + 2 b^2 c^2 e + 2 a^2 d^2 e + 2 b^2 d^2 e + 2 c^2 d^2 e + 2 a^2 b e^2 + 2 a b^2 e^2 + 2 a^2 c e^2 + 2 b^2 c e^2 + 2 a c^2 e^2 + 2 b c^2 e^2 + 2 a^2 d e^2 + 2 b^2 d e^2 + 2 c^2 d e^2 + 2 a d^2 e^2 + 2 b d^2 e^2 + 2 c d^2 e^2 + 2 a^2 b^2 f + 2 a^2 c^2 f + 2 b^2 c^2 f + 2 a^2 d^2 f + 2 b^2 d^2 f + 2 c^2 d^2 f + 2 a^2 e^2 f + 2 b^2 e^2 f + 2 c^2 e^2 f + 2 d^2 e^2 f + 2 a^2 b f^2 + 2 a b^2 f^2 + 2 a^2 c f^2 + 2 b^2 c f^2 + 2 a c^2 f^2 + 2 b c^2 f^2 + 2 a^2 d f^2 + 2 b^2 d f^2 + 2 c^2 d f^2 + 2 a d^2 f^2 + 2 b d^2 f^2 + 2 c d^2 f^2 + 2 a^2 e f^2 + 2 b^2 e f^2 + 2 c^2 e f^2 + 2 d^2 e f^2 + 2 a e^2 f^2 + 2 b e^2 f^2 + 2 c e^2 f^2 + 2 d e^2 f^2$$

In[50]:=
```
AugmentedSymmetricPolynomial[{1, 1, 1, 2}, {a, b, c, d, e, f}]
```

Out[50]=
$$6 a^2 b c d + 6 a b^2 c d + 6 a b c^2 d + 6 a b c d^2 + 6 a^2 b c e + 6 a b^2 c e + 6 a b c^2 e + 6 a^2 b d e + 6 a b^2 d e + 6 a^2 c d e + 6 b^2 c d e + 6 a c^2 d e + 6 b c^2 d e + 6 a b d^2 e + 6 a c d^2 e + 6 b c d^2 e + 6 a b c e^2 + 6 a b d e^2 + 6 a c d e^2 + 6 b c d e^2 + 6 a^2 b c f + 6 a b^2 c f + 6 a b c^2 f + 6 a^2 b d f + 6 a b^2 d f + 6 a^2 c d f + 6 b^2 c d f + 6 a c^2 d f + 6 b c^2 d f + 6 a b d^2 f + 6 a c d^2 f + 6 b c d^2 f + 6 a^2 b e f + 6 a b^2 e f + 6 a^2 c e f + 6 b^2 c e f + 6 a c^2 e f + 6 b c^2 e f + 6 a^2 d e f + 6 b^2 d e f + 6 c^2 d e f + 6 a d^2 e f + 6 b d^2 e f + 6 c d^2 e f + 6 a b e^2 f + 6 a c e^2 f + 6 b c e^2 f + 6 a d e^2 f + 6 b d e^2 f + 6 c d e^2 f + 6 a b c f^2 + 6 a b d f^2 + 6 a c d f^2 + 6 b c d f^2 + 6 a b e f^2 + 6 a c e f^2 + 6 b c e f^2 + 6 a d e f^2 + 6 b d e f^2 + 6 c d e f^2$$

In[51]:=
```
AugmentedSymmetricPolynomial[{1, 1, 1, 1, 1}, {a, b, c, d, e, f}]
```

Out[51]=
$$120 a b c d e + 120 a b c d f + 120 a b c e f + 120 a b d e f + 120 a c d e f + 120 b c d e f$$

In[52]:=
```
SymmetricReduction[%48, {a, b, c, d, e, f}, {c1, c2, c3, c4, c5, c6}]
```

Out[52]=
$$\{c1^3\, c2 - 3\, c1\, c2^2 - c1^2\, c3 + 5\, c2\, c3 + c1\, c4 - 5\, c5,\ 0\}$$

In[53]:=
```
t41 = First[%52]
```

Out[53]=
$$c1^3\, c2 - 3\, c1\, c2^2 - c1^2\, c3 + 5\, c2\, c3 + c1\, c4 - 5\, c5$$

In[54]:=
```
SymmetricReduction[(1 / 2) * (%49), {a, b, c, d, e, f}, {c1, c2, c3, c4, c5, c6}]
```

Out[54]=
$$\{c2\, c3 - 3\, c1\, c4 + 5\, c5,\ 0\}$$

In[55]:=
```
t221 = First[%54]
```

Out[55]=
$$c2\, c3 - 3\, c1\, c4 + 5\, c5$$

In[56]:=
```
SymmetricReduction[(1 / 6) * (%50), {a, b, c, d, e, f}, {c1, c2, c3, c4, c5, c6}]
```

Out[56]=
$$\{c1\, c4 - 5\, c5,\ 0\}$$

In[57]:=
```
t2111 = First[%56]
```

Out[57]=
$$c1\, c4 - 5\, c5$$

In[58]:=
```
SymmetricReduction[(1 / 120) * (%51), {a, b, c, d, e, f}, {c1, c2, c3, c4, c5, c6}]
```

Out[58]=
$$\{c5,\ 0\}$$

In[59]:=
```
t11111 = First[%58]
```

Out[59]=
$$c5$$

In[60]:=
```
Expand[-t41 + (1440 / 288) * t221 + (1440 / 96) * t2111 + (1440 / 32) * t11111]
```

Out[60]=
$$-c1^3\, c2 + 3\, c1\, c2^2 + c1^2\, c3 - c1\, c4$$

In[61]:=
```
td = 1 + (1 / 2) * c1 * t + (1 / 12) * (c1 ^ 2 + c2) * t ^ 2 + (1 / 24) * c1 * c2 * t ^ 3 -
   (1 / 720) (c1 ^ 4 - 4 * c1 ^ 2 * c2 - 3 * c2 ^ 2 - c1 * c3 + c4) * t ^ 4 +
   (1 / 1440) * (%60) * t ^ 5 + (1 / 30 240) * (%40) * t ^ 6
```

Out[61]=
$$1 + \frac{c1\, t}{2} + \frac{1}{12}\left(c1^2 + c2\right) t^2 + \frac{1}{24}\, c1\, c2\, t^3 - \frac{1}{720}\left(c1^4 - 4\, c1^2\, c2 - 3\, c2^2 - c1\, c3 + c4\right) t^4 + \frac{\left(-c1^3\, c2 + 3\, c1\, c2^2 + c1^2\, c3 - c1\, c4\right) t^5}{1440} + \frac{\left(c1^6 - 6\, c1^4\, c2 + \frac{11\, c1^2\, c2^2}{2} + 5\, c2^3 + \frac{5\, c1^3\, c3}{2} + \frac{11\, c1\, c2\, c3}{2} - \frac{c3^2}{2} - \frac{5\, c1^2\, c4}{2} - \frac{9\, c2\, c4}{2} - c1\, c5 + c6\right) t^6}{30\,240}$$

In[62]:=
```
AugmentedSymmetricPolynomial[{6}, {a, b, c, d, e, f}]
```

Out[62]=
$$a^6 + b^6 + c^6 + d^6 + e^6 + f^6$$

In[63]:=
```
SymmetricReduction[%62, {a, b, c, d, e, f}, {d1, d2, d3, d4, d5, d6}]
```

Out[63]=
$$\{d1^6 - 6\,d1^4\,d2 + 9\,d1^2\,d2^2 - 2\,d2^3 + 6\,d1^3\,d3 - 12\,d1\,d2\,d3 + 3\,d3^2 - 6\,d1^2\,d4 + 6\,d2\,d4 + 6\,d1\,d5 - 6\,d6,\ 0\}$$

In[64]:=
```
s6 = First[%63]
```

Out[64]=
$$d1^6 - 6\,d1^4\,d2 + 9\,d1^2\,d2^2 - 2\,d2^3 + 6\,d1^3\,d3 - 12\,d1\,d2\,d3 + 3\,d3^2 - 6\,d1^2\,d4 + 6\,d2\,d4 + 6\,d1\,d5 - 6\,d6$$

In[65]:=
```
AugmentedSymmetricPolynomial[{5}, {a, b, c, d, e, f}]
```

Out[65]=
$$a^5 + b^5 + c^5 + d^5 + e^5 + f^5$$

In[66]:=
```
SymmetricReduction[%65, {a, b, c, d, e, f}, {d1, d2, d3, d4, d5, d6}]
```

Out[66]=
$$\{d1^5 - 5\,d1^3\,d2 + 5\,d1\,d2^2 + 5\,d1^2\,d3 - 5\,d2\,d3 - 5\,d1\,d4 + 5\,d5,\ 0\}$$

In[67]:=
```
s5 = First[%66]
```

Out[67]=
$$d1^5 - 5\,d1^3\,d2 + 5\,d1\,d2^2 + 5\,d1^2\,d3 - 5\,d2\,d3 - 5\,d1\,d4 + 5\,d5$$

In[68]:=
```
ch = 6 + d1 * t + (1 / 2) * (d1 ^ 2 - 2 * d2) * t ^ 2 + (1 / 6) * (d1 ^ 3 - 3 * d1 * d2 + 3 * d3) * t ^ 3 +
   (1 / 24) * (d1 ^ 4 - 4 * d1 ^ 2 * d2 + 4 * d1 * d3 + 2 * d2 ^ 2 - 4 * d4) * t ^ 4 +
   (1 / 120) * s5 * t ^ 5 + (1 / 720) * s6 * t ^ 6
```

Out[68]=
$$6 + d1\,t + \frac{1}{2}\left(d1^2 - 2\,d2\right)t^2 + \frac{1}{6}\left(d1^3 - 3\,d1\,d2 + 3\,d3\right)t^3 + \frac{1}{24}\left(d1^4 - 4\,d1^2\,d2 + 2\,d2^2 + 4\,d1\,d3 - 4\,d4\right)t^4 + \frac{1}{120}\left(d1^5 - 5\,d1^3\,d2 + 5\,d1\,d2^2 + 5\,d1^2\,d3 - 5\,d2\,d3 - 5\,d1\,d4 + 5\,d5\right)t^5 + \frac{1}{720}\left(d1^6 - 6\,d1^4\,d2 + 9\,d1^2\,d2^2 - 2\,d2^3 + 6\,d1^3\,d3 - 12\,d1\,d2\,d3 + 3\,d3^2 - 6\,d1^2\,d4 + 6\,d2\,d4 + 6\,d1\,d5 - 6\,d6\right)t^6$$

In[69]:=
```
Expand[ch * td]
```

Out[69]=
$$6 + 3\,c1\,t + d1\,t + \frac{c1^2\,t^2}{2} + \frac{c2\,t^2}{2} + \frac{1}{2}\,c1\,d1\,t^2 + \frac{d1^2\,t^2}{2} - d2\,t^2 + \frac{1}{4}\,c1\,c2\,t^3 + \frac{1}{12}\,c1^2\,d1\,t^3 + \frac{1}{12}\,c2\,d1\,t^3 + \frac{1}{4}\,c1\,d1^2\,t^3 + \frac{d1^3\,t^3}{6} - \frac{1}{2}\,c1\,d2\,t^3 - \frac{1}{2}\,d1\,d2\,t^3 + \frac{d3\,t^3}{2} - \frac{c1^4\,t^4}{120} + \frac{1}{30}\,c1^2\,c2\,t^4 + \frac{c2^2\,t^4}{40} + \frac{1}{120}\,c1\,c3\,t^4 - \frac{c4\,t^4}{120} + \frac{1}{24}\,c1\,c2\,d1\,t^4 + \frac{1}{24}\,c1^2\,d1^2\,t^4 + \frac{1}{24}\,c2\,d1^2\,t^4 + \frac{1}{12}\,c1\,d1^3\,t^4 + \frac{d1^4\,t^4}{24} - \frac{1}{12}\,c1^2\,d2\,t^4 - \frac{1}{12}\,c2\,d2\,t^4 - \frac{1}{4}\,c1\,d1\,d2\,t^4 - \frac{1}{6}\,d1^2\,d2\,t^4 + \frac{d2^2\,t^4}{12} + \frac{1}{4}\,c1\,d3\,t^4 + \frac{1}{6}\,d1\,d3\,t^4 - \frac{d4\,t^4}{6} - \frac{1}{240}\,c1^3\,c2\,t^5 + \frac{1}{80}\,c1\,c2^2\,t^5 + \frac{1}{240}\,c1^2\,c3\,t^5 - \frac{1}{240}\,c1\,c4\,t^5 - \frac{1}{720}\,c1^4\,d1\,t^5 + \frac{1}{180}\,c1^2\,c2\,d1\,t^5 + \frac{1}{240}\,c2^2\,d1\,t^5 +$$

$$\frac{1}{720}\,c1\,c3\,d1\,t^5-\frac{1}{720}\,c4\,d1\,t^5+\frac{1}{48}\,c1\,c2\,d1^2\,t^5+\frac{1}{72}\,c1^2\,d1^3\,t^5+\frac{1}{72}\,c2\,d1^3\,t^5+$$
$$\frac{1}{48}\,c1\,d1^4\,t^5+\frac{d1^5\,t^5}{120}-\frac{1}{24}\,c1\,c2\,d2\,t^5-\frac{1}{24}\,c1^2\,d1\,d2\,t^5-\frac{1}{24}\,c2\,d1\,d2\,t^5-$$
$$\frac{1}{12}\,c1\,d1^2\,d2\,t^5-\frac{1}{24}\,d1^3\,d2\,t^5+\frac{1}{24}\,c1\,d2^2\,t^5+\frac{1}{24}\,d1\,d2^2\,t^5+\frac{1}{24}\,c1^2\,d3\,t^5+\frac{1}{24}\,c2\,d3\,t^5+$$
$$\frac{1}{12}\,c1\,d1\,d3\,t^5+\frac{1}{24}\,d1^2\,d3\,t^5-\frac{1}{24}\,d2\,d3\,t^5-\frac{1}{12}\,c1\,d4\,t^5-\frac{1}{24}\,d1\,d4\,t^5+\frac{d5\,t^5}{24}+$$
$$\frac{c1^6\,t^6}{5040}-\frac{1}{840}\,c1^4\,c2\,t^6+\frac{11\,c1^2\,c2^2\,t^6}{10\,080}+\frac{c2^3\,t^6}{1008}+\frac{c1^3\,c3\,t^6}{2016}+\frac{11\,c1\,c2\,c3\,t^6}{10\,080}-\frac{c3^2\,t^6}{10\,080}-$$
$$\frac{c1^2\,c4\,t^6}{2016}-\frac{c2\,c4\,t^6}{1120}-\frac{c1\,c5\,t^6}{5040}+\frac{c6\,t^6}{5040}-\frac{c1^3\,c2\,d1\,t^6}{1440}+\frac{1}{480}\,c1\,c2^2\,d1\,t^6+\frac{c1^2\,c3\,d1\,t^6}{1440}-$$
$$\frac{c1\,c4\,d1\,t^6}{1440}-\frac{c1^4\,d1^2\,t^6}{1440}+\frac{1}{360}\,c1^2\,c2\,d1^2\,t^6+\frac{1}{480}\,c2^2\,d1^2\,t^6+\frac{c1\,c3\,d1^2\,t^6}{1440}-$$
$$\frac{c4\,d1^2\,t^6}{1440}+\frac{1}{144}\,c1\,c2\,d1^3\,t^6+\frac{1}{288}\,c1^2\,d1^4\,t^6+\frac{1}{288}\,c2\,d1^4\,t^6+\frac{1}{240}\,c1\,d1^5\,t^6+\frac{d1^6\,t^6}{720}+$$
$$\frac{1}{720}\,c1^4\,d2\,t^6-\frac{1}{180}\,c1^2\,c2\,d2\,t^6-\frac{1}{240}\,c2^2\,d2\,t^6-\frac{1}{720}\,c1\,c3\,d2\,t^6+\frac{1}{720}\,c4\,d2\,t^6-$$
$$\frac{1}{48}\,c1\,c2\,d1\,d2\,t^6-\frac{1}{72}\,c1^2\,d1^2\,d2\,t^6-\frac{1}{72}\,c2\,d1^2\,d2\,t^6-\frac{1}{48}\,c1\,d1^3\,d2\,t^6-\frac{1}{120}\,d1^4\,d2\,t^6+$$
$$\frac{1}{144}\,c1^2\,d2^2\,t^6+\frac{1}{144}\,c2\,d2^2\,t^6+\frac{1}{48}\,c1\,d1\,d2^2\,t^6+\frac{1}{80}\,d1^2\,d2^2\,t^6-\frac{d2^3\,t^6}{360}+\frac{1}{48}\,c1\,c2\,d3\,t^6+$$
$$\frac{1}{72}\,c1^2\,d1\,d3\,t^6+\frac{1}{72}\,c2\,d1\,d3\,t^6+\frac{1}{48}\,c1\,d1^2\,d3\,t^6+\frac{1}{120}\,d1^3\,d3\,t^6-\frac{1}{48}\,c1\,d2\,d3\,t^6-$$
$$\frac{1}{60}\,d1\,d2\,d3\,t^6+\frac{d3^2\,t^6}{240}-\frac{1}{72}\,c1^2\,d4\,t^6-\frac{1}{72}\,c2\,d4\,t^6-\frac{1}{48}\,c1\,d1\,d4\,t^6-\frac{1}{120}\,d1^2\,d4\,t^6+$$
$$\frac{1}{120}\,d2\,d4\,t^6+\frac{1}{48}\,c1\,d5\,t^6+\frac{1}{120}\,d1\,d5\,t^6-\frac{d6\,t^6}{120}+\frac{c1^6\,d1\,t^7}{30\,240}-\frac{c1^4\,c2\,d1\,t^7}{5040}+$$
$$\frac{11\,c1^2\,c2^2\,d1\,t^7}{60\,480}+\frac{c2^3\,d1\,t^7}{6048}+\frac{c1^3\,c3\,d1\,t^7}{12\,096}+\frac{11\,c1\,c2\,c3\,d1\,t^7}{60\,480}-\frac{c3^2\,d1\,t^7}{60\,480}-$$
$$\frac{c1^2\,c4\,d1\,t^7}{12\,096}-\frac{c2\,c4\,d1\,t^7}{6720}-\frac{c1\,c5\,d1\,t^7}{30\,240}+\frac{c6\,d1\,t^7}{30\,240}-\frac{c1^3\,c2\,d1^2\,t^7}{2880}+\frac{1}{960}\,c1\,c2^2\,d1^2\,t^7+$$
$$\frac{c1^2\,c3\,d1^2\,t^7}{2880}-\frac{c1\,c4\,d1^2\,t^7}{2880}-\frac{c1^4\,d1^3\,t^7}{4320}+\frac{c1^2\,c2\,d1^3\,t^7}{1080}+\frac{c2^2\,d1^3\,t^7}{1440}+\frac{c1\,c3\,d1^3\,t^7}{4320}-$$
$$\frac{c4\,d1^3\,t^7}{4320}+\frac{1}{576}\,c1\,c2\,d1^4\,t^7+\frac{c1^2\,d1^5\,t^7}{1440}+\frac{c2\,d1^5\,t^7}{1440}+\frac{c1\,d1^6\,t^7}{1440}+\frac{c1^3\,c2\,d2\,t^7}{1440}-$$
$$\frac{1}{480}\,c1\,c2^2\,d2\,t^7-\frac{c1^2\,c3\,d2\,t^7}{1440}+\frac{c1\,c4\,d2\,t^7}{1440}+\frac{c1^4\,d1\,d2\,t^7}{1440}-\frac{1}{360}\,c1^2\,c2\,d1\,d2\,t^7-$$
$$\frac{1}{480}\,c2^2\,d1\,d2\,t^7-\frac{c1\,c3\,d1\,d2\,t^7}{1440}+\frac{c4\,d1\,d2\,t^7}{1440}-\frac{1}{144}\,c1\,c2\,d1^2\,d2\,t^7-\frac{1}{288}\,c1^2\,d1^3\,d2\,t^7-$$
$$\frac{1}{288}\,c2\,d1^3\,d2\,t^7-\frac{1}{240}\,c1\,d1^4\,d2\,t^7+\frac{1}{288}\,c1\,c2\,d2^2\,t^7+\frac{1}{288}\,c1^2\,d1\,d2^2\,t^7+$$
$$\frac{1}{288}\,c2\,d1\,d2^2\,t^7+\frac{1}{160}\,c1\,d1^2\,d2^2\,t^7-\frac{1}{720}\,c1\,d2^3\,t^7-\frac{c1^4\,d3\,t^7}{1440}+\frac{1}{360}\,c1^2\,c2\,d3\,t^7+$$

$$\frac{1}{480} c2^2 d3 t^7 + \frac{c1 c3 d3 t^7}{1440} - \frac{c4 d3 t^7}{1440} + \frac{1}{144} c1 c2 d1 d3 t^7 + \frac{1}{288} c1^2 d1^2 d3 t^7 +$$
$$\frac{1}{288} c2 d1^2 d3 t^7 + \frac{1}{240} c1 d1^3 d3 t^7 - \frac{1}{288} c1^2 d2 d3 t^7 - \frac{1}{288} c2 d2 d3 t^7 -$$
$$\frac{1}{120} c1 d1 d2 d3 t^7 + \frac{1}{480} c1 d3^2 t^7 - \frac{1}{144} c1 c2 d4 t^7 - \frac{1}{288} c1^2 d1 d4 t^7 - \frac{1}{288} c2 d1 d4 t^7 -$$
$$\frac{1}{240} c1 d1^2 d4 t^7 + \frac{1}{240} c1 d2 d4 t^7 + \frac{1}{288} c1^2 d5 t^7 + \frac{1}{288} c2 d5 t^7 + \frac{1}{240} c1 d1 d5 t^7 -$$
$$\frac{1}{240} c1 d6 t^7 + \frac{c1^6 d1^2 t^8}{60\,480} - \frac{c1^4 c2 d1^2 t^8}{10\,080} + \frac{11 c1^2 c2^2 d1^2 t^8}{120\,960} + \frac{c2^3 d1^2 t^8}{12\,096} +$$
$$\frac{c1^3 c3 d1^2 t^8}{24\,192} + \frac{11 c1 c2 c3 d1^2 t^8}{120\,960} - \frac{c3^2 d1^2 t^8}{120\,960} - \frac{c1^2 c4 d1^2 t^8}{24\,192} - \frac{c2 c4 d1^2 t^8}{13\,440} -$$
$$\frac{c1 c5 d1^2 t^8}{60\,480} + \frac{c6 d1^2 t^8}{60\,480} - \frac{c1^3 c2 d1^3 t^8}{8640} + \frac{c1 c2^2 d1^3 t^8}{2880} + \frac{c1^2 c3 d1^3 t^8}{8640} - \frac{c1 c4 d1^3 t^8}{8640} -$$
$$\frac{c1^4 d1^4 t^8}{17\,280} + \frac{c1^2 c2 d1^4 t^8}{4320} + \frac{c2^2 d1^4 t^8}{5760} + \frac{c1 c3 d1^4 t^8}{17\,280} - \frac{c4 d1^4 t^8}{17\,280} + \frac{c1 c2 d1^5 t^8}{2880} +$$
$$\frac{c1^2 d1^6 t^8}{8640} + \frac{c2 d1^6 t^8}{8640} - \frac{c1^6 d2 t^8}{30\,240} + \frac{c1^4 c2 d2 t^8}{5040} - \frac{11 c1^2 c2^2 d2 t^8}{60\,480} - \frac{c2^3 d2 t^8}{6048} -$$
$$\frac{c1^3 c3 d2 t^8}{12\,096} - \frac{11 c1 c2 c3 d2 t^8}{60\,480} + \frac{c3^2 d2 t^8}{60\,480} + \frac{c1^2 c4 d2 t^8}{12\,096} + \frac{c2 c4 d2 t^8}{6720} + \frac{c1 c5 d2 t^8}{30\,240} -$$
$$\frac{c6 d2 t^8}{30\,240} + \frac{c1^3 c2 d1 d2 t^8}{2880} - \frac{1}{960} c1 c2^2 d1 d2 t^8 - \frac{c1^2 c3 d1 d2 t^8}{2880} + \frac{c1 c4 d1 d2 t^8}{2880} +$$
$$\frac{c1^4 d1^2 d2 t^8}{4320} - \frac{c1^2 c2 d1^2 d2 t^8}{1080} - \frac{c2^2 d1^2 d2 t^8}{1440} - \frac{c1 c3 d1^2 d2 t^8}{4320} + \frac{c4 d1^2 d2 t^8}{4320} -$$
$$\frac{1}{576} c1 c2 d1^3 d2 t^8 - \frac{c1^2 d1^4 d2 t^8}{1440} - \frac{c2 d1^4 d2 t^8}{1440} - \frac{c1^4 d2^2 t^8}{8640} + \frac{c1^2 c2 d2^2 t^8}{2160} +$$
$$\frac{c2^2 d2^2 t^8}{2880} + \frac{c1 c3 d2^2 t^8}{8640} - \frac{c4 d2^2 t^8}{8640} + \frac{1}{576} c1 c2 d1 d2^2 t^8 + \frac{1}{960} c1^2 d1^2 d2^2 t^8 +$$
$$\frac{1}{960} c2 d1^2 d2^2 t^8 - \frac{c1^2 d2^3 t^8}{4320} - \frac{c2 d2^3 t^8}{4320} - \frac{c1^3 c2 d3 t^8}{2880} + \frac{1}{960} c1 c2^2 d3 t^8 +$$
$$\frac{c1^2 c3 d3 t^8}{2880} - \frac{c1 c4 d3 t^8}{2880} - \frac{c1^4 d1 d3 t^8}{4320} + \frac{c1^2 c2 d1 d3 t^8}{1080} + \frac{c2^2 d1 d3 t^8}{1440} +$$
$$\frac{c1 c3 d1 d3 t^8}{4320} - \frac{c4 d1 d3 t^8}{4320} + \frac{1}{576} c1 c2 d1^2 d3 t^8 + \frac{c1^2 d1^3 d3 t^8}{1440} + \frac{c2 d1^3 d3 t^8}{1440} -$$
$$\frac{1}{576} c1 c2 d2 d3 t^8 - \frac{1}{720} c1^2 d1 d2 d3 t^8 - \frac{1}{720} c2 d1 d2 d3 t^8 + \frac{c1^2 d3^2 t^8}{2880} + \frac{c2 d3^2 t^8}{2880} +$$
$$\frac{c1^4 d4 t^8}{4320} - \frac{c1^2 c2 d4 t^8}{1080} - \frac{c2^2 d4 t^8}{1440} - \frac{c1 c3 d4 t^8}{4320} + \frac{c4 d4 t^8}{4320} - \frac{1}{576} c1 c2 d1 d4 t^8 -$$
$$\frac{c1^2 d1^2 d4 t^8}{1440} - \frac{c2 d1^2 d4 t^8}{1440} + \frac{c1^2 d2 d4 t^8}{1440} + \frac{c2 d2 d4 t^8}{1440} + \frac{1}{576} c1 c2 d5 t^8 +$$
$$\frac{c1^2 d1 d5 t^8}{1440} + \frac{c2 d1 d5 t^8}{1440} - \frac{c1^2 d6 t^8}{1440} - \frac{c2 d6 t^8}{1440} + \frac{c1^6 d1^3 t^9}{181\,440} - \frac{c1^4 c2 d1^3 t^9}{30\,240} +$$
$$\frac{11 c1^2 c2^2 d1^3 t^9}{362\,880} + \frac{c2^3 d1^3 t^9}{36\,288} + \frac{c1^3 c3 d1^3 t^9}{72\,576} + \frac{11 c1 c2 c3 d1^3 t^9}{362\,880} - \frac{c3^2 d1^3 t^9}{362\,880} -$$

$$\frac{c1^2\,c4\,d1^3\,t^9}{72\,576}-\frac{c2\,c4\,d1^3\,t^9}{40\,320}-\frac{c1\,c5\,d1^3\,t^9}{181\,440}+\frac{c6\,d1^3\,t^9}{181\,440}-\frac{c1^3\,c2\,d1^4\,t^9}{34\,560}+\frac{c1\,c2^2\,d1^4\,t^9}{11\,520}+$$
$$\frac{c1^2\,c3\,d1^4\,t^9}{34\,560}-\frac{c1\,c4\,d1^4\,t^9}{34\,560}-\frac{c1^4\,d1^5\,t^9}{86\,400}+\frac{c1^2\,c2\,d1^5\,t^9}{21\,600}+\frac{c2^2\,d1^5\,t^9}{28\,800}+\frac{c1\,c3\,d1^5\,t^9}{86\,400}-$$
$$\frac{c4\,d1^5\,t^9}{86\,400}+\frac{c1\,c2\,d1^6\,t^9}{17\,280}-\frac{c1^6\,d1\,d2\,t^9}{60\,480}+\frac{c1^4\,c2\,d1\,d2\,t^9}{10\,080}-\frac{11\,c1^2\,c2^2\,d1\,d2\,t^9}{120\,960}-$$
$$\frac{c2^3\,d1\,d2\,t^9}{12\,096}-\frac{c1^3\,c3\,d1\,d2\,t^9}{24\,192}-\frac{11\,c1\,c2\,c3\,d1\,d2\,t^9}{120\,960}+\frac{c3^2\,d1\,d2\,t^9}{120\,960}+\frac{c1^2\,c4\,d1\,d2\,t^9}{24\,192}+$$
$$\frac{c2\,c4\,d1\,d2\,t^9}{13\,440}+\frac{c1\,c5\,d1\,d2\,t^9}{60\,480}-\frac{c6\,d1\,d2\,t^9}{60\,480}+\frac{c1^3\,c2\,d1^2\,d2\,t^9}{8640}-\frac{c1\,c2^2\,d1^2\,d2\,t^9}{2880}-$$
$$\frac{c1^2\,c3\,d1^2\,d2\,t^9}{8640}+\frac{c1\,c4\,d1^2\,d2\,t^9}{8640}+\frac{c1^4\,d1^3\,d2\,t^9}{17\,280}-\frac{c1^2\,c2\,d1^3\,d2\,t^9}{4320}-\frac{c2^2\,d1^3\,d2\,t^9}{5760}-$$
$$\frac{c1\,c3\,d1^3\,d2\,t^9}{17\,280}+\frac{c4\,d1^3\,d2\,t^9}{17\,280}-\frac{c1\,c2\,d1^4\,d2\,t^9}{2880}-\frac{c1^3\,c2\,d2^2\,t^9}{17\,280}+\frac{c1\,c2^2\,d2^2\,t^9}{5760}+$$
$$\frac{c1^2\,c3\,d2^2\,t^9}{17\,280}-\frac{c1\,c4\,d2^2\,t^9}{17\,280}-\frac{c1^4\,d1\,d2^2\,t^9}{17\,280}+\frac{c1^2\,c2\,d1\,d2^2\,t^9}{4320}+\frac{c2^2\,d1\,d2^2\,t^9}{5760}+$$
$$\frac{c1\,c3\,d1\,d2^2\,t^9}{17\,280}-\frac{c4\,d1\,d2^2\,t^9}{17\,280}+\frac{c1\,c2\,d1^2\,d2^2\,t^9}{1920}-\frac{c1\,c2\,d2^3\,t^9}{8640}+\frac{c1^6\,d3\,t^9}{60\,480}-$$
$$\frac{c1^4\,c2\,d3\,t^9}{10\,080}+\frac{11\,c1^2\,c2^2\,d3\,t^9}{120\,960}+\frac{c2^3\,d3\,t^9}{12\,096}+\frac{c1^3\,c3\,d3\,t^9}{24\,192}+\frac{11\,c1\,c2\,c3\,d3\,t^9}{120\,960}-$$
$$\frac{c3^2\,d3\,t^9}{120\,960}-\frac{c1^2\,c4\,d3\,t^9}{24\,192}-\frac{c2\,c4\,d3\,t^9}{13\,440}-\frac{c1\,c5\,d3\,t^9}{60\,480}+\frac{c6\,d3\,t^9}{60\,480}-\frac{c1^3\,c2\,d1\,d3\,t^9}{8640}+$$
$$\frac{c1\,c2^2\,d1\,d3\,t^9}{2880}+\frac{c1^2\,c3\,d1\,d3\,t^9}{8640}-\frac{c1\,c4\,d1\,d3\,t^9}{8640}-\frac{c1^4\,d1^2\,d3\,t^9}{17\,280}+\frac{c1^2\,c2\,d1^2\,d3\,t^9}{4320}+$$
$$\frac{c2^2\,d1^2\,d3\,t^9}{5760}+\frac{c1\,c3\,d1^2\,d3\,t^9}{17\,280}-\frac{c4\,d1^2\,d3\,t^9}{17\,280}+\frac{c1\,c2\,d1^3\,d3\,t^9}{2880}+\frac{c1^4\,d2\,d3\,t^9}{17\,280}-$$
$$\frac{c1^2\,c2\,d2\,d3\,t^9}{4320}-\frac{c2^2\,d2\,d3\,t^9}{5760}-\frac{c1\,c3\,d2\,d3\,t^9}{17\,280}+\frac{c4\,d2\,d3\,t^9}{17\,280}-\frac{c1\,c2\,d1\,d2\,d3\,t^9}{1440}+$$
$$\frac{c1\,c2\,d3^2\,t^9}{5760}+\frac{c1^3\,c2\,d4\,t^9}{8640}-\frac{c1\,c2^2\,d4\,t^9}{2880}-\frac{c1^2\,c3\,d4\,t^9}{8640}+\frac{c1\,c4\,d4\,t^9}{8640}+\frac{c1^4\,d1\,d4\,t^9}{17\,280}-$$
$$\frac{c1^2\,c2\,d1\,d4\,t^9}{4320}-\frac{c2^2\,d1\,d4\,t^9}{5760}-\frac{c1\,c3\,d1\,d4\,t^9}{17\,280}+\frac{c4\,d1\,d4\,t^9}{17\,280}-\frac{c1\,c2\,d1^2\,d4\,t^9}{2880}+$$
$$\frac{c1\,c2\,d2\,d4\,t^9}{2880}-\frac{c1^4\,d5\,t^9}{17\,280}+\frac{c1^2\,c2\,d5\,t^9}{4320}+\frac{c2^2\,d5\,t^9}{5760}+\frac{c1\,c3\,d5\,t^9}{17\,280}-\frac{c4\,d5\,t^9}{17\,280}+$$
$$\frac{c1\,c2\,d1\,d5\,t^9}{2880}-\frac{c1\,c2\,d6\,t^9}{2880}+\frac{c1^6\,d1^4\,t^{10}}{725\,760}-\frac{c1^4\,c2\,d1^4\,t^{10}}{120\,960}+\frac{11\,c1^2\,c2^2\,d1^4\,t^{10}}{1\,451\,520}+$$
$$\frac{c2^3\,d1^4\,t^{10}}{145\,152}+\frac{c1^3\,c3\,d1^4\,t^{10}}{290\,304}+\frac{11\,c1\,c2\,c3\,d1^4\,t^{10}}{1\,451\,520}-\frac{c3^2\,d1^4\,t^{10}}{1\,451\,520}-\frac{c1^2\,c4\,d1^4\,t^{10}}{290\,304}-$$
$$\frac{c2\,c4\,d1^4\,t^{10}}{161\,280}-\frac{c1\,c5\,d1^4\,t^{10}}{725\,760}+\frac{c6\,d1^4\,t^{10}}{725\,760}-\frac{c1^3\,c2\,d1^5\,t^{10}}{172\,800}+\frac{c1\,c2^2\,d1^5\,t^{10}}{57\,600}+$$
$$\frac{c1^2\,c3\,d1^5\,t^{10}}{172\,800}-\frac{c1\,c4\,d1^5\,t^{10}}{172\,800}-\frac{c1^4\,d1^6\,t^{10}}{518\,400}+\frac{c1^2\,c2\,d1^6\,t^{10}}{129\,600}+\frac{c2^2\,d1^6\,t^{10}}{172\,800}+\frac{c1\,c3\,d1^6\,t^{10}}{518\,400}-$$
$$\frac{c4\,d1^6\,t^{10}}{518\,400}-\frac{c1^6\,d1^2\,d2\,t^{10}}{181\,440}+\frac{c1^4\,c2\,d1^2\,d2\,t^{10}}{30\,240}-\frac{11\,c1^2\,c2^2\,d1^2\,d2\,t^{10}}{362\,880}-\frac{c2^3\,d1^2\,d2\,t^{10}}{36\,288}-$$

$$\frac{c1^3\,c3\,d1^2\,d2\,t^{10}}{72\,576}-\frac{11\,c1\,c2\,c3\,d1^2\,d2\,t^{10}}{362\,880}+\frac{c3^2\,d1^2\,d2\,t^{10}}{362\,880}+\frac{c1^2\,c4\,d1^2\,d2\,t^{10}}{72\,576}+$$
$$\frac{c2\,c4\,d1^2\,d2\,t^{10}}{40\,320}+\frac{c1\,c5\,d1^2\,d2\,t^{10}}{181\,440}-\frac{c6\,d1^2\,d2\,t^{10}}{181\,440}+\frac{c1^3\,c2\,d1^3\,d2\,t^{10}}{34\,560}-\frac{c1\,c2^2\,d1^3\,d2\,t^{10}}{11\,520}-$$
$$\frac{c1^2\,c3\,d1^3\,d2\,t^{10}}{34\,560}+\frac{c1\,c4\,d1^3\,d2\,t^{10}}{34\,560}+\frac{c1^4\,d1^4\,d2\,t^{10}}{86\,400}-\frac{c1^2\,c2\,d1^4\,d2\,t^{10}}{21\,600}-\frac{c2^2\,d1^4\,d2\,t^{10}}{28\,800}-$$
$$\frac{c1\,c3\,d1^4\,d2\,t^{10}}{86\,400}+\frac{c4\,d1^4\,d2\,t^{10}}{86\,400}+\frac{c1^6\,d2^2\,t^{10}}{362\,880}-\frac{c1^4\,c2\,d2^2\,t^{10}}{60\,480}+\frac{11\,c1^2\,c2^2\,d2^2\,t^{10}}{725\,760}+$$
$$\frac{c2^3\,d2^2\,t^{10}}{72\,576}+\frac{c1^3\,c3\,d2^2\,t^{10}}{145\,152}+\frac{11\,c1\,c2\,c3\,d2^2\,t^{10}}{725\,760}-\frac{c3^2\,d2^2\,t^{10}}{725\,760}-\frac{c1^2\,c4\,d2^2\,t^{10}}{145\,152}-$$
$$\frac{c2\,c4\,d2^2\,t^{10}}{80\,640}-\frac{c1\,c5\,d2^2\,t^{10}}{362\,880}+\frac{c6\,d2^2\,t^{10}}{362\,880}-\frac{c1^3\,c2\,d1\,d2^2\,t^{10}}{34\,560}+\frac{c1\,c2^2\,d1\,d2^2\,t^{10}}{11\,520}+$$
$$\frac{c1^2\,c3\,d1\,d2^2\,t^{10}}{34\,560}-\frac{c1\,c4\,d1\,d2^2\,t^{10}}{34\,560}-\frac{c1^4\,d1^2\,d2^2\,t^{10}}{57\,600}+\frac{c1^2\,c2\,d1^2\,d2^2\,t^{10}}{14\,400}+$$
$$\frac{c2^2\,d1^2\,d2^2\,t^{10}}{19\,200}+\frac{c1\,c3\,d1^2\,d2^2\,t^{10}}{57\,600}-\frac{c4\,d1^2\,d2^2\,t^{10}}{57\,600}+\frac{c1^4\,d2^3\,t^{10}}{259\,200}-\frac{c1^2\,c2\,d2^3\,t^{10}}{64\,800}-$$
$$\frac{c2^2\,d2^3\,t^{10}}{86\,400}-\frac{c1\,c3\,d2^3\,t^{10}}{259\,200}+\frac{c4\,d2^3\,t^{10}}{259\,200}+\frac{c1^6\,d1\,d3\,t^{10}}{181\,440}-\frac{c1^4\,c2\,d1\,d3\,t^{10}}{30\,240}+$$
$$\frac{11\,c1^2\,c2^2\,d1\,d3\,t^{10}}{362\,880}+\frac{c2^3\,d1\,d3\,t^{10}}{36\,288}+\frac{c1^3\,c3\,d1\,d3\,t^{10}}{72\,576}+\frac{11\,c1\,c2\,c3\,d1\,d3\,t^{10}}{362\,880}-$$
$$\frac{c3^2\,d1\,d3\,t^{10}}{362\,880}-\frac{c1^2\,c4\,d1\,d3\,t^{10}}{72\,576}-\frac{c2\,c4\,d1\,d3\,t^{10}}{40\,320}-\frac{c1\,c5\,d1\,d3\,t^{10}}{181\,440}+\frac{c6\,d1\,d3\,t^{10}}{181\,440}-$$
$$\frac{c1^3\,c2\,d1^2\,d3\,t^{10}}{34\,560}+\frac{c1\,c2^2\,d1^2\,d3\,t^{10}}{11\,520}+\frac{c1^2\,c3\,d1^2\,d3\,t^{10}}{34\,560}-\frac{c1\,c4\,d1^2\,d3\,t^{10}}{34\,560}-$$
$$\frac{c1^4\,d1^3\,d3\,t^{10}}{86\,400}+\frac{c1^2\,c2\,d1^3\,d3\,t^{10}}{21\,600}+\frac{c2^2\,d1^3\,d3\,t^{10}}{28\,800}+\frac{c1\,c3\,d1^3\,d3\,t^{10}}{86\,400}-\frac{c4\,d1^3\,d3\,t^{10}}{86\,400}+$$
$$\frac{c1^3\,c2\,d2\,d3\,t^{10}}{34\,560}-\frac{c1\,c2^2\,d2\,d3\,t^{10}}{11\,520}-\frac{c1^2\,c3\,d2\,d3\,t^{10}}{34\,560}+\frac{c1\,c4\,d2\,d3\,t^{10}}{34\,560}+\frac{c1^4\,d1\,d2\,d3\,t^{10}}{43\,200}-$$
$$\frac{c1^2\,c2\,d1\,d2\,d3\,t^{10}}{10\,800}-\frac{c2^2\,d1\,d2\,d3\,t^{10}}{14\,400}-\frac{c1\,c3\,d1\,d2\,d3\,t^{10}}{43\,200}+\frac{c4\,d1\,d2\,d3\,t^{10}}{43\,200}-$$
$$\frac{c1^4\,d3^2\,t^{10}}{172\,800}+\frac{c1^2\,c2\,d3^2\,t^{10}}{43\,200}+\frac{c2^2\,d3^2\,t^{10}}{57\,600}+\frac{c1\,c3\,d3^2\,t^{10}}{172\,800}-\frac{c4\,d3^2\,t^{10}}{172\,800}-\frac{c1^6\,d4\,t^{10}}{181\,440}+$$
$$\frac{c1^4\,c2\,d4\,t^{10}}{30\,240}-\frac{11\,c1^2\,c2^2\,d4\,t^{10}}{362\,880}-\frac{c2^3\,d4\,t^{10}}{36\,288}-\frac{c1^3\,c3\,d4\,t^{10}}{72\,576}-\frac{11\,c1\,c2\,c3\,d4\,t^{10}}{362\,880}+$$
$$\frac{c3^2\,d4\,t^{10}}{362\,880}+\frac{c1^2\,c4\,d4\,t^{10}}{72\,576}+\frac{c2\,c4\,d4\,t^{10}}{40\,320}+\frac{c1\,c5\,d4\,t^{10}}{181\,440}-\frac{c6\,d4\,t^{10}}{181\,440}+\frac{c1^3\,c2\,d1\,d4\,t^{10}}{34\,560}-$$
$$\frac{c1\,c2^2\,d1\,d4\,t^{10}}{11\,520}-\frac{c1^2\,c3\,d1\,d4\,t^{10}}{34\,560}+\frac{c1\,c4\,d1\,d4\,t^{10}}{34\,560}+\frac{c1^4\,d1^2\,d4\,t^{10}}{86\,400}-\frac{c1^2\,c2\,d1^2\,d4\,t^{10}}{21\,600}-$$
$$\frac{c2^2\,d1^2\,d4\,t^{10}}{28\,800}-\frac{c1\,c3\,d1^2\,d4\,t^{10}}{86\,400}+\frac{c4\,d1^2\,d4\,t^{10}}{86\,400}-\frac{c1^4\,d2\,d4\,t^{10}}{86\,400}+\frac{c1^2\,c2\,d2\,d4\,t^{10}}{21\,600}+$$
$$\frac{c2^2\,d2\,d4\,t^{10}}{28\,800}+\frac{c1\,c3\,d2\,d4\,t^{10}}{86\,400}-\frac{c4\,d2\,d4\,t^{10}}{86\,400}-\frac{c1^3\,c2\,d5\,t^{10}}{34\,560}+\frac{c1\,c2^2\,d5\,t^{10}}{11\,520}+$$
$$\frac{c1^2\,c3\,d5\,t^{10}}{34\,560}-\frac{c1\,c4\,d5\,t^{10}}{34\,560}-\frac{c1^4\,d1\,d5\,t^{10}}{86\,400}+\frac{c1^2\,c2\,d1\,d5\,t^{10}}{21\,600}+\frac{c2^2\,d1\,d5\,t^{10}}{28\,800}+$$

$$\frac{c1\,c3\,d1\,d5\,t^{10}}{86\,400}-\frac{c4\,d1\,d5\,t^{10}}{86\,400}+\frac{c1^4\,d6\,t^{10}}{86\,400}-\frac{c1^2\,c2\,d6\,t^{10}}{21\,600}-\frac{c2^2\,d6\,t^{10}}{28\,800}-\frac{c1\,c3\,d6\,t^{10}}{86\,400}+$$
$$\frac{c4\,d6\,t^{10}}{86\,400}+\frac{c1^6\,d1^5\,t^{11}}{3\,628\,800}-\frac{c1^4\,c2\,d1^5\,t^{11}}{604\,800}+\frac{11\,c1^2\,c2^2\,d1^5\,t^{11}}{7\,257\,600}+\frac{c2^3\,d1^5\,t^{11}}{725\,760}+$$
$$\frac{c1^3\,c3\,d1^5\,t^{11}}{1\,451\,520}+\frac{11\,c1\,c2\,c3\,d1^5\,t^{11}}{7\,257\,600}-\frac{c3^2\,d1^5\,t^{11}}{7\,257\,600}-\frac{c1^2\,c4\,d1^5\,t^{11}}{1\,451\,520}-\frac{c2\,c4\,d1^5\,t^{11}}{806\,400}-$$
$$\frac{c1\,c5\,d1^5\,t^{11}}{3\,628\,800}+\frac{c6\,d1^5\,t^{11}}{3\,628\,800}-\frac{c1^3\,c2\,d1^6\,t^{11}}{1\,036\,800}+\frac{c1\,c2^2\,d1^6\,t^{11}}{345\,600}+\frac{c1^2\,c3\,d1^6\,t^{11}}{1\,036\,800}-$$
$$\frac{c1\,c4\,d1^6\,t^{11}}{1\,036\,800}-\frac{c1^6\,d1^3\,d2\,t^{11}}{725\,760}+\frac{c1^4\,c2\,d1^3\,d2\,t^{11}}{120\,960}-\frac{11\,c1^2\,c2^2\,d1^3\,d2\,t^{11}}{1\,451\,520}-\frac{c2^3\,d1^3\,d2\,t^{11}}{145\,152}-$$
$$\frac{c1^3\,c3\,d1^3\,d2\,t^{11}}{290\,304}-\frac{11\,c1\,c2\,c3\,d1^3\,d2\,t^{11}}{1\,451\,520}+\frac{c3^2\,d1^3\,d2\,t^{11}}{1\,451\,520}+\frac{c1^2\,c4\,d1^3\,d2\,t^{11}}{290\,304}+$$
$$\frac{c2\,c4\,d1^3\,d2\,t^{11}}{161\,280}+\frac{c1\,c5\,d1^3\,d2\,t^{11}}{725\,760}-\frac{c6\,d1^3\,d2\,t^{11}}{725\,760}+\frac{c1^3\,c2\,d1^4\,d2\,t^{11}}{172\,800}-\frac{c1\,c2^2\,d1^4\,d2\,t^{11}}{57\,600}-$$
$$\frac{c1^2\,c3\,d1^4\,d2\,t^{11}}{172\,800}+\frac{c1\,c4\,d1^4\,d2\,t^{11}}{172\,800}+\frac{c1^6\,d1\,d2^2\,t^{11}}{725\,760}-\frac{c1^4\,c2\,d1\,d2^2\,t^{11}}{120\,960}+$$
$$\frac{11\,c1^2\,c2^2\,d1\,d2^2\,t^{11}}{1\,451\,520}+\frac{c2^3\,d1\,d2^2\,t^{11}}{145\,152}+\frac{c1^3\,c3\,d1\,d2^2\,t^{11}}{290\,304}+\frac{11\,c1\,c2\,c3\,d1\,d2^2\,t^{11}}{1\,451\,520}-$$
$$\frac{c3^2\,d1\,d2^2\,t^{11}}{1\,451\,520}-\frac{c1^2\,c4\,d1\,d2^2\,t^{11}}{290\,304}-\frac{c2\,c4\,d1\,d2^2\,t^{11}}{161\,280}-\frac{c1\,c5\,d1\,d2^2\,t^{11}}{725\,760}+\frac{c6\,d1\,d2^2\,t^{11}}{725\,760}-$$
$$\frac{c1^3\,c2\,d1^2\,d2^2\,t^{11}}{115\,200}+\frac{c1\,c2^2\,d1^2\,d2^2\,t^{11}}{38\,400}+\frac{c1^2\,c3\,d1^2\,d2^2\,t^{11}}{115\,200}-\frac{c1\,c4\,d1^2\,d2^2\,t^{11}}{115\,200}+$$
$$\frac{c1^3\,c2\,d2^3\,t^{11}}{518\,400}-\frac{c1\,c2^2\,d2^3\,t^{11}}{172\,800}-\frac{c1^2\,c3\,d2^3\,t^{11}}{518\,400}+\frac{c1\,c4\,d2^3\,t^{11}}{518\,400}+\frac{c1^6\,d1^2\,d3\,t^{11}}{725\,760}-$$
$$\frac{c1^4\,c2\,d1^2\,d3\,t^{11}}{120\,960}+\frac{11\,c1^2\,c2^2\,d1^2\,d3\,t^{11}}{1\,451\,520}+\frac{c2^3\,d1^2\,d3\,t^{11}}{145\,152}+\frac{c1^3\,c3\,d1^2\,d3\,t^{11}}{290\,304}+$$
$$\frac{11\,c1\,c2\,c3\,d1^2\,d3\,t^{11}}{1\,451\,520}-\frac{c3^2\,d1^2\,d3\,t^{11}}{1\,451\,520}-\frac{c1^2\,c4\,d1^2\,d3\,t^{11}}{290\,304}-\frac{c2\,c4\,d1^2\,d3\,t^{11}}{161\,280}-$$
$$\frac{c1\,c5\,d1^2\,d3\,t^{11}}{725\,760}+\frac{c6\,d1^2\,d3\,t^{11}}{725\,760}-\frac{c1^3\,c2\,d1^3\,d3\,t^{11}}{172\,800}+\frac{c1\,c2^2\,d1^3\,d3\,t^{11}}{57\,600}+\frac{c1^2\,c3\,d1^3\,d3\,t^{11}}{172\,800}-$$
$$\frac{c1\,c4\,d1^3\,d3\,t^{11}}{172\,800}-\frac{c1^6\,d2\,d3\,t^{11}}{725\,760}+\frac{c1^4\,c2\,d2\,d3\,t^{11}}{120\,960}-\frac{11\,c1^2\,c2^2\,d2\,d3\,t^{11}}{1\,451\,520}-$$
$$\frac{c2^3\,d2\,d3\,t^{11}}{145\,152}-\frac{c1^3\,c3\,d2\,d3\,t^{11}}{290\,304}-\frac{11\,c1\,c2\,c3\,d2\,d3\,t^{11}}{1\,451\,520}+\frac{c3^2\,d2\,d3\,t^{11}}{1\,451\,520}+$$
$$\frac{c1^2\,c4\,d2\,d3\,t^{11}}{290\,304}+\frac{c2\,c4\,d2\,d3\,t^{11}}{161\,280}+\frac{c1\,c5\,d2\,d3\,t^{11}}{725\,760}-\frac{c6\,d2\,d3\,t^{11}}{725\,760}+\frac{c1^3\,c2\,d1\,d2\,d3\,t^{11}}{86\,400}-$$
$$\frac{c1\,c2^2\,d1\,d2\,d3\,t^{11}}{28\,800}-\frac{c1^2\,c3\,d1\,d2\,d3\,t^{11}}{86\,400}+\frac{c1\,c4\,d1\,d2\,d3\,t^{11}}{86\,400}-\frac{c1^3\,c2\,d3^2\,t^{11}}{345\,600}+$$
$$\frac{c1\,c2^2\,d3^2\,t^{11}}{115\,200}+\frac{c1^2\,c3\,d3^2\,t^{11}}{345\,600}-\frac{c1\,c4\,d3^2\,t^{11}}{345\,600}-\frac{c1^6\,d1\,d4\,t^{11}}{725\,760}+\frac{c1^4\,c2\,d1\,d4\,t^{11}}{120\,960}-$$
$$\frac{11\,c1^2\,c2^2\,d1\,d4\,t^{11}}{1\,451\,520}-\frac{c2^3\,d1\,d4\,t^{11}}{145\,152}-\frac{c1^3\,c3\,d1\,d4\,t^{11}}{290\,304}-\frac{11\,c1\,c2\,c3\,d1\,d4\,t^{11}}{1\,451\,520}+$$
$$\frac{c3^2\,d1\,d4\,t^{11}}{1\,451\,520}+\frac{c1^2\,c4\,d1\,d4\,t^{11}}{290\,304}+\frac{c2\,c4\,d1\,d4\,t^{11}}{161\,280}+\frac{c1\,c5\,d1\,d4\,t^{11}}{725\,760}-\frac{c6\,d1\,d4\,t^{11}}{725\,760}+$$

$$\frac{c1^3\,c2\,d1^2\,d4\,t^{11}}{172\,800}-\frac{c1\,c2^2\,d1^2\,d4\,t^{11}}{57\,600}-\frac{c1^2\,c3\,d1^2\,d4\,t^{11}}{172\,800}+\frac{c1\,c4\,d1^2\,d4\,t^{11}}{172\,800}-$$
$$\frac{c1^3\,c2\,d2\,d4\,t^{11}}{172\,800}+\frac{c1\,c2^2\,d2\,d4\,t^{11}}{57\,600}+\frac{c1^2\,c3\,d2\,d4\,t^{11}}{172\,800}-\frac{c1\,c4\,d2\,d4\,t^{11}}{172\,800}+\frac{c1^6\,d5\,t^{11}}{725\,760}-$$
$$\frac{c1^4\,c2\,d5\,t^{11}}{120\,960}+\frac{11\,c1^2\,c2^2\,d5\,t^{11}}{1\,451\,520}+\frac{c2^3\,d5\,t^{11}}{145\,152}+\frac{c1^3\,c3\,d5\,t^{11}}{290\,304}+\frac{11\,c1\,c2\,c3\,d5\,t^{11}}{1\,451\,520}-$$
$$\frac{c3^2\,d5\,t^{11}}{1\,451\,520}-\frac{c1^2\,c4\,d5\,t^{11}}{290\,304}-\frac{c2\,c4\,d5\,t^{11}}{161\,280}-\frac{c1\,c5\,d5\,t^{11}}{725\,760}+\frac{c6\,d5\,t^{11}}{725\,760}-\frac{c1^3\,c2\,d1\,d5\,t^{11}}{172\,800}+$$
$$\frac{c1\,c2^2\,d1\,d5\,t^{11}}{57\,600}+\frac{c1^2\,c3\,d1\,d5\,t^{11}}{172\,800}-\frac{c1\,c4\,d1\,d5\,t^{11}}{172\,800}+\frac{c1^3\,c2\,d6\,t^{11}}{172\,800}-\frac{c1\,c2^2\,d6\,t^{11}}{57\,600}-$$
$$\frac{c1^2\,c3\,d6\,t^{11}}{172\,800}+\frac{c1\,c4\,d6\,t^{11}}{172\,800}+\frac{c1^6\,d1^6\,t^{12}}{21\,772\,800}-\frac{c1^4\,c2\,d1^6\,t^{12}}{3\,628\,800}+\frac{11\,c1^2\,c2^2\,d1^6\,t^{12}}{43\,545\,600}+$$
$$\frac{c2^3\,d1^6\,t^{12}}{4\,354\,560}+\frac{c1^3\,c3\,d1^6\,t^{12}}{8\,709\,120}+\frac{11\,c1\,c2\,c3\,d1^6\,t^{12}}{43\,545\,600}-\frac{c3^2\,d1^6\,t^{12}}{43\,545\,600}-\frac{c1^2\,c4\,d1^6\,t^{12}}{8\,709\,120}-$$
$$\frac{c2\,c4\,d1^6\,t^{12}}{4\,838\,400}-\frac{c1\,c5\,d1^6\,t^{12}}{21\,772\,800}+\frac{c6\,d1^6\,t^{12}}{21\,772\,800}-\frac{c1^6\,d1^4\,d2\,t^{12}}{3\,628\,800}+\frac{c1^4\,c2\,d1^4\,d2\,t^{12}}{604\,800}-$$
$$\frac{11\,c1^2\,c2^2\,d1^4\,d2\,t^{12}}{7\,257\,600}-\frac{c2^3\,d1^4\,d2\,t^{12}}{725\,760}-\frac{c1^3\,c3\,d1^4\,d2\,t^{12}}{1\,451\,520}-\frac{11\,c1\,c2\,c3\,d1^4\,d2\,t^{12}}{7\,257\,600}+$$
$$\frac{c3^2\,d1^4\,d2\,t^{12}}{7\,257\,600}+\frac{c1^2\,c4\,d1^4\,d2\,t^{12}}{1\,451\,520}+\frac{c2\,c4\,d1^4\,d2\,t^{12}}{806\,400}+\frac{c1\,c5\,d1^4\,d2\,t^{12}}{3\,628\,800}-$$
$$\frac{c6\,d1^4\,d2\,t^{12}}{3\,628\,800}+\frac{c1^6\,d1^2\,d2^2\,t^{12}}{2\,419\,200}-\frac{c1^4\,c2\,d1^2\,d2^2\,t^{12}}{403\,200}+\frac{11\,c1^2\,c2^2\,d1^2\,d2^2\,t^{12}}{4\,838\,400}+$$
$$\frac{c2^3\,d1^2\,d2^2\,t^{12}}{483\,840}+\frac{c1^3\,c3\,d1^2\,d2^2\,t^{12}}{967\,680}+\frac{11\,c1\,c2\,c3\,d1^2\,d2^2\,t^{12}}{4\,838\,400}-\frac{c3^2\,d1^2\,d2^2\,t^{12}}{4\,838\,400}-$$
$$\frac{c1^2\,c4\,d1^2\,d2^2\,t^{12}}{967\,680}-\frac{c2\,c4\,d1^2\,d2^2\,t^{12}}{537\,600}-\frac{c1\,c5\,d1^2\,d2^2\,t^{12}}{2\,419\,200}+\frac{c6\,d1^2\,d2^2\,t^{12}}{2\,419\,200}-$$
$$\frac{c1^6\,d2^3\,t^{12}}{10\,886\,400}+\frac{c1^4\,c2\,d2^3\,t^{12}}{1\,814\,400}-\frac{11\,c1^2\,c2^2\,d2^3\,t^{12}}{21\,772\,800}-\frac{c2^3\,d2^3\,t^{12}}{2\,177\,280}-\frac{c1^3\,c3\,d2^3\,t^{12}}{4\,354\,560}-$$
$$\frac{11\,c1\,c2\,c3\,d2^3\,t^{12}}{21\,772\,800}+\frac{c3^2\,d2^3\,t^{12}}{21\,772\,800}+\frac{c1^2\,c4\,d2^3\,t^{12}}{4\,354\,560}+\frac{c2\,c4\,d2^3\,t^{12}}{2\,419\,200}+\frac{c1\,c5\,d2^3\,t^{12}}{10\,886\,400}-$$
$$\frac{c6\,d2^3\,t^{12}}{10\,886\,400}+\frac{c1^6\,d1^3\,d3\,t^{12}}{3\,628\,800}-\frac{c1^4\,c2\,d1^3\,d3\,t^{12}}{604\,800}+\frac{11\,c1^2\,c2^2\,d1^3\,d3\,t^{12}}{7\,257\,600}+\frac{c2^3\,d1^3\,d3\,t^{12}}{725\,760}+$$
$$\frac{c1^3\,c3\,d1^3\,d3\,t^{12}}{1\,451\,520}+\frac{11\,c1\,c2\,c3\,d1^3\,d3\,t^{12}}{7\,257\,600}-\frac{c3^2\,d1^3\,d3\,t^{12}}{7\,257\,600}-\frac{c1^2\,c4\,d1^3\,d3\,t^{12}}{1\,451\,520}-$$
$$\frac{c2\,c4\,d1^3\,d3\,t^{12}}{806\,400}-\frac{c1\,c5\,d1^3\,d3\,t^{12}}{3\,628\,800}+\frac{c6\,d1^3\,d3\,t^{12}}{3\,628\,800}-\frac{c1^6\,d1\,d2\,d3\,t^{12}}{1\,814\,400}+$$
$$\frac{c1^4\,c2\,d1\,d2\,d3\,t^{12}}{302\,400}-\frac{11\,c1^2\,c2^2\,d1\,d2\,d3\,t^{12}}{3\,628\,800}-\frac{c2^3\,d1\,d2\,d3\,t^{12}}{362\,880}-\frac{c1^3\,c3\,d1\,d2\,d3\,t^{12}}{725\,760}-$$
$$\frac{11\,c1\,c2\,c3\,d1\,d2\,d3\,t^{12}}{3\,628\,800}+\frac{c3^2\,d1\,d2\,d3\,t^{12}}{3\,628\,800}+\frac{c1^2\,c4\,d1\,d2\,d3\,t^{12}}{725\,760}+\frac{c2\,c4\,d1\,d2\,d3\,t^{12}}{403\,200}+$$
$$\frac{c1\,c5\,d1\,d2\,d3\,t^{12}}{1\,814\,400}-\frac{c6\,d1\,d2\,d3\,t^{12}}{1\,814\,400}+\frac{c1^6\,d3^2\,t^{12}}{7\,257\,600}-\frac{c1^4\,c2\,d3^2\,t^{12}}{1\,209\,600}+\frac{11\,c1^2\,c2^2\,d3^2\,t^{12}}{14\,515\,200}+$$
$$\frac{c2^3\,d3^2\,t^{12}}{1\,451\,520}+\frac{c1^3\,c3\,d3^2\,t^{12}}{2\,903\,040}+\frac{11\,c1\,c2\,c3\,d3^2\,t^{12}}{14\,515\,200}-\frac{c3^2\,d3^2\,t^{12}}{14\,515\,200}-\frac{c1^2\,c4\,d3^2\,t^{12}}{2\,903\,040}-$$

$$\frac{c2\,c4\,d3^2\,t^{12}}{1\,612\,800}-\frac{c1\,c5\,d3^2\,t^{12}}{7\,257\,600}+\frac{c6\,d3^2\,t^{12}}{7\,257\,600}-\frac{c1^6\,d1^2\,d4\,t^{12}}{3\,628\,800}+\frac{c1^4\,c2\,d1^2\,d4\,t^{12}}{604\,800}-$$
$$\frac{11\,c1^2\,c2^2\,d1^2\,d4\,t^{12}}{7\,257\,600}-\frac{c2^3\,d1^2\,d4\,t^{12}}{725\,760}-\frac{c1^3\,c3\,d1^2\,d4\,t^{12}}{1\,451\,520}-\frac{11\,c1\,c2\,c3\,d1^2\,d4\,t^{12}}{7\,257\,600}+$$
$$\frac{c3^2\,d1^2\,d4\,t^{12}}{7\,257\,600}+\frac{c1^2\,c4\,d1^2\,d4\,t^{12}}{1\,451\,520}+\frac{c2\,c4\,d1^2\,d4\,t^{12}}{806\,400}+\frac{c1\,c5\,d1^2\,d4\,t^{12}}{3\,628\,800}-$$
$$\frac{c6\,d1^2\,d4\,t^{12}}{3\,628\,800}+\frac{c1^6\,d2\,d4\,t^{12}}{3\,628\,800}-\frac{c1^4\,c2\,d2\,d4\,t^{12}}{604\,800}+\frac{11\,c1^2\,c2^2\,d2\,d4\,t^{12}}{7\,257\,600}+\frac{c2^3\,d2\,d4\,t^{12}}{725\,760}+$$
$$\frac{c1^3\,c3\,d2\,d4\,t^{12}}{1\,451\,520}+\frac{11\,c1\,c2\,c3\,d2\,d4\,t^{12}}{7\,257\,600}-\frac{c3^2\,d2\,d4\,t^{12}}{7\,257\,600}-\frac{c1^2\,c4\,d2\,d4\,t^{12}}{1\,451\,520}-$$
$$\frac{c2\,c4\,d2\,d4\,t^{12}}{806\,400}-\frac{c1\,c5\,d2\,d4\,t^{12}}{3\,628\,800}+\frac{c6\,d2\,d4\,t^{12}}{3\,628\,800}+\frac{c1^6\,d1\,d5\,t^{12}}{3\,628\,800}-\frac{c1^4\,c2\,d1\,d5\,t^{12}}{604\,800}+$$
$$\frac{11\,c1^2\,c2^2\,d1\,d5\,t^{12}}{7\,257\,600}+\frac{c2^3\,d1\,d5\,t^{12}}{725\,760}+\frac{c1^3\,c3\,d1\,d5\,t^{12}}{1\,451\,520}+\frac{11\,c1\,c2\,c3\,d1\,d5\,t^{12}}{7\,257\,600}-$$
$$\frac{c3^2\,d1\,d5\,t^{12}}{7\,257\,600}-\frac{c1^2\,c4\,d1\,d5\,t^{12}}{1\,451\,520}-\frac{c2\,c4\,d1\,d5\,t^{12}}{806\,400}-\frac{c1\,c5\,d1\,d5\,t^{12}}{3\,628\,800}+\frac{c6\,d1\,d5\,t^{12}}{3\,628\,800}-$$
$$\frac{c1^6\,d6\,t^{12}}{3\,628\,800}+\frac{c1^4\,c2\,d6\,t^{12}}{604\,800}-\frac{11\,c1^2\,c2^2\,d6\,t^{12}}{7\,257\,600}-\frac{c2^3\,d6\,t^{12}}{725\,760}-\frac{c1^3\,c3\,d6\,t^{12}}{1\,451\,520}-$$
$$\frac{11\,c1\,c2\,c3\,d6\,t^{12}}{7\,257\,600}+\frac{c3^2\,d6\,t^{12}}{7\,257\,600}+\frac{c1^2\,c4\,d6\,t^{12}}{1\,451\,520}+\frac{c2\,c4\,d6\,t^{12}}{806\,400}+\frac{c1\,c5\,d6\,t^{12}}{3\,628\,800}-\frac{c6\,d6\,t^{12}}{3\,628\,800}$$

In[70]:=
```
SeriesCoefficient[%69, {t, 0, 6}]
```

Out[70]=

$$\frac{c1^6}{5040}-\frac{c1^4\,c2}{840}+\frac{11\,c1^2\,c2^2}{10\,080}+\frac{c2^3}{1008}+\frac{c1^3\,c3}{2016}+\frac{11\,c1\,c2\,c3}{10\,080}-\frac{c3^2}{10\,080}-\frac{c1^2\,c4}{2016}-\frac{c2\,c4}{1120}-$$
$$\frac{c1\,c5}{5040}+\frac{c6}{5040}-\frac{c1^3\,c2\,d1}{1440}+\frac{1}{480}c1\,c2^2\,d1+\frac{c1^2\,c3\,d1}{1440}-\frac{c1\,c4\,d1}{1440}-\frac{c1^4\,d1^2}{1440}+$$
$$\frac{1}{360}c1^2\,c2\,d1^2+\frac{c2^2\,d1^2}{480}+\frac{c1\,c3\,d1^2}{1440}-\frac{c4\,d1^2}{1440}+\frac{1}{144}c1\,c2\,d1^3+\frac{c1^2\,d1^4}{288}+\frac{c2\,d1^4}{288}+$$
$$\frac{c1\,d1^5}{240}+\frac{d1^6}{720}+\frac{c1^4\,d2}{720}-\frac{1}{180}c1^2\,c2\,d2-\frac{c2^2\,d2}{240}-\frac{c1\,c3\,d2}{720}+\frac{c4\,d2}{720}-\frac{1}{48}c1\,c2\,d1\,d2-$$
$$\frac{1}{72}c1^2\,d1^2\,d2-\frac{1}{72}c2\,d1^2\,d2-\frac{1}{48}c1\,d1^3\,d2-\frac{d1^4\,d2}{120}+\frac{c1^2\,d2^2}{144}+\frac{c2\,d2^2}{144}+\frac{1}{48}c1\,d1\,d2^2+$$
$$\frac{d1^2\,d2^2}{80}-\frac{d2^3}{360}+\frac{c1\,c2\,d3}{48}+\frac{1}{72}c1^2\,d1\,d3+\frac{c2\,d1\,d3}{72}+\frac{1}{48}c1\,d1^2\,d3+\frac{d1^3\,d3}{120}-\frac{c1\,d2\,d3}{48}-$$
$$\frac{d1\,d2\,d3}{60}+\frac{d3^2}{240}-\frac{c1^2\,d4}{72}-\frac{c2\,d4}{72}-\frac{c1\,d1\,d4}{48}-\frac{d1^2\,d4}{120}+\frac{d2\,d4}{120}+\frac{c1\,d5}{48}+\frac{d1\,d5}{120}-\frac{d6}{120}$$

In[71]:=
```
Expand[%70 /. {d1 → e1 + 6 * t * H, d2 → e2 + 5 * e1 * t * H + 15 * t^2 * H^2,
   d3 → e3 + 4 * e2 * t * H + 10 * e1 * t^2 * H^2 + 20 * t^3 * H^3,
   d4 → e4 + 3 * e3 * t * H + 6 * e2 * t^2 * H^2 + 10 * e1 * t^3 * H^3 + 15 * t^4 * H^4,
   d5 → e5 + 2 * e4 * t * H + 3 * e3 * t^2 * H^2 + 4 * e2 * t^3 * H^3 +
     5 * e1 * t^4 * H^4 + 6 * t^5 * H^5, d6 → e6 + e5 * t * H + e4 * t^2 * H^2 +
     e3 * t^3 * H^3 + e2 * t^4 * H^4 + e1 * t^5 * H^5 + t^6 * H^6}]
```

Out[71]=

$$\frac{c1^6}{5040} - \frac{c1^4\,c2}{840} + \frac{11\,c1^2\,c2^2}{10\,080} + \frac{c2^3}{1008} + \frac{c1^3\,c3}{2016} + \frac{11\,c1\,c2\,c3}{10\,080} - \frac{c3^2}{10\,080} - \frac{c1^2\,c4}{2016} - \frac{c2\,c4}{1120} -$$
$$\frac{c1\,c5}{5040} + \frac{c6}{5040} - \frac{c1^3\,c2\,e1}{1440} + \frac{1}{480}\,c1\,c2^2\,e1 + \frac{c1^2\,c3\,e1}{1440} - \frac{c1\,c4\,e1}{1440} - \frac{c1^4\,e1^2}{1440} +$$
$$\frac{1}{360}\,c1^2\,c2\,e1^2 + \frac{c2^2\,e1^2}{480} + \frac{c1\,c3\,e1^2}{1440} - \frac{c4\,e1^2}{1440} + \frac{1}{144}\,c1\,c2\,e1^3 + \frac{c1^2\,e1^4}{288} + \frac{c2\,e1^4}{288} +$$
$$\frac{c1\,e1^5}{240} + \frac{e1^6}{720} + \frac{c1^4\,e2}{720} - \frac{1}{180}\,c1^2\,c2\,e2 - \frac{c2^2\,e2}{240} - \frac{c1\,c3\,e2}{720} + \frac{c4\,e2}{720} - \frac{1}{48}\,c1\,c2\,e1\,e2 -$$
$$\frac{1}{72}\,c1^2\,e1^2\,e2 - \frac{1}{72}\,c2\,e1^2\,e2 - \frac{1}{48}\,c1\,e1^3\,e2 - \frac{e1^4\,e2}{120} + \frac{c1^2\,e2^2}{144} + \frac{c2\,e2^2}{144} + \frac{1}{48}\,c1\,e1\,e2^2 +$$
$$\frac{e1^2\,e2^2}{80} - \frac{e2^3}{360} + \frac{c1\,c2\,e3}{48} + \frac{1}{72}\,c1^2\,e1\,e3 + \frac{c2\,e1\,e3}{72} + \frac{1}{48}\,c1\,e1^2\,e3 + \frac{e1^3\,e3}{120} - \frac{c1\,e2\,e3}{48} -$$
$$\frac{e1\,e2\,e3}{60} + \frac{e3^2}{240} - \frac{c1^2\,e4}{72} - \frac{c2\,e4}{72} - \frac{c1\,e1\,e4}{48} - \frac{e1^2\,e4}{120} + \frac{e2\,e4}{120} + \frac{c1\,e5}{48} + \frac{e1\,e5}{120} - \frac{e6}{120} -$$
$$\frac{1}{240}\,c1^3\,c2\,H\,t + \frac{1}{80}\,c1\,c2^2\,H\,t + \frac{1}{240}\,c1^2\,c3\,H\,t - \frac{1}{240}\,c1\,c4\,H\,t - \frac{1}{720}\,c1^4\,e1\,H\,t +$$
$$\frac{1}{180}\,c1^2\,c2\,e1\,H\,t + \frac{1}{240}\,c2^2\,e1\,H\,t + \frac{1}{720}\,c1\,c3\,e1\,H\,t - \frac{1}{720}\,c4\,e1\,H\,t + \frac{1}{48}\,c1\,c2\,e1^2\,H\,t +$$
$$\frac{1}{72}\,c1^2\,e1^3\,H\,t + \frac{1}{72}\,c2\,e1^3\,H\,t + \frac{1}{48}\,c1\,e1^4\,H\,t + \frac{1}{120}\,e1^5\,H\,t - \frac{1}{24}\,c1\,c2\,e2\,H\,t -$$
$$\frac{1}{24}\,c1^2\,e1\,e2\,H\,t - \frac{1}{24}\,c2\,e1\,e2\,H\,t - \frac{1}{12}\,c1\,e1^2\,e2\,H\,t - \frac{1}{24}\,e1^3\,e2\,H\,t + \frac{1}{24}\,c1\,e2^2\,H\,t +$$
$$\frac{1}{24}\,e1\,e2^2\,H\,t + \frac{1}{24}\,c1^2\,e3\,H\,t + \frac{1}{24}\,c2\,e3\,H\,t + \frac{1}{12}\,c1\,e1\,e3\,H\,t + \frac{1}{24}\,e1^2\,e3\,H\,t -$$
$$\frac{1}{24}\,e2\,e3\,H\,t - \frac{1}{12}\,c1\,e4\,H\,t - \frac{1}{24}\,e1\,e4\,H\,t + \frac{e5\,H\,t}{24} - \frac{1}{240}\,c1^4\,H^2\,t^2 + \frac{1}{60}\,c1^2\,c2\,H^2\,t^2 +$$
$$\frac{1}{80}\,c2^2\,H^2\,t^2 + \frac{1}{240}\,c1\,c3\,H^2\,t^2 - \frac{1}{240}\,c4\,H^2\,t^2 + \frac{1}{48}\,c1\,c2\,e1\,H^2\,t^2 + \frac{1}{48}\,c1^2\,e1^2\,H^2\,t^2 +$$
$$\frac{1}{48}\,c2\,e1^2\,H^2\,t^2 + \frac{1}{24}\,c1\,e1^3\,H^2\,t^2 + \frac{1}{48}\,e1^4\,H^2\,t^2 - \frac{1}{24}\,c1^2\,e2\,H^2\,t^2 - \frac{1}{24}\,c2\,e2\,H^2\,t^2 -$$
$$\frac{1}{8}\,c1\,e1\,e2\,H^2\,t^2 - \frac{1}{12}\,e1^2\,e2\,H^2\,t^2 + \frac{1}{24}\,e2^2\,H^2\,t^2 + \frac{1}{8}\,c1\,e3\,H^2\,t^2 + \frac{1}{12}\,e1\,e3\,H^2\,t^2 -$$
$$\frac{1}{12}\,e4\,H^2\,t^2 + \frac{1}{24}\,c1\,c2\,H^3\,t^3 + \frac{1}{72}\,c1^2\,e1\,H^3\,t^3 + \frac{1}{72}\,c2\,e1\,H^3\,t^3 + \frac{1}{24}\,c1\,e1^2\,H^3\,t^3 +$$
$$\frac{1}{36}\,e1^3\,H^3\,t^3 - \frac{1}{12}\,c1\,e2\,H^3\,t^3 - \frac{1}{12}\,e1\,e2\,H^3\,t^3 + \frac{1}{12}\,e3\,H^3\,t^3 + \frac{1}{48}\,c1^2\,H^4\,t^4 + \frac{1}{48}\,c2\,H^4\,t^4 +$$
$$\frac{1}{48}\,c1\,e1\,H^4\,t^4 + \frac{1}{48}\,e1^2\,H^4\,t^4 - \frac{1}{24}\,e2\,H^4\,t^4 + \frac{1}{40}\,c1\,H^5\,t^5 + \frac{1}{120}\,e1\,H^5\,t^5 + \frac{H^6\,t^6}{120}$$

In[72]:=
```
Expand[(1 + (a + b) * t) * (1 + (a + c) * t) *
   (1 + (a + d) * t) * (1 + (b + c) * t) * (1 + (b + d) * t) * (1 + (c + d) * t)]
```

Out[72]=
$$1 + 3\,a\,t + 3\,b\,t + 3\,c\,t + 3\,d\,t + 3\,a^2\,t^2 + 8\,a\,b\,t^2 + 3\,b^2\,t^2 + 8\,a\,c\,t^2 + 8\,b\,c\,t^2 + 3\,c^2\,t^2 + 8\,a\,d\,t^2 + 8\,b\,d\,t^2 + 8\,c\,d\,t^2 + 3\,d^2\,t^2 + a^3\,t^3 + 7\,a^2\,b\,t^3 + 7\,a\,b^2\,t^3 + b^3\,t^3 + 7\,a^2\,c\,t^3 + 18\,a\,b\,c\,t^3 + 7\,b^2\,c\,t^3 + 7\,a\,c^2\,t^3 + 7\,b\,c^2\,t^3 + c^3\,t^3 + 7\,a^2\,d\,t^3 + 18\,a\,b\,d\,t^3 + 7\,b^2\,d\,t^3 + 18\,a\,c\,d\,t^3 + 18\,b\,c\,d\,t^3 + 7\,c^2\,d\,t^3 + 7\,a\,d^2\,t^3 + 7\,b\,d^2\,t^3 + 7\,c\,d^2\,t^3 + d^3\,t^3 + 2\,a^3\,b\,t^4 + 5\,a^2\,b^2\,t^4 + 2\,a\,b^3\,t^4 + 2\,a^3\,c\,t^4 + 13\,a^2\,b\,c\,t^4 + 13\,a\,b^2\,c\,t^4 + 2\,b^3\,c\,t^4 + 5\,a^2\,c^2\,t^4 + 13\,a\,b\,c^2\,t^4 + 5\,b^2\,c^2\,t^4 + 2\,a\,c^3\,t^4 + 2\,b\,c^3\,t^4 + 2\,a^3\,d\,t^4 + 13\,a^2\,b\,d\,t^4 + 13\,a\,b^2\,d\,t^4 + 2\,b^3\,d\,t^4 + 13\,a^2\,c\,d\,t^4 + 30\,a\,b\,c\,d\,t^4 + 13\,b^2\,c\,d\,t^4 + 13\,a\,c^2\,d\,t^4 + 13\,b\,c^2\,d\,t^4 + 2\,c^3\,d\,t^4 + 5\,a^2\,d^2\,t^4 + 13\,a\,b\,d^2\,t^4 + 5\,b^2\,d^2\,t^4 + 13\,a\,c\,d^2\,t^4 + 13\,b\,c\,d^2\,t^4 + 5\,c^2\,d^2\,t^4 + 2\,a\,d^3\,t^4 + 2\,b\,d^3\,t^4 + 2\,c\,d^3\,t^4 + a^3\,b^2\,t^5 + a^2\,b^3\,t^5 + 3\,a^3\,b\,c\,t^5 + 7\,a^2\,b^2\,c\,t^5 + 3\,a\,b^3\,c\,t^5 + a^3\,c^2\,t^5 + 7\,a^2\,b\,c^2\,t^5 + 7\,a\,b^2\,c^2\,t^5 + b^3\,c^2\,t^5 + a^2\,c^3\,t^5 + 3\,a\,b\,c^3\,t^5 + b^2\,c^3\,t^5 + 3\,a^3\,b\,d\,t^5 + 7\,a^2\,b^2\,d\,t^5 + 3\,a\,b^3\,d\,t^5 + 3\,a^3\,c\,d\,t^5 + 15\,a^2\,b\,c\,d\,t^5 + 15\,a\,b^2\,c\,d\,t^5 + 3\,b^3\,c\,d\,t^5 + 7\,a^2\,c^2\,d\,t^5 + 15\,a\,b\,c^2\,d\,t^5 + 7\,b^2\,c^2\,d\,t^5 + 3\,a\,c^3\,d\,t^5 + 3\,b\,c^3\,d\,t^5 + a^3\,d^2\,t^5 + 7\,a^2\,b\,d^2\,t^5 + 7\,a\,b^2\,d^2\,t^5 + b^3\,d^2\,t^5 + 7\,a^2\,c\,d^2\,t^5 + 15\,a\,b\,c\,d^2\,t^5 + 7\,b^2\,c\,d^2\,t^5 + 7\,a\,c^2\,d^2\,t^5 + 7\,b\,c^2\,d^2\,t^5 + c^3\,d^2\,t^5 + a^2\,d^3\,t^5 + 3\,a\,b\,d^3\,t^5 + b^2\,d^3\,t^5 + 3\,a\,c\,d^3\,t^5 + 3\,b\,c\,d^3\,t^5 + c^2\,d^3\,t^5 + a^3\,b^2\,c\,t^6 + a^2\,b^3\,c\,t^6 + a^3\,b\,c^2\,t^6 + 2\,a^2\,b^2\,c^2\,t^6 + a\,b^3\,c^2\,t^6 + a^2\,b\,c^3\,t^6 + a\,b^2\,c^3\,t^6 + a^3\,b^2\,d\,t^6 + a^2\,b^3\,d\,t^6 + 2\,a^3\,b\,c\,d\,t^6 + 4\,a^2\,b^2\,c\,d\,t^6 + 2\,a\,b^3\,c\,d\,t^6 + a^3\,c^2\,d\,t^6 + 4\,a^2\,b\,c^2\,d\,t^6 + 4\,a\,b^2\,c^2\,d\,t^6 + b^3\,c^2\,d\,t^6 + a^2\,c^3\,d\,t^6 + 2\,a\,b\,c^3\,d\,t^6 + b^2\,c^3\,d\,t^6 + a^3\,b\,d^2\,t^6 + 2\,a^2\,b^2\,d^2\,t^6 + a\,b^3\,d^2\,t^6 + a^3\,c\,d^2\,t^6 + 4\,a^2\,b\,c\,d^2\,t^6 + 4\,a\,b^2\,c\,d^2\,t^6 + b^3\,c\,d^2\,t^6 + 2\,a^2\,c^2\,d^2\,t^6 + 4\,a\,b\,c^2\,d^2\,t^6 + 2\,b^2\,c^2\,d^2\,t^6 + a\,c^3\,d^2\,t^6 + b\,c^3\,d^2\,t^6 + a^2\,b\,d^3\,t^6 + a\,b^2\,d^3\,t^6 + a^2\,c\,d^3\,t^6 + 2\,a\,b\,c\,d^3\,t^6 + b^2\,c\,d^3\,t^6 + a\,c^2\,d^3\,t^6 + b\,c^2\,d^3\,t^6$$

In[73]:=
```
G6 = SeriesCoefficient[%72, {t, 0, 6}]
```

Out[73]=
$$a^3\,b^2\,c + a^2\,b^3\,c + a^3\,b\,c^2 + 2\,a^2\,b^2\,c^2 + a\,b^3\,c^2 + a^2\,b\,c^3 + a\,b^2\,c^3 + a^3\,b^2\,d + a^2\,b^3\,d + 2\,a^3\,b\,c\,d + 4\,a^2\,b^2\,c\,d + 2\,a\,b^3\,c\,d + a^3\,c^2\,d + 4\,a^2\,b\,c^2\,d + 4\,a\,b^2\,c^2\,d + b^3\,c^2\,d + a^2\,c^3\,d + 2\,a\,b\,c^3\,d + b^2\,c^3\,d + a^3\,b\,d^2 + 2\,a^2\,b^2\,d^2 + a\,b^3\,d^2 + a^3\,c\,d^2 + 4\,a^2\,b\,c\,d^2 + 4\,a\,b^2\,c\,d^2 + b^3\,c\,d^2 + 2\,a^2\,c^2\,d^2 + 4\,a\,b\,c^2\,d^2 + 2\,b^2\,c^2\,d^2 + a\,c^3\,d^2 + b\,c^3\,d^2 + a^2\,b\,d^3 + a\,b^2\,d^3 + a^2\,c\,d^3 + 2\,a\,b\,c\,d^3 + b^2\,c\,d^3 + a\,c^2\,d^3 + b\,c^2\,d^3$$

In[74]:=
```
G5 = SeriesCoefficient[%72, {t, 0, 5}]
```

Out[74]=
$$a^3\,b^2 + a^2\,b^3 + 3\,a^3\,b\,c + 7\,a^2\,b^2\,c + 3\,a\,b^3\,c + a^3\,c^2 + 7\,a^2\,b\,c^2 + 7\,a\,b^2\,c^2 + b^3\,c^2 + a^2\,c^3 + 3\,a\,b\,c^3 + b^2\,c^3 + 3\,a^3\,b\,d + 7\,a^2\,b^2\,d + 3\,a\,b^3\,d + 3\,a^3\,c\,d + 15\,a^2\,b\,c\,d + 15\,a\,b^2\,c\,d + 3\,b^3\,c\,d + 7\,a^2\,c^2\,d + 15\,a\,b\,c^2\,d + 7\,b^2\,c^2\,d + 3\,a\,c^3\,d + 3\,b\,c^3\,d + a^3\,d^2 + 7\,a^2\,b\,d^2 + 7\,a\,b^2\,d^2 + b^3\,d^2 + 7\,a^2\,c\,d^2 + 15\,a\,b\,c\,d^2 + 7\,b^2\,c\,d^2 + 7\,a\,c^2\,d^2 + 7\,b\,c^2\,d^2 + c^3\,d^2 + a^2\,d^3 + 3\,a\,b\,d^3 + b^2\,d^3 + 3\,a\,c\,d^3 + 3\,b\,c\,d^3 + c^2\,d^3$$

In[75]:=
```
G4 = SeriesCoefficient[%72, {t, 0, 4}]
```

Out[75]=
$$2\,a^3\,b + 5\,a^2\,b^2 + 2\,a\,b^3 + 2\,a^3\,c + 13\,a^2\,b\,c + 13\,a\,b^2\,c + 2\,b^3\,c + 5\,a^2\,c^2 + 13\,a\,b\,c^2 + 5\,b^2\,c^2 + 2\,a\,c^3 + 2\,b\,c^3 + 2\,a^3\,d + 13\,a^2\,b\,d + 13\,a\,b^2\,d + 2\,b^3\,d + 13\,a^2\,c\,d + 30\,a\,b\,c\,d + 13\,b^2\,c\,d + 13\,a\,c^2\,d + 13\,b\,c^2\,d + 2\,c^3\,d + 5\,a^2\,d^2 + 13\,a\,b\,d^2 + 5\,b^2\,d^2 + 13\,a\,c\,d^2 + 13\,b\,c\,d^2 + 5\,c^2\,d^2 + 2\,a\,d^3 + 2\,b\,d^3 + 2\,c\,d^3$$

In[76]:=
```
G3 = SeriesCoefficient[%72, {t, 0, 3}]
```
Out[76]=
$$a^3 + 7\,a^2\,b + 7\,a\,b^2 + b^3 + 7\,a^2\,c + 18\,a\,b\,c + 7\,b^2\,c + 7\,a\,c^2 + 7\,b\,c^2 + c^3 + 7\,a^2\,d + 18\,a\,b\,d + 7\,b^2\,d + 18\,a\,c\,d + 18\,b\,c\,d + 7\,c^2\,d + 7\,a\,d^2 + 7\,b\,d^2 + 7\,c\,d^2 + d^3$$

In[77]:=
```
G2 = SeriesCoefficient[%72, {t, 0, 2}]
```
Out[77]=
$$3\,a^2 + 8\,a\,b + 3\,b^2 + 8\,a\,c + 8\,b\,c + 3\,c^2 + 8\,a\,d + 8\,b\,d + 8\,c\,d + 3\,d^2$$

In[78]:=
```
G1 = SeriesCoefficient[%72, {t, 0, 1}]
```
Out[78]=
$$3\,(a + b + c + d)$$

In[79]:=
```
SymmetricReduction[G6, {a, b, c, d}, {f1, f2, f3, f4}]
```
Out[79]=
$$\{f1\,f2\,f3 - f3^2 - f1^2\,f4,\ 0\}$$

In[80]:=
```
k6 = First[%79]
```
Out[80]=
$$f1\,f2\,f3 - f3^2 - f1^2\,f4$$

In[81]:=
```
SymmetricReduction[G5, {a, b, c, d}, {f1, f2, f3, f4}]
```
Out[81]=
$$\{f1\,f2^2 + f1^2\,f3 - 4\,f1\,f4,\ 0\}$$

In[82]:=
```
k5 = First[%81]
```
Out[82]=
$$f1\,f2^2 + f1^2\,f3 - 4\,f1\,f4$$

In[83]:=
```
SymmetricReduction[G4, {a, b, c, d}, {f1, f2, f3, f4}]
```
Out[83]=
$$\{2\,f1^2\,f2 + f2^2 + f1\,f3 - 4\,f4,\ 0\}$$

In[84]:=
```
k4 = First[%83]
```
Out[84]=
$$2\,f1^2\,f2 + f2^2 + f1\,f3 - 4\,f4$$

In[85]:=
```
SymmetricReduction[G3, {a, b, c, d}, {f1, f2, f3, f4}]
```
Out[85]=
$$\{f1^3 + 4\,f1\,f2,\ 0\}$$

In[86]:=
```
k3 = First[%85]
```
Out[86]=
$$f1^3 + 4\,f1\,f2$$

In[87]:=
```
SymmetricReduction[G2, {a, b, c, d}, {f1, f2, f3, f4}]
```
Out[87]=
$$\{3\,f1^2 + 2\,f2,\ 0\}$$

In[88]:=
```
k2 = First[%87]
```
Out[88]=
$$3\,f1^2 + 2\,f2$$

In[89]:=
```
SymmetricReduction[G1, {a, b, c, d}, {f1, f2, f3, f4}]
```

Out[89]=

$$\{3\,f1,\ 0\}$$

In[90]:=
```
k1 = First[%89]
```

Out[90]=

$$3\,f1$$

In[91]:=
```
Expand[%71 /. {e1 → k1, e2 → k2, e3 → k3, e4 → k4, e5 → k5, e6 → k6}]
```

Out[91]=

$$\frac{c1^6}{5040} - \frac{c1^4\,c2}{840} + \frac{11\,c1^2\,c2^2}{10\,080} + \frac{c2^3}{1008} + \frac{c1^3\,c3}{2016} + \frac{11\,c1\,c2\,c3}{10\,080} - \frac{c3^2}{10\,080} - \frac{c1^2\,c4}{2016} - \frac{c2\,c4}{1120} - \frac{c1\,c5}{5040} + \frac{c6}{5040} - \frac{1}{480}\,c1^3\,c2\,f1 + \frac{1}{160}\,c1\,c2^2\,f1 + \frac{1}{480}\,c1^2\,c3\,f1 - \frac{c1\,c4\,f1}{480} - \frac{c1^4\,f1^2}{480} + \frac{1}{120}\,c1^2\,c2\,f1^2 + \frac{c2^2\,f1^2}{160} + \frac{1}{480}\,c1\,c3\,f1^2 - \frac{c4\,f1^2}{480} + \frac{1}{48}\,c1\,c2\,f1^3 + \frac{c1^2\,f1^4}{96} + \frac{c2\,f1^4}{96} + \frac{c1\,f1^5}{80} + \frac{f1^6}{240} + \frac{c1^4\,f2}{360} - \frac{1}{90}\,c1^2\,c2\,f2 - \frac{c2^2\,f2}{120} - \frac{c1\,c3\,f2}{360} + \frac{c4\,f2}{360} - \frac{1}{24}\,c1\,c2\,f1\,f2 - \frac{1}{36}\,c1^2\,f1^2\,f2 - \frac{1}{36}\,c2\,f1^2\,f2 - \frac{1}{24}\,c1\,f1^3\,f2 - \frac{f1^4\,f2}{60} + \frac{c1^2\,f2^2}{72} + \frac{c2\,f2^2}{72} + \frac{1}{24}\,c1\,f1\,f2^2 + \frac{f1^2\,f2^2}{40} - \frac{f2^3}{180} - \frac{1}{72}\,c1^2\,f1\,f3 - \frac{c2\,f1\,f3}{72} - \frac{1}{24}\,c1\,f1^2\,f3 - \frac{f1^3\,f3}{40} + \frac{f1\,f2\,f3}{120} + \frac{f3^2}{120} + \frac{c1^2\,f4}{18} + \frac{c2\,f4}{18} + \frac{c1\,f1\,f4}{6} + \frac{13\,f1^2\,f4}{120} - \frac{f2\,f4}{15} - \frac{1}{240}\,c1^3\,c2\,H\,t + \frac{1}{80}\,c1\,c2^2\,H\,t + \frac{1}{240}\,c1^2\,c3\,H\,t - \frac{1}{240}\,c1\,c4\,H\,t - \frac{1}{240}\,c1^4\,f1\,H\,t + \frac{1}{60}\,c1^2\,c2\,f1\,H\,t + \frac{1}{80}\,c2^2\,f1\,H\,t + \frac{1}{240}\,c1\,c3\,f1\,H\,t - \frac{1}{240}\,c4\,f1\,H\,t + \frac{1}{16}\,c1\,c2\,f1^2\,H\,t + \frac{1}{24}\,c1^2\,f1^3\,H\,t + \frac{1}{24}\,c2\,f1^3\,H\,t + \frac{1}{16}\,c1\,f1^4\,H\,t + \frac{1}{40}\,f1^5\,H\,t - \frac{1}{12}\,c1\,c2\,f2\,H\,t - \frac{1}{12}\,c1^2\,f1\,f2\,H\,t - \frac{1}{12}\,c2\,f1\,f2\,H\,t - \frac{1}{6}\,c1\,f1^2\,f2\,H\,t - \frac{1}{12}\,f1^3\,f2\,H\,t + \frac{1}{12}\,c1\,f2^2\,H\,t + \frac{1}{12}\,f1\,f2^2\,H\,t - \frac{1}{12}\,c1\,f1\,f3\,H\,t - \frac{1}{12}\,f1^2\,f3\,H\,t + \frac{1}{3}\,c1\,f4\,H\,t + \frac{1}{3}\,f1\,f4\,H\,t - \frac{1}{240}\,c1^4\,H^2\,t^2 + \frac{1}{60}\,c1^2\,c2\,H^2\,t^2 + \frac{1}{80}\,c2^2\,H^2\,t^2 + \frac{1}{240}\,c1\,c3\,H^2\,t^2 - \frac{1}{240}\,c4\,H^2\,t^2 + \frac{1}{16}\,c1\,c2\,f1\,H^2\,t^2 + \frac{1}{16}\,c1^2\,f1^2\,H^2\,t^2 + \frac{1}{16}\,c2\,f1^2\,H^2\,t^2 + \frac{1}{8}\,c1\,f1^3\,H^2\,t^2 + \frac{1}{16}\,f1^4\,H^2\,t^2 - \frac{1}{12}\,c1^2\,f2\,H^2\,t^2 - \frac{1}{12}\,c2\,f2\,H^2\,t^2 - \frac{1}{4}\,c1\,f1\,f2\,H^2\,t^2 - \frac{1}{6}\,f1^2\,f2\,H^2\,t^2 + \frac{1}{12}\,f2^2\,H^2\,t^2 - \frac{1}{12}\,f1\,f3\,H^2\,t^2 + \frac{1}{3}\,f4\,H^2\,t^2 + \frac{1}{24}\,c1\,c2\,H^3\,t^3 + \frac{1}{24}\,c1^2\,f1\,H^3\,t^3 + \frac{1}{24}\,c2\,f1\,H^3\,t^3 + \frac{1}{8}\,c1\,f1^2\,H^3\,t^3 + \frac{1}{12}\,f1^3\,H^3\,t^3 - \frac{1}{6}\,c1\,f2\,H^3\,t^3 - \frac{1}{6}\,f1\,f2\,H^3\,t^3 + \frac{1}{48}\,c1^2\,H^4\,t^4 + \frac{1}{48}\,c2\,H^4\,t^4 + \frac{1}{16}\,c1\,f1\,H^4\,t^4 + \frac{1}{16}\,f1^2\,H^4\,t^4 - \frac{1}{12}\,f2\,H^4\,t^4 + \frac{1}{40}\,c1\,H^5\,t^5 + \frac{1}{40}\,f1\,H^5\,t^5 + \frac{H^6\,t^6}{120}$$

In[92]:=
```
FunctionExpand[1 - Binomial[6 - d, 6] + Binomial[5 - d, 6]]
```

Out[92]=

$$1 - \frac{1}{720} (-6+d)(-5+d)(-4+d)(-3+d)(-2+d)(-1+d) + \frac{1}{720} (-5+d)(-4+d)(-3+d)(-2+d)(-1+d)\,d$$

In[93]:=
```
Expand[(1 / 4) * l1 * l2 * f1 +
  (1 / 4) * (l1 ^ 2 + l2) * (f1 ^ 2 - 2 * f2) + (1 / 2) * l1 * (f1 ^ 3 - 3 * f1 * f2 + 3 * f3) +
  (1 / 4) * (f1 ^ 4 - 4 * f1 ^ 2 * f2 + 4 * f1 * f3 + 2 * f2 ^ 2) - 24 * d + 24 * %92]
```

Out[93]=

$$\frac{154\,d}{5} - 45\,d^2 + 17\,d^3 - 3\,d^4 + \frac{d^5}{5} + \frac{f1^4}{4} - f1^2\,f2 + \frac{f2^2}{2} + f1\,f3 + \frac{f1^3\,l1}{2} - \frac{3\,f1\,f2\,l1}{2} + \frac{3\,f3\,l1}{2} + \frac{f1^2\,l1^2}{4} - \frac{f2\,l1^2}{2} + \frac{f1^2\,l2}{4} - \frac{f2\,l2}{2} + \frac{f1\,l1\,l2}{4}$$

In[94]:=
```
Expand[%93 /. {l1 → (6 - d) * H, l2 → (d ^ 2 - 6 * d + 15) * H ^ 2, f1 → 2 * (d - 1) * H,
    f2 → (1 / 3) * (d - 1) * (5 * d - 4) * H ^ 2, f3 → (1 / 3) * (d - 1) ^ 2 * (2 * d - 1) * H ^ 3}]
```

Out[94]=

$$\frac{154\,d}{5} - 45\,d^2 + 17\,d^3 - 3\,d^4 + \frac{d^5}{5} - \frac{277\,H^4}{9} + \frac{269\,d\,H^4}{6} - \frac{299\,d^2\,H^4}{18} + \frac{8\,d^3\,H^4}{3} - \frac{d^4\,H^4}{9}$$

In[95]:=
```
Expand[%94 /. {H ^ 4 → d}]
```

Out[95]=

$$\frac{d}{45} - \frac{d^2}{6} + \frac{7\,d^3}{18} - \frac{d^4}{3} + \frac{4\,d^5}{45}$$

In[96]:=
```
Expand[(1 / d) * %95]
```

Out[96]=

$$\frac{1}{45} - \frac{d}{6} + \frac{7\,d^2}{18} - \frac{d^3}{3} + \frac{4\,d^4}{45}$$

In[97]:=
```
Factor[%96]
```

Out[97]=

$$\frac{1}{90} (-2+d)(-1+d)(-1+2\,d)(-1+4\,d)$$

In[98]:=
```
Expand[%91 /.
  {c1 → (8 - d) * H, c2 → (d^2 - 8 * d + 28) * H^2, c3 → (56 - 28 * d + 8 * d^2 - d^3) * H^3,
   c4 → (d^4 - 8 * d^3 + 28 * d^2 - 56 * d + 70) * H^4,
   c5 → (56 - 70 * d + 56 * d^2 - 28 * d^3 + 8 * d^4 - d^5) * H^5,
   c6 → (d^6 - 8 * d^5 + 28 * d^4 - 56 * d^3 + 70 * d^2 - 56 * d + 28) * H^6,
   f1 → 2 * (d - 1) * H, f2 → (1 / 3) * (d - 1) * (5 * d - 4) * H^2,
   f3 → (1 / 3) * (d - 1)^2 * (2 * d - 1) * H^3, f4 → (%97) * H^4}]
```

Out[98]=
$$\frac{518\,729\,H^6}{340\,200}+\frac{323\,d\,H^6}{120}+\frac{12\,323\,d^2\,H^6}{8100}+\frac{d^3\,H^6}{3}-\frac{709\,d^4\,H^6}{16\,200}-\frac{d^5\,H^6}{40}-\frac{403\,d^6\,H^6}{170\,100}+\frac{323\,H^6\,t}{60}+\frac{2339}{360}\,d\,H^6\,t+\frac{5}{2}\,d^2\,H^6\,t+\frac{13}{36}\,d^3\,H^6\,t-\frac{1}{30}\,d^4\,H^6\,t-\frac{1}{120}\,d^5\,H^6\,t+\frac{2339\,H^6\,t^2}{360}+\frac{11}{2}\,d\,H^6\,t^2+\frac{17}{12}\,d^2\,H^6\,t^2+\frac{1}{8}\,d^3\,H^6\,t^2-\frac{1}{180}\,d^4\,H^6\,t^2+\frac{11\,H^6\,t^3}{3}+\frac{19}{9}\,d\,H^6\,t^3+\frac{1}{3}\,d^2\,H^6\,t^3+\frac{1}{72}\,d^3\,H^6\,t^3+\frac{19\,H^6\,t^4}{18}+\frac{3}{8}\,d\,H^6\,t^4+\frac{1}{36}\,d^2\,H^6\,t^4+\frac{3\,H^6\,t^5}{20}+\frac{1}{40}\,d\,H^6\,t^5+\frac{H^6\,t^6}{120}$$

In[99]:=
```
Expand[%98 /. {H^6 → d}]
```

Out[99]=
$$\frac{518\,729\,d}{340\,200}+\frac{323\,d^2}{120}+\frac{12\,323\,d^3}{8100}+\frac{d^4}{3}-\frac{709\,d^5}{16\,200}-\frac{d^6}{40}-\frac{403\,d^7}{170\,100}+\frac{323\,d\,t}{60}+\frac{2339\,d^2\,t}{360}+\frac{5\,d^3\,t}{2}+\frac{13\,d^4\,t}{36}-\frac{d^5\,t}{30}-\frac{d^6\,t}{120}+\frac{2339\,d\,t^2}{360}+\frac{11\,d^2\,t^2}{2}+\frac{17\,d^3\,t^2}{12}+\frac{d^4\,t^2}{8}-\frac{d^5\,t^2}{180}+\frac{11\,d\,t^3}{3}+\frac{19\,d^2\,t^3}{9}+\frac{d^3\,t^3}{3}+\frac{d^4\,t^3}{72}+\frac{19\,d\,t^4}{18}+\frac{3\,d^2\,t^4}{8}+\frac{d^3\,t^4}{36}+\frac{3\,d\,t^5}{20}+\frac{d^2\,t^5}{40}+\frac{d\,t^6}{120}$$

In[100]:=
```
Expand[%99 /. {t → 2 - 2 * d + m}]
```

Out[100]=
$$\frac{30\,562\,169\,d}{340\,200}-\frac{1473\,d^2}{8}+\frac{611\,389\,d^3}{4050}-\frac{190\,d^4}{3}+\frac{229\,151\,d^5}{16\,200}-\frac{37\,d^6}{24}+\frac{2498\,d^7}{42\,525}+\frac{491\,d\,m}{4}-\frac{24\,419\,d^2\,m}{120}+\frac{2335\,d^3\,m}{18}-\frac{159\,d^4\,m}{4}+\frac{52\,d^5\,m}{9}-\frac{37\,d^6\,m}{120}+\frac{24\,419\,d\,m^2}{360}-\frac{175\,d^2\,m^2}{2}+\frac{163\,d^3\,m^2}{4}-\frac{65\,d^4\,m^2}{8}+\frac{26\,d^5\,m^2}{45}+\frac{175\,d\,m^3}{9}-\frac{55\,d^2\,m^3}{3}+\frac{50\,d^3\,m^3}{9}-\frac{13\,d^4\,m^3}{24}+\frac{55\,d\,m^4}{18}-\frac{15\,d^2\,m^4}{8}+\frac{5\,d^3\,m^4}{18}+\frac{d\,m^5}{4}-\frac{3\,d^2\,m^5}{40}+\frac{d\,m^6}{120}$$

In[101]:=
```
FunctionExpand[
 Binomial[7 + m, 7] - Binomial[m - d + 7, 7] - 3 * Binomial[9 - 2 * d + m, 7] +
  3 * Binomial[9 - 3 * d + m, 7] + 8 * d * Binomial[8 - 2 * d + m, 6] - %100]
```

Out[101]=
$$-\frac{30\,562\,169\,d}{340\,200}+\frac{1473\,d^2}{8}-\frac{611\,389\,d^3}{4050}+\frac{190\,d^4}{3}-\frac{229\,151\,d^5}{16\,200}+\frac{37\,d^6}{24}-\frac{2498\,d^7}{42\,525}+\frac{(-7+d-m)\,(-6+d-m)\,(-5+d-m)\,(-4+d-m)\,(-3+d-m)\,(-2+d-m)\,(-1+d-m)}{5040}+\frac{1}{90}d\,(-8+2d-m)\,(-7+2d-m)\,(-6+2d-m)\,(-5+2d-m)\,(-4+2d-m)\,(-3+2d-m)+\frac{1}{1680}(-9+2d-m)\,(-8+2d-m)\,(-7+2d-m)\,(-6+2d-m)\,(-5+2d-m)\,(-4+2d-m)\,(-3+2d-m)-\frac{1}{1680}(-9+3d-m)\,(-8+3d-m)\,(-7+3d-m)\,(-6+3d-m)\,(-5+3d-m)\,(-4+3d-m)\,(-3+3d-m)-\frac{491\,d\,m}{4}+\frac{24\,419\,d^2\,m}{120}-\frac{2335\,d^3\,m}{18}+\frac{159\,d^4\,m}{4}-\frac{52\,d^5\,m}{9}+\frac{37\,d^6\,m}{120}-\frac{24\,419\,d\,m^2}{360}+\frac{175\,d^2\,m^2}{2}-\frac{163\,d^3\,m^2}{4}+\frac{65\,d^4\,m^2}{8}-\frac{26\,d^5\,m^2}{45}-\frac{175\,d\,m^3}{9}+\frac{55\,d^2\,m^3}{3}-\frac{50\,d^3\,m^3}{9}+\frac{13\,d^4\,m^3}{24}-\frac{55\,d\,m^4}{18}+\frac{15\,d^2\,m^4}{8}-\frac{5\,d^3\,m^4}{18}-\frac{d\,m^5}{4}+\frac{3\,d^2\,m^5}{40}-\frac{d\,m^6}{120}+\frac{(1+m)\,(2+m)\,(3+m)\,(4+m)\,(5+m)\,(6+m)\,(7+m)}{5040}$$

In[102]:=
```
p0 = Expand[%101 /. {m → 0}]
```

Out[102]=
$$-\frac{2\,303\,699\,d}{340\,200}+\frac{3109\,d^2}{90}-\frac{133\,637\,d^3}{2025}+\frac{2179\,d^4}{36}-\frac{456\,221\,d^5}{16\,200}+\frac{1157\,d^6}{180}-\frac{24\,368\,d^7}{42\,525}$$

In[103]:=
```
Factor[p0]
```

Out[103]=
$$-\frac{(-1+d)\,d\,(-1+2d)\,\left(2\,303\,699-4\,840\,923\,d+3\,320\,849\,d^2-947\,157\,d^3+97\,472\,d^4\right)}{340\,200}$$

In[104]:=
```
p1 = Expand[%101 /. {m → 1}]
```

Out[104]=
$$-\frac{4\,034\,939\,d}{340\,200}+\frac{2617\,d^2}{45}-\frac{848\,873\,d^3}{8100}+\frac{3185\,d^4}{36}-\frac{595\,631\,d^5}{16\,200}+\frac{1327\,d^6}{180}-\frac{24\,368\,d^7}{42\,525}$$

In[105]:=
```
Factor[p1]
```

Out[105]=
$$-\frac{(-1+d)\,d\,(-1+2\,d)\,\left(4\,034\,939-7\,679\,703\,d+4\,543\,679\,d^2-1\,107\,807\,d^3+97\,472\,d^4\right)}{340\,200}$$

In[106]:=
```
p2 = Expand[%101 /. {m → 2}]
```

Out[106]=
$$-\frac{6\,454\,139\,d}{340\,200}+\frac{2713\,d^2}{30}-\frac{315\,887\,d^3}{2025}+\frac{493\,d^4}{4}-\frac{752\,681\,d^5}{16\,200}+\frac{499\,d^6}{60}-\frac{24\,368\,d^7}{42\,525}$$

In[107]:=
```
Factor[p2]
```

Out[107]=
$$-\frac{(-1+d)\,d\,(-1+2\,d)\,\left(6\,454\,139-11\,403\,003\,d+5\,951\,729\,d^2-1\,268\,457\,d^3+97\,472\,d^4\right)}{340\,200}$$

In[108]:=
```
DZ = (d / 3) * (d - 1) ^ 2 * (2 * d - 1)
```

Out[108]=
$$\frac{1}{3}\,(-1+d)^2\,d\,(-1+2\,d)$$

In[109]:=
```
KH2 = Expand[4 * p1 - 2 * p2 - 2 * p0 + 2 * DZ]
```

Out[109]=
$$\frac{152\,d}{45}-\frac{44\,d^2}{3}+\frac{193\,d^3}{9}-\frac{37\,d^4}{3}+\frac{98\,d^5}{45}$$

In[110]:=
```
Factor[%109]
```

Out[110]=
$$\frac{1}{45}\,(-1+d)\,d\,(-1+2\,d)\,\left(152-204\,d+49\,d^2\right)$$

In[111]:=
```
K2HHc2 = Expand[12 * p1 - 12 * p0 - 2 * DZ + 3 * KH2]
```

Out[111]=
$$-\frac{754\,d}{15}+\frac{710\,d^2}{3}-398\,d^3+297\,d^4-\frac{1451\,d^5}{15}+\frac{34\,d^6}{3}$$

In[112]:=
```
Factor[%111]
```

Out[112]=
$$\frac{1}{15}(-1+d)\,d\,(-1+2d)\left(-754+1288\,d-598\,d^2+85\,d^3\right)$$

In[113]:=
```
Hc2 = -(2 / 3) * (2 * d - 5) * (5 * d - 19) * DZ + (4 * d - 11) * KH2
```

Out[113]=
$$-\frac{2}{9}(-1+d)^2\,d\,(-5+2d)\,(-1+2d)\,(-19+5d)+(-11+4d)\left(\frac{152\,d}{45}-\frac{44\,d^2}{3}+\frac{193\,d^3}{9}-\frac{37\,d^4}{3}+\frac{98\,d^5}{45}\right)$$

In[114]:=
```
Factor[%113]
```

Out[114]=
$$\frac{1}{45}(-1+d)\,d\,(-1+2d)\left(-722+1272\,d-625\,d^2+96\,d^3\right)$$

In[115]:=
```
K2H = K2HHc2 - Hc2
```

Out[115]=
$$-\frac{754\,d}{15}+\frac{710\,d^2}{3}-398\,d^3+297\,d^4-\frac{1451\,d^5}{15}+\frac{34\,d^6}{3}+\frac{2}{9}(-1+d)^2\,d\,(-5+2d)\,(-1+2d)\,(-19+5d)-(-11+4d)\left(\frac{152\,d}{45}-\frac{44\,d^2}{3}+\frac{193\,d^3}{9}-\frac{37\,d^4}{3}+\frac{98\,d^5}{45}\right)$$

In[116]:=
```
Factor[%115]
```

Out[116]=
$$\frac{1}{45}(-1+d)\,d\,(-1+2d)\,(-10+3d)\left(154-213\,d+53\,d^2\right)$$

In[117]:=
```
Kc2 = -(2 / 3) * (2 * d - 5) * (5 * d - 19) * KH2 + (4 * d - 11) * K2H
```

Out[117]=
$$-\frac{2}{3}\,(-5+2\,d)\,(-19+5\,d)\left(\frac{152\,d}{45}-\frac{44\,d^2}{3}+\frac{193\,d^3}{9}-\frac{37\,d^4}{3}+\frac{98\,d^5}{45}\right)+$$
$$(-11+4\,d)\left(-\frac{754\,d}{15}+\frac{710\,d^2}{3}-398\,d^3+297\,d^4-\frac{1451\,d^5}{15}+\frac{34\,d^6}{3}+\frac{2}{9}\,(-1+d)^2\,d\,(-5+2\,d)\right.$$
$$\left.(-1+2\,d)\,(-19+5\,d)-(-11+4\,d)\left(\frac{152\,d}{45}-\frac{44\,d^2}{3}+\frac{193\,d^3}{9}-\frac{37\,d^4}{3}+\frac{98\,d^5}{45}\right)\right)$$

In[118]:=
```
Factor[%117]
```

Out[118]=
$$\frac{1}{135}\,(-1+d)\,d\,(-1+2\,d)\left(21\,940-46\,104\,d+31\,627\,d^2-9021\,d^3+928\,d^4\right)$$

In[119]:=
```
Expand[24 * p0 + Kc2]
```

Out[119]=
$$\frac{d}{14\,175}-\frac{d^3}{675}+\frac{4\,d^5}{675}-\frac{64\,d^7}{14\,175}$$

In[120]:=
```
Factor[%119]
```

Out[120]=
$$-\frac{(-1+d)\,d\,(1+d)\,(-1+2\,d)\,(1+2\,d)\,(-1+4\,d)\,(1+4\,d)}{14\,175}$$