In[91]:=
```
G[u0_, u1_, u2_, u3_, u4_, u5_] :=
 u0^3*u1^3*u2^3*u3^3*u4^3*u5^3 - u0^3*u1^3*u2^2*u3^2*u4^2*u5^2 -
  u0^3*u1^2*u2^3*u3^2*u4^2*u5^2 - u0^2*u1^3*u2^3*u3^2*u4^2*u5^2 -
  u0^3*u1^2*u2^2*u3^3*u4^2*u5^2 - u0^2*u1^3*u2^2*u3^3*u4^2*u5^2 -
  u0^2*u1^2*u2^3*u3^3*u4^2*u5^2 - u0^3*u1^2*u2^2*u3^2*u4^3*u5^2 -
  u0^2*u1^3*u2^2*u3^2*u4^3*u5^2 - u0^2*u1^2*u2^3*u3^2*u4^3*u5^2 -
  u0^2*u1^2*u2^2*u3^3*u4^3*u5^2 - u0^3*u1^2*u2^2*u3^2*u4^2*u5^3 -
  u0^2*u1^3*u2^2*u3^2*u4^2*u5^3 - u0^2*u1^2*u2^3*u3^2*u4^2*u5^3 -
  u0^2*u1^2*u2^2*u3^3*u4^2*u5^3 - u0^2*u1^2*u2^2*u3^2*u4^3*u5^3 +
  u0^3*u1^2*u2^2*u3^2*u4^2*u5 + u0^2*u1^3*u2^2*u3^2*u4^2*u5 +
  u0^2*u1^2*u2^3*u3^2*u4^2*u5 + u0^2*u1^2*u2^2*u3^3*u4^2*u5 +
  u0^2*u1^2*u2^2*u3^2*u4^3*u5 + u0^3*u1^2*u2^2*u3^2*u4*u5^2 +
  u0^2*u1^3*u2^2*u3^2*u4*u5^2 + u0^2*u1^2*u2^3*u3^2*u4*u5^2 +
  u0^2*u1^2*u2^2*u3^3*u4*u5^2 + u0^3*u1^2*u2^2*u3*u4^2*u5^2 +
  u0^2*u1^3*u2^2*u3*u4^2*u5^2 + u0^2*u1^2*u2^3*u3*u4^2*u5^2 +
  u0^3*u1^2*u2*u3^2*u4^2*u5^2 + u0^2*u1^3*u2*u3^2*u4^2*u5^2 +
  u0^3*u1*u2^2*u3^2*u4^2*u5^2 + 5*u0^2*u1^2*u2^2*u3^2*u4^2*u5^2 +
  u0*u1^3*u2^2*u3^2*u4^2*u5^2 + u0^2*u1*u2^3*u3^2*u4^2*u5^2 +
  u0*u1^2*u2^3*u3^2*u4^2*u5^2 + u0^2*u1^2*u2*u3^3*u4^2*u5^2 +
  u0^2*u1*u2^2*u3^3*u4^2*u5^2 + u0*u1^2*u2^2*u3^3*u4^2*u5^2 +
  u0^2*u1^2*u2^2*u3*u4^3*u5^2 + u0^2*u1^2*u2*u3^2*u4^3*u5^2 +
  u0^2*u1*u2^2*u3^2*u4^3*u5^2 + u0*u1^2*u2^2*u3^2*u4^3*u5^2 +
  u0^2*u1^2*u2^2*u3^2*u4*u5^3 + u0^2*u1^2*u2^2*u3*u4^2*u5^3 +
  u0^2*u1^2*u2*u3^2*u4^2*u5^3 + u0^2*u1*u2^2*u3^2*u4^2*u5^3 +
  u0*u1^2*u2^2*u3^2*u4^2*u5^3 - u0^2*u1^2*u2^2*u3^2*u4^2 -
  u0^2*u1^2*u2^2*u3^2*u4*u5 - u0^2*u1^2*u2^2*u3*u4^2*u5 -
  u0^2*u1^2*u2*u3^2*u4^2*u5 - u0^2*u1*u2^2*u3^2*u4^2*u5 -
  u0*u1^2*u2^2*u3^2*u4^2*u5 - u0^2*u1^2*u2^2*u3^2*u5^2 -
  u0^2*u1^2*u2^2*u3*u4*u5^2 - u0^2*u1^2*u2*u3^2*u4*u5^2 -
  u0^2*u1*u2^2*u3^2*u4*u5^2 - u0*u1^2*u2^2*u3^2*u4*u5^2 -
  u0^2*u1^2*u2^2*u4^2*u5^2 - u0^2*u1^2*u2*u3*u4^2*u5^2 -
  u0^2*u1*u2^2*u3*u4^2*u5^2 - u0*u1^2*u2^2*u3*u4^2*u5^2 -
  u0^2*u1^2*u3^2*u4^2*u5^2 - u0^2*u1*u2*u3^2*u4^2*u5^2 -
  u0*u1^2*u2*u3^2*u4^2*u5^2 - u0^2*u2^2*u3^2*u4^2*u5^2 -
  u0*u1*u2^2*u3^2*u4^2*u5^2 - u1^2*u2^2*u3^2*u4^2*u5^2 -
  u0^3*u1*u2*u3*u4*u5 - u0^2*u1^2*u2*u3*u4*u5 - u0*u1^3*u2*u3*u4*u5 -
  u0^2*u1*u2^2*u3*u4*u5 - u0*u1^2*u2*u3*u4*u5 -
  u0*u1*u2^3*u3*u4*u5 - u0^2*u1*u2*u3^2*u4*u5 -
  u0*u1^2*u2*u3^2*u4*u5 - u0*u1*u2^2*u3^2*u4*u5 -
  u0*u1*u2*u3^3*u4*u5 - u0^2*u1*u2*u3*u4^2*u5 -
  u0*u1^2*u2*u3*u4^2*u5 - u0*u1*u2^2*u3*u4^2*u5 -
  u0*u1*u2*u3^2*u4^2*u5 - u0*u1*u2*u3*u4^3*u5 -
  u0^2*u1*u2*u3*u4*u5^2 - u0*u1^2*u2*u3*u4*u5^2 -
  u0*u1*u2^2*u3*u4*u5^2 - u0*u1*u2*u3^2*u4*u5^2 -
  u0*u1*u2*u3*u4^2*u5^2 - u0*u1*u2*u3*u4*u5^3 + u0^2*u1*u2*u3*u4 +
  u0*u1^2*u2*u3*u4 + u0*u1*u2^2*u3*u4 + u0*u1*u2*u3^2*u4 +
  u0*u1*u2*u3*u4^2 + u0^2*u1*u2*u3*u5 + u0*u1^2*u2*u3*u5 +
```

```
u0 * u1 * u2 ^ 2 * u3 * u5 + u0 * u1 * u2 * u3 ^ 2 * u5 + u0 ^ 2 * u1 * u2 * u4 * u5 +
u0 * u1 ^ 2 * u2 * u4 * u5 + u0 * u1 * u2 ^ 2 * u4 * u5 + u0 ^ 2 * u1 * u3 * u4 * u5 +
u0 * u1 ^ 2 * u3 * u4 * u5 + u0 ^ 2 * u2 * u3 * u4 * u5 + 5 * u0 * u1 * u2 * u3 * u4 * u5 +
u1 ^ 2 * u2 * u3 * u4 * u5 + u0 * u2 ^ 2 * u3 * u4 * u5 + u1 * u2 ^ 2 * u3 * u4 * u5 +
u0 * u1 * u3 ^ 2 * u4 * u5 + u0 * u2 * u3 ^ 2 * u4 * u5 + u1 * u2 * u3 ^ 2 * u4 * u5 +
u0 * u1 * u2 * u4 ^ 2 * u5 + u0 * u1 * u3 * u4 ^ 2 * u5 + u0 * u2 * u3 * u4 ^ 2 * u5 +
u1 * u2 * u3 * u4 ^ 2 * u5 + u0 * u1 * u2 * u3 * u5 ^ 2 + u0 * u1 * u2 * u4 * u5 ^ 2 +
u0 * u1 * u3 * u4 * u5 ^ 2 + u0 * u2 * u3 * u4 * u5 ^ 2 + u1 * u2 * u3 * u4 * u5 ^ 2 -
u0 * u1 * u2 * u3 - u0 * u1 * u2 * u4 - u0 * u1 * u3 * u4 - u0 * u2 * u3 * u4 - u1 * u2 * u3 * u4 -
u0 * u1 * u2 * u5 - u0 * u1 * u3 * u5 - u0 * u2 * u3 * u5 - u1 * u2 * u3 * u5 - u0 * u1 * u4 * u5 -
u0 * u2 * u4 * u5 - u1 * u2 * u4 * u5 - u0 * u3 * u4 * u5 - u1 * u3 * u4 * u5 - u2 * u3 * u4 * u5 + 1
```

In[93]:=
```
Solve[{u1 * u2 == t1, u2 * u4 == t3, u0 * u3 == t2 ^ 2 / t1, u3 * u4 == t2 * t3 / t1,
 u0 * u4 == t3 ^ 2 / t1, u1 * u5 == t1 ^ 2 / t2, u0 * u5 == t1, u4 * u5 == t1 * t3 / t2,
 u0 * u2 == t2, u1 * u4 == t3 ^ 2 / t2, u2 * u5 == t1 ^ 2 / t3, u3 * u5 == t1 * t2 / t3,
 u2 * u3 == t2 ^ 2 / t3, u1 * u3 == t2, u0 * u1 == t3}, {u0, u1, u2, u3, u4, u5}]
```

Out[93]=
$$\left\{\left\{u0 \to -\frac{\sqrt{t2}\ \sqrt{t3}}{\sqrt{t1}},\ u1 \to -\frac{\sqrt{t1}\ \sqrt{t3}}{\sqrt{t2}},\ u2 \to -\frac{\sqrt{t1}\ \sqrt{t2}}{\sqrt{t3}},\ u3 \to -\frac{t2^{3/2}}{\sqrt{t1}\ \sqrt{t3}},\right.\right.$$
$$\left.u4 \to -\frac{t3^{3/2}}{\sqrt{t1}\ \sqrt{t2}},\ u5 \to -\frac{t1^{3/2}}{\sqrt{t2}\ \sqrt{t3}}\right\},\ \left\{u0 \to \frac{\sqrt{t2}\ \sqrt{t3}}{\sqrt{t1}},\ u1 \to \frac{\sqrt{t1}\ \sqrt{t3}}{\sqrt{t2}},\right.$$
$$\left.\left.u2 \to \frac{\sqrt{t1}\ \sqrt{t2}}{\sqrt{t3}},\ u3 \to \frac{t2^{3/2}}{\sqrt{t1}\ \sqrt{t3}},\ u4 \to \frac{t3^{3/2}}{\sqrt{t1}\ \sqrt{t2}},\ u5 \to \frac{t1^{3/2}}{\sqrt{t2}\ \sqrt{t3}}\right\}\right\}$$

In[97]:=
```
Together[
 G[-Sqrt[t2] Sqrt[t3]/Sqrt[t1], -Sqrt[t1] Sqrt[t3]/Sqrt[t2], -Sqrt[t1] Sqrt[t2]/Sqrt[t3],
  -t2^(3/2)/(Sqrt[t1] Sqrt[t3]), -t3^(3/2)/(Sqrt[t1] Sqrt[t2]), -t1^(3/2)/(Sqrt[t2] Sqrt[t3])]]
```

Out[97]=
$$\frac{1}{t1\ t2\ t3}$$
$$\left(-t1^3\ t2^2 + t1^4\ t2^2 - t1^2\ t2^3 + t1^3\ t2^3 + t1^2\ t2^4 - t1^4\ t2^4 + t1\ t2\ t3 - t1^3\ t2\ t3 + t1^4\ t2\ t3 - t1^5\ t2\ t3 - 2\ t1^2\ t2^2\ t3 + 3\ t1^3\ t2^2\ t3 - t1^4\ t2^2\ t3 - t1\ t2^3\ t3 + 3\ t1^2\ t2^3\ t3 - 2\ t1^3\ t2^3\ t3 - t1^4\ t2^3\ t3 + t1^5\ t2^3\ t3 + t1\ t2^4\ t3 - t1^2\ t2^4\ t3 - t1^3\ t2^4\ t3 + t1^4\ t2^4\ t3 - t1\ t2^5\ t3 + t1^3\ t2^5\ t3 - t1^3\ t3^2 + t1^4\ t3^2 - 2\ t1^2\ t2\ t3^2 + 3\ t1^3\ t2\ t3^2 - t1^4\ t2\ t3^2 - 2\ t1\ t2^2\ t3^2 + 5\ t1^2\ t2^2\ t3^2 - 2\ t1^3\ t2^2\ t3^2 - 2\ t1^4\ t2^2\ t3^2 + t1^5\ t2^2\ t3^2 - t2^3\ t3^2 + 3\ t1\ t2^3\ t3^2 - 2\ t1^2\ t2^3\ t3^2 - 2\ t1^3\ t2^3\ t3^2 + 3\ t1^4\ t2^3\ t3^2 - t1^5\ t2^3\ t3^2 + t2^4\ t3^2 - t1\ t2^4\ t3^2 - 2\ t1^2\ t2^4\ t3^2 + 3\ t1^3\ t2^4\ t3^2 - t1^4\ t2^4\ t3^2 + t1^2\ t2^5\ t3^2 - t1^3\ t2^5\ t3^2 - t1^2\ t3^3 + t1^3\ t3^3 - t1\ t2\ t3^3 + 3\ t1^2\ t2\ t3^3 - 2\ t1^3\ t2\ t3^3 - t1^4\ t2\ t3^3 + t1^5\ t2\ t3^3 - t2^2\ t3^3 + 3\ t1\ t2^2\ t3^3 - 2\ t1^2\ t2^2\ t3^3 - 2\ t1^3\ t2^2\ t3^3 + 3\ t1^4\ t2^2\ t3^3 - t1^5\ t2^2\ t3^3 + t2^3\ t3^3 - 2\ t1\ t2^3\ t3^3 - 2\ t1^2\ t2^3\ t3^3 + 5\ t1^3\ t2^3\ t3^3 - 2\ t1^4\ t2^3\ t3^3 - t1\ t2^4\ t3^3 + 3\ t1^2\ t2^4\ t3^3 - 2\ t1^3\ t2^4\ t3^3 + t1\ t2^5\ t3^3 - t1^2\ t2^5\ t3^3 + t1^2\ t3^4 - t1^4\ t3^4 + t1\ t2\ t3^4 - t1^2\ t2\ t3^4 - t1^3\ t2\ t3^4 + t1^4\ t2\ t3^4 + t2^2\ t3^4 - t1\ t2^2\ t3^4 - 2\ t1^2\ t2^2\ t3^4 + 3\ t1^3\ t2^2\ t3^4 - t1^4\ t2^2\ t3^4 - t1\ t2^3\ t3^4 + 3\ t1^2\ t2^3\ t3^4 - 2\ t1^3\ t2^3\ t3^4 - t2^4\ t3^4 + t1\ t2^4\ t3^4 - t1^2\ t2^4\ t3^4 + t1^4\ t2^4\ t3^4 - t1\ t2\ t3^5 + t1^3\ t2\ t3^5 + t1^2\ t2^2\ t3^5 - t1^3\ t2^2\ t3^5 + t1\ t2^3\ t3^5 - t1^2\ t2^3\ t3^5\right)$$

In[161]:=
```
G44tangent[t1_, t2_, t3_] :=
 Det[DiagonalMatrix[{-t1 + 1, -t2 + 1, -t3 + 1, (-t2^2 + t1) / t1,
    (-t2 * t3 + t1) / t1, (-t3^2 + t1) / t1, (-t1^2 + t2) / t2, -t1 + 1,
    (-t1 * t3 + t2) / t2, -t2 + 1, -t3 + 1, (-t3^2 + t2) / t2, (-t1^2 + t3) / t3,
    (-t1 * t2 + t3) / t3, -t1 + 1, (-t2^2 + t3) / t3, -t2 + 1, -t3 + 1}]]
```

In[160]:=

In[162]:=
```
Together[%97 / G44tangent[t1, t2, t3]]
```

Out[162]=
$$-\Big(\big(t1^2\,t2^2\,t3^2\,\big(-t1^3\,t2^2-t1^2\,t2^3-t1^3\,t2^3+t1\,t2\,t3+t1^2\,t2\,t3+t1^4\,t2\,t3+t1\,t2^2\,t3-t1^2\,t2^2\,t3+t1^4\,t2^2\,t3+t1\,t2^4\,t3+t1^2\,t2^4\,t3-t1^3\,t3^2+t1\,t2\,t3^2-t1^2\,t2\,t3^2+t1^4\,t2\,t3^2-t1\,t2^2\,t3^2+t1^3\,t2^2\,t3^2-t2^3\,t3^2+t1^2\,t2^3\,t3^2-t1^3\,t2^3\,t3^2+t1\,t2^4\,t3^2-t1^2\,t3^3-t1^3\,t3^3-t2^2\,t3^3+t1^2\,t2^2\,t3^3-t1^3\,t2^2\,t3^3-t2^3\,t3^3-t1^2\,t2^3\,t3^3-t1^3\,t2^3\,t3^3+t1\,t2\,t3^4+t1^2\,t2\,t3^4+t1\,t2^2\,t3^4\big)\big)\Big/\Big((-1+t1)^2\,\big(t1^2-t2\big)\,(-1+t2)^2\,\big(t1-t2^2\big)\,\big(t1^2-t3\big)\,(t1\,t2-t3)\,\big(t2^2-t3\big)\,(-1+t3)^2\,(-t2+t1\,t3)\,(t1-t2\,t3)\,\big(t1-t3^2\big)\,\big(t2-t3^2\big)\big)\Big)$$

In[168]:=
```
G44[t1_, t2_, t3_] :=
 -((t1^2 t2^2 t3^2 (-t1^3 t2^2 - t1^2 t2^3 - t1^3 t2^3 + t1 t2 t3 + t1^2 t2 t3 + t1^4 t2 t3 + t1 t2^2 t3 -
       t1^2 t2^2 t3 + t1^4 t2^2 t3 + t1 t2^4 t3 + t1^2 t2^4 t3 - t1^3 t3^2 + t1 t2 t3^2 -
       t1^2 t2 t3^2 + t1^4 t2 t3^2 - t1 t2^2 t3^2 + t1^3 t2^2 t3^2 - t2^3 t3^2 + t1^2 t2^3 t3^2 -
       t1^3 t2^3 t3^2 + t1 t2^4 t3^2 - t1^2 t3^3 - t1^3 t3^3 - t2^2 t3^3 + t1^2 t2^2 t3^3 - t1^3 t2^2 t3^3 -
       t2^3 t3^3 - t1^2 t2^3 t3^3 - t1^3 t2^3 t3^3 + t1 t2 t3^4 + t1^2 t2 t3^4 + t1 t2^2 t3^4)) /
   ((-1 + t1)^2 (t1^2 - t2) (-1 + t2)^2 (t1 - t2^2) (t1^2 - t3) (t1 t2 - t3) (t2^2 - t3)
     (-1 + t3)^2 (-t2 + t1 t3) (t1 - t2 t3) (t1 - t3^2) (t2 - t3^2)));
```

In[192]:=
```
T44[t1_, t2_, t3_, u_, v_] :=
 Det[DiagonalMatrix[{-u + 1, -t1 * u + 1, -t2 * u + 1, -t3 * u + 1,
    -v + 1, (t1 - v) / t1, (t2 - v) / t2, (t3 - v) / t3}]]
```

In[193]:=
```
GT44[t1_, t2_, t3_, u_, v_] := G44[t1, t2, t3] * T44[t1, t2, t3, u, v]
```

In[170]:=
```
G4smoothTangentContributions[t1_, t2_, t3_] :=
 {{-t2 + 1, -t3 + 1, -t1^4 + 1, (t1 - t2) / t1,
   (t1 - t3) / t1, -t1^3 + 1, (t1^2 - t2) / t1^2, (t1^2 - t3) / t1^2,
   -t1^2 + 1, (t1^3 - t2) / t1^3, (t1^3 - t3) / t1^3, -t1 + 1},
  {-t3 + 1, (t1 - t3) / t1, -t2 + 1, -t1^2 + 1, (t1^2 - t3) / t1^2, (t1 - t2) / t1, -t1 + 1,
   (t1^2 - t2^2) / t1^2, (t2 - t3) / t2, -t1 + 1, (-t1^3 + t2) / t2, -t2 + 1}, {-t3 + 1,
   -t1^2 + 1, -t2^2 + 1, (t1 - t3) / t1, -t1 + 1, (-t2^2 + t1) / t1, (t2 - t3) / t2,
   (-t1^2 + t2) / t2, -t2 + 1, (t1 * t2 - t3) / (t1 * t2), (-t1 + t2) / t2, (t1 - t2) / t1},
  {-t3 + 1, (t1 - t3) / t1, -t1 + 1, -t2 + 1, (-t2^3 + t1) / t1, (t2 - t3) / t2, -t1 + 1,
   -t2^2 + 1, (t2^2 - t3) / t2^2, (-t1^2 + t2^2) / t2^2, (-t1 + t2) / t2, -t2 + 1},
  {-t1 + 1, -t3 + 1, -t2^4 + 1, (-t1 + t2) / t2, (t2 - t3) / t2,
   -t2^3 + 1, (t2^2 - t1) / t2^2, (t2^2 - t3) / t2^2,
   -t2^2 + 1, (t2^3 - t1) / t2^3, (t2^3 - t3) / t2^3, -t2 + 1},
  {-t2 + 1, (t1 - t2) / t1, -t3 + 1, -t1^2 + 1, (t1^2 - t2) / t1^2, (t1 - t3) / t1,
   -t1 + 1, (t1^2 - t3^2) / t1^2, (-t2 + t3) / t3, -t1 + 1, (-t1^3 + t3) / t3, -t3 + 1},
  {-t1 + 1, (-t1 + t2) / t2, -t3 + 1, -t2^2 + 1, (t2^2 - t1) / t2^2, (t2 - t3) / t2,
   -t2 + 1, (t2^2 - t3^2) / t2^2, (-t1 + t3) / t3, -t2 + 1, (-t2^3 + t3) / t3, -t3 + 1},
  {-t2 + 1, -t1^2 + 1, -t3^2 + 1, (t1 - t2) / t1, -t1 + 1, (-t3^2 + t1) / t1,
   (-t2 + t3) / t3, (-t1^2 + t3) / t3, -t3 + 1, (t1 * t3 - t2) / (t1 * t3),
   (-t1 + t3) / t3, (t1 - t3) / t1}, {-t1 + 1, -t2^2 + 1, -t3^2 + 1,
   (-t1 + t2) / t2, -t2 + 1, (-t3^2 + t2) / t2, (-t1 + t3) / t3, (-t2^2 + t3) / t3,
   -t3 + 1, (t2 * t3 - t1) / (t2 * t3), (-t2 + t3) / t3, (t2 - t3) / t2},
  {-t2 + 1, (t1 - t2) / t1, -t1 + 1, -t3 + 1, (-t3^3 + t1) / t1, (-t2 + t3) / t3, -t1 + 1,
   -t3^2 + 1, (t3^2 - t2) / t3^2, (-t1^2 + t3^2) / t3^2, (-t1 + t3) / t3, -t3 + 1},
  {-t1 + 1, (-t1 + t2) / t2, -t2 + 1, -t3 + 1, (-t3^3 + t2) / t2, (-t1 + t3) / t3, -t2 + 1,
   -t3^2 + 1, (t3^2 - t1) / t3^2, (-t2^2 + t3^2) / t3^2, (-t2 + t3) / t3, -t3 + 1},
  {-t1 + 1, -t2 + 1, -t3^4 + 1, (-t1 + t3) / t3, (-t2 + t3) / t3,
   -t3^3 + 1, (t3^2 - t1) / t3^2, (t3^2 - t2) / t3^2,
   -t3^2 + 1, (t3^3 - t1) / t3^3, (t3^3 - t2) / t3^3, -t3 + 1}}
```

In[171]:=
```
Length[G4smoothTangentContributions[t1, t2, t3]]
```

Out[171]= 12

In[194]:=
```
GT4smoothPointsContributions[t1_, t2_, t3_, u_, v_] :=
 {{(-1) / (t2 - 1), (-1) / (t3 - 1), (-1) / (t1^4 - 1), t1 / (t1 - t2),
   t1 / (t1 - t3), (-1) / (t1^3 - 1), t1^2 / (t1^2 - t2), t1^2 / (t1^2 - t3),
   (-1) / (t1^2 - 1), t1^3 / (t1^3 - t2), t1^3 / (t1^3 - t3),
   (-1) / (t1 - 1), -u + 1, -t1 * u + 1, -t1^2 * u + 1, -t1^3 * u + 1,
   -v + 1, (t1 - v) / t1, (t1^2 - v) / t1^2, (t1^3 - v) / t1^3},
  {(-1) / (t3 - 1), t1 / (t1 - t3), (-1) / (t2 - 1), (-1) / (t1^2 - 1), t1^2 / (t1^2 - t3),
   t1 / (t1 - t2), (-1) / (t1 - 1), t1^2 / (t1^2 - t2^2), t2 / (t2 - t3),
   (-1) / (t1 - 1), (-t2) / (t1^3 - t2), (-1) / (t2 - 1), -u + 1, -t1 * u + 1,
   -t1^2 * u + 1, -t2 * u + 1, -v + 1, (t1 - v) / t1, (t1^2 - v) / t1^2, (t2 - v) / t2},
  {(-1) / (t3 - 1), (-1) / (t1^2 - 1), (-1) / (t2^2 - 1), t1 / (t1 - t3),
   (-1) / (t1 - 1), (-t1) / (t2^2 - t1), t2 / (t2 - t3), (-t2) / (t1^2 - t2),
   (-1) / (t2 - 1), (t1 * t2) / (t1 * t2 - t3), (-t2) / (t1 - t2),
   t1 / (t1 - t2), -u + 1, -t1 * u + 1, -t2 * u + 1, -t1 * t2 * u + 1,
```

```
 -v + 1, (t1 - v) / t1, (t2 - v) / t2, (t1 * t2 - v) / (t1 * t2)},
{(-1) / (t3 - 1), t1 / (t1 - t3), (-1) / (t1 - 1), (-1) / (t2 - 1), (-t1) / (t2^3 - t1),
 t2 / (t2 - t3), (-1) / (t1 - 1), (-1) / (t2^2 - 1), t2^2 / (t2^2 - t3),
 (-t2^2) / (t1^2 - t2^2), (-t2) / (t1 - t2), (-1) / (t2 - 1), -u + 1, -t1 * u + 1,
 -t2 * u + 1, -t2^2 * u + 1, -v + 1, (t1 - v) / t1, (t2 - v) / t2, (t2^2 - v) / t2^2},
{(-1) / (t1 - 1), (-1) / (t3 - 1), (-1) / (t2^4 - 1), (-t2) / (t1 - t2),
 t2 / (t2 - t3), (-1) / (t2^3 - 1), t2^2 / (t2^2 - t1), t2^2 / (t2^2 - t3),
 (-1) / (t2^2 - 1), t2^3 / (t2^3 - t1), t2^3 / (t2^3 - t3),
 (-1) / (t2 - 1), -u + 1, -t2 * u + 1, -t2^2 * u + 1, -t2^3 * u + 1,
 -v + 1, (t2 - v) / t2, (t2^2 - v) / t2^2, (t2^3 - v) / t2^3},
{(-1) / (t2 - 1), t1 / (t1 - t2), (-1) / (t3 - 1), (-1) / (t1^2 - 1), t1^2 / (t1^2 - t2),
 t1 / (t1 - t3), (-1) / (t1 - 1), t1^2 / (t1^2 - t3^2), (-t3) / (t2 - t3),
 (-1) / (t1 - 1), (-t3) / (t1^3 - t3), (-1) / (t3 - 1), -u + 1, -t1 * u + 1,
 -t1^2 * u + 1, -t3 * u + 1, -v + 1, (t1 - v) / t1, (t1^2 - v) / t1^2, (t3 - v) / t3},
{(-1) / (t1 - 1), (-t2) / (t1 - t2), (-1) / (t3 - 1), (-1) / (t2^2 - 1),
 t2^2 / (t2^2 - t1), t2 / (t2 - t3), (-1) / (t2 - 1), t2^2 / (t2^2 - t3^2),
 (-t3) / (t1 - t3), (-1) / (t2 - 1), (-t3) / (t2^3 - t3), (-1) / (t3 - 1),
 -u + 1, -t2 * u + 1, -t2^2 * u + 1, -t3 * u + 1, -v + 1, (t2 - v) / t2,
 (t2^2 - v) / t2^2, (t3 - v) / t3}, {(-1) / (t2 - 1), (-1) / (t1^2 - 1),
 (-1) / (t3^2 - 1), t1 / (t1 - t2), (-1) / (t1 - 1), (-t1) / (t3^2 - t1),
 (-t3) / (t2 - t3), (-t3) / (t1^2 - t3), (-1) / (t3 - 1), (t1 * t3) / (t1 * t3 - t2),
 (-t3) / (t1 - t3), t1 / (t1 - t3), -u + 1, -t1 * u + 1, -t3 * u + 1,
 -t1 * t3 * u + 1, -v + 1, (t1 - v) / t1, (t3 - v) / t3, (t1 * t3 - v) / (t1 * t3)},
{(-1) / (t1 - 1), (-1) / (t2^2 - 1), (-1) / (t3^2 - 1), (-t2) / (t1 - t2),
 (-1) / (t2 - 1), (-t2) / (t3^2 - t2), (-t3) / (t1 - t3), (-t3) / (t2^2 - t3),
 (-1) / (t3 - 1), (t2 * t3) / (t2 * t3 - t1), (-t3) / (t2 - t3),
 t2 / (t2 - t3), -u + 1, -t2 * u + 1, -t3 * u + 1, -t2 * t3 * u + 1,
 -v + 1, (t2 - v) / t2, (t3 - v) / t3, (t2 * t3 - v) / (t2 * t3)},
{(-1) / (t2 - 1), t1 / (t1 - t2), (-1) / (t1 - 1), (-1) / (t3 - 1), (-t1) / (t3^3 - t1),
 (-t3) / (t2 - t3), (-1) / (t1 - 1), (-1) / (t3^2 - 1), t3^2 / (t3^2 - t2),
 (-t3^2) / (t1^2 - t3^2), (-t3) / (t1 - t3), (-1) / (t3 - 1), -u + 1, -t1 * u + 1,
 -t3 * u + 1, -t3^2 * u + 1, -v + 1, (t1 - v) / t1, (t3 - v) / t3, (t3^2 - v) / t3^2},
{(-1) / (t1 - 1), (-t2) / (t1 - t2), (-1) / (t2 - 1), (-1) / (t3 - 1),
 (-t2) / (t3^3 - t2), (-t3) / (t1 - t3), (-1) / (t2 - 1), (-1) / (t3^2 - 1),
 t3^2 / (t3^2 - t1), (-t3^2) / (t2^2 - t3^2), (-t3) / (t2 - t3),
 (-1) / (t3 - 1), -u + 1, -t2 * u + 1, -t3 * u + 1, -t3^2 * u + 1, -v + 1,
 (t2 - v) / t2, (t3 - v) / t3, (t3^2 - v) / t3^2}, {(-1) / (t1 - 1), (-1) / (t2 - 1),
 (-1) / (t3^4 - 1), (-t3) / (t1 - t3), (-t3) / (t2 - t3), (-1) / (t3^3 - 1),
 t3^2 / (t3^2 - t1), t3^2 / (t3^2 - t2), (-1) / (t3^2 - 1), t3^3 / (t3^3 - t1),
 t3^3 / (t3^3 - t2), (-1) / (t3 - 1), -u + 1, -t3 * u + 1, -t3^2 * u + 1,
 -t3^3 * u + 1, -v + 1, (t3 - v) / t3, (t3^2 - v) / t3^2, (t3^3 - v) / t3^3}}
```

In[195]:=
```
Length[GT4smoothPointsContributions[t1, t2, t3, u, v]]
```

Out[195]= 12

In[174]:=
```
G4smooth[t1_, t2_, t3_] :=
  Sum[1 / Det[DiagonalMatrix[G4smoothTangentContributions[t1, t2, t3][[i]]]],
   {i, 1, 12}];
```

In[196]:=
```
GT4smooth[t1_, t2_, t3_, u_, v_] :=
  Sum[Det[DiagonalMatrix[GT4smoothPointsContributions[t1, t2, t3, u, v][[i]]]],
   {i, 1, 12}];
```

In[198]:=
```
Together[GT4smooth[t1, t2, t3, u, v] +
  GT44[t1, t2, t3, u, v] - SeriesCoefficient[Exp[Sum[Q^n * (1 - u^n) *
      (1 - v^n) / (n * (1 - t1^n) * (1 - t2^n) * (1 - t3^n)), {n, 1, 4}]], {Q, 0, 4}]]
```

Out[198]= 0

In[106]:=
```
Solve[{u1 * u2 == t1^2, u2 * u4 == t3, u0 * u3 == t2^2 / t1^2, u3 * u4 == t2 * t3 / t1^2,
  u0 * u4 == t3^2 / t1^2, u1 * u5 == t1^3 / t2, u0 * u5 == t1, u4 * u5 == t1 * t3 / t2,
  u0 * u2 == t2, u1 * u4 == t3^2 / t2, u2 * u5 == t1^3 / t3, u3 * u5 == t1 * t2 / t3,
  u2 * u3 == t2^2 / t3, u1 * u3 == t2, u0 * u1 == t3}, {u0, u1, u2, u3, u4, u5}]
```

Out[106]=
$$\left\{\left\{u0 \to -\frac{\sqrt{t2}\ \sqrt{t3}}{t1},\ u1 \to -\frac{t1\sqrt{t3}}{\sqrt{t2}},\ u2 \to -\frac{t1\sqrt{t2}}{\sqrt{t3}},\ u3 \to -\frac{t2^{3/2}}{t1\sqrt{t3}},\right.\right.$$
$$\left.u4 \to -\frac{t3^{3/2}}{t1\sqrt{t2}},\ u5 \to -\frac{t1^2}{\sqrt{t2}\ \sqrt{t3}}\right\},\ \left\{u0 \to \frac{\sqrt{t2}\ \sqrt{t3}}{t1},\ u1 \to \frac{t1\sqrt{t3}}{\sqrt{t2}},\right.$$
$$\left.\left.u2 \to \frac{t1\sqrt{t2}}{\sqrt{t3}},\ u3 \to \frac{t2^{3/2}}{t1\sqrt{t3}},\ u4 \to \frac{t3^{3/2}}{t1\sqrt{t2}},\ u5 \to \frac{t1^2}{\sqrt{t2}\ \sqrt{t3}}\right\}\right\}$$

In[107]:=
```
Together[G[-Sqrt[t2] Sqrt[t3] / t1, -t1 Sqrt[t3] / Sqrt[t2], -t1 Sqrt[t2] / Sqrt[t3],
  -t2^(3/2) / (t1 Sqrt[t3]), -t3^(3/2) / (t1 Sqrt[t2]), -t1^2 / (Sqrt[t2] Sqrt[t3])]]
```

Out[107]=
$$\frac{1}{t1^2\ t2\ t3}$$
$$\left(-t1^5\ t2^2 + t1^6\ t2^2 - t1^3\ t2^3 + t1^5\ t2^3 + t1^3\ t2^4 - t1^6\ t2^4 + t1^2\ t2\ t3 - t1^5\ t2\ t3 + t1^6\ t2\ t3 - t1^7\ t2\ t3 - 2\ t1^3\ t2^2\ t3 + t1^4\ t2^2\ t3 + 2\ t1^5\ t2^2\ t3 - t1^6\ t2^2\ t3 - t1^2\ t2^3\ t3 + 3\ t1^3\ t2^3\ t3 - t1^4\ t2^3\ t3 - t1^5\ t2^3\ t3 - t1^6\ t2^3\ t3 + t1^7\ t2^3\ t3 + t1\ t2^4\ t3 - t1^3\ t2^4\ t3 - t1^4\ t2^4\ t3 + t1^6\ t2^4\ t3 - t1\ t2^5\ t3 + t1^4\ t2^5\ t3 - t1^5\ t3^2 + t1^6\ t3^2 - 2\ t1^3\ t2\ t3^2 + t1^4\ t2\ t3^2 + 2\ t1^5\ t2\ t3^2 - t1^6\ t2\ t3^2 - t1\ t2^2\ t3^2 - t1^2\ t2^2\ t3^2 + 5\ t1^3\ t2^2\ t3^2 - t1^4\ t2^2\ t3^2 - t1^5\ t2^2\ t3^2 - 2\ t1^6\ t2^2\ t3^2 + t1^7\ t2^2\ t3^2 - t2^3\ t3^2 + 2\ t1\ t2^3\ t3^2 + t1^2\ t2^3\ t3^2 - 2\ t1^3\ t2^3\ t3^2 - 2\ t1^4\ t2^3\ t3^2 + t1^5\ t2^3\ t3^2 + 2\ t1^6\ t2^3\ t3^2 - t1^7\ t2^3\ t3^2 + t2^4\ t3^2 - t1\ t2^4\ t3^2 - t1^2\ t2^4\ t3^2 - t1^3\ t2^4\ t3^2 + 3\ t1^4\ t2^4\ t3^2 - t1^5\ t2^4\ t3^2 + t1^2\ t2^5\ t3^2 - t1^4\ t2^5\ t3^2 - t1^3\ t3^3 + t1^5\ t3^3 - t1^2\ t2\ t3^3 + 3\ t1^3\ t2\ t3^3 - t1^4\ t2\ t3^3 - t1^5\ t2\ t3^3 - t1^6\ t2\ t3^3 + t1^7\ t2\ t3^3 - t2^2\ t3^3 + 2\ t1\ t2^2\ t3^3 + t1^2\ t2^2\ t3^3 - 2\ t1^3\ t2^2\ t3^3 - 2\ t1^4\ t2^2\ t3^3 + t1^5\ t2^2\ t3^3 + 2\ t1^6\ t2^2\ t3^3 - t1^7\ t2^2\ t3^3 + t2^3\ t3^3 - 2\ t1\ t2^3\ t3^3 - t1^2\ t2^3\ t3^3 - t1^3\ t2^3\ t3^3 + 5\ t1^4\ t2^3\ t3^3 - t1^5\ t2^3\ t3^3 - t1^6\ t2^3\ t3^3 - t1\ t2^4\ t3^3 + 2\ t1^2\ t2^4\ t3^3 + t1^3\ t2^4\ t3^3 - 2\ t1^4\ t2^4\ t3^3 + t1\ t2^5\ t3^3 - t1^2\ t2^5\ t3^3 + t1^3\ t3^4 - t1^6\ t3^4 + t1\ t2\ t3^4 - t1^3\ t2\ t3^4 - t1^4\ t2\ t3^4 + t1^6\ t2\ t3^4 + t2^2\ t3^4 - t1\ t2^2\ t3^4 - t1^2\ t2^2\ t3^4 - t1^3\ t2^2\ t3^4 + 3\ t1^4\ t2^2\ t3^4 - t1^5\ t2^2\ t3^4 - t1\ t2^3\ t3^4 + 2\ t1^2\ t2^3\ t3^4 + t1^3\ t2^3\ t3^4 - 2\ t1^4\ t2^3\ t3^4 - t2^4\ t3^4 + t1\ t2^4\ t3^4 - t1^2\ t2^4\ t3^4 + t1^5\ t2^4\ t3^4 - t1\ t2\ t3^5 + t1^4\ t2\ t3^5 + t1^2\ t2^2\ t3^5 - t1^4\ t2^2\ t3^5 + t1\ t2^3\ t3^5 - t1^2\ t2^3\ t3^5\right)$$

```
In[176]:= G56tangent[t1_, t2_, t3_] :=
 Det[DiagonalMatrix[{-t2 + 1, -t3 + 1, -t1^2 + 1, -t1 + 1, (-t1 * t3 + t2) / t2, -t2 + 1,
    -t3 + 1, (-t3^2 + t2) / t2, (-t1^3 + t2) / t2, (-t1 * t2 + t3) / t3, -t1 + 1,
    (-t2^2 + t3) / t3, -t2 + 1, -t3 + 1, (-t1^3 + t3) / t3, (t1 - t2) / t1, (t1 - t3) / t1,
    (t1^2 - t2^2) / t1^2, (t1^2 - t2 * t3) / t1^2, (t1^2 - t3^2) / t1^2, -t1 + 1}]]
```

```
In[143]:=
```

```
In[158]:= Together[%107 / G56tangent[t1, t2, t3]]
```

```
Out[158]= (t1^6 t2^2 t3^2
    (-t1^5 t2^2 - t1^3 t2^3 - t1^4 t2^3 - t1^5 t2^3 + t1^2 t2 t3 + t1^3 t2 t3 + t1^4 t2 t3 + t1^6 t2 t3 +
      t1^2 t2^2 t3 - t1^3 t2^2 t3 + t1^6 t2^2 t3 + t1 t2^4 t3 + t1^2 t2^4 t3 + t1^3 t2^4 t3 - t1^5 t3^2 +
      t1^2 t2 t3^2 - t1^3 t2 t3^2 + t1^6 t2 t3^2 - t1 t2^2 t3^2 - t1^2 t2^2 t3^2 + t1^4 t2^2 t3^2 +
      t1^5 t2^2 t3^2 - t2^3 t3^2 + t1^3 t2^3 t3^2 - t1^4 t2^3 t3^2 + t1 t2^4 t3^2 - t1^3 t3^3 -
      t1^4 t3^3 - t1^5 t3^3 - t2^2 t3^3 + t1^3 t2^2 t3^3 - t1^4 t2^2 t3^3 - t2^3 t3^3 - t1^2 t2^3 t3^3 -
      t1^3 t2^3 t3^3 - t1^4 t2^3 t3^3 + t1 t2 t3^4 + t1^2 t2 t3^4 + t1^3 t2 t3^4 + t1 t2^2 t3^4)) /
  ((-1 + t1)^3 (1 + t1) (t1 - t2)^2 (t1^3 - t2) (-1 + t2)^2 (t1 + t2) (t1 - t3)^2
    (t1^3 - t3) (t1 t2 - t3) (t2^2 - t3) (-1 + t3)^2
    (t1 + t3) (-t2 + t1 t3) (t1^2 - t2 t3) (t2 - t3^2))
```

```
In[177]:= G56[t1_, t2_, t3_] :=
 (t1^6 t2^2 t3^2 (-t1^5 t2^2 - t1^3 t2^3 - t1^4 t2^3 - t1^5 t2^3 + t1^2 t2 t3 + t1^3 t2 t3 + t1^4 t2 t3 +
      t1^6 t2 t3 + t1^2 t2^2 t3 - t1^3 t2^2 t3 + t1^6 t2^2 t3 + t1 t2^4 t3 + t1^2 t2^4 t3 +
      t1^3 t2^4 t3 - t1^5 t3^2 + t1^2 t2 t3^2 - t1^3 t2 t3^2 + t1^6 t2 t3^2 - t1 t2^2 t3^2 - t1^2 t2^2 t3^2 +
      t1^4 t2^2 t3^2 + t1^5 t2^2 t3^2 - t2^3 t3^2 + t1^3 t2^3 t3^2 - t1^4 t2^3 t3^2 + t1 t2^4 t3^2 - t1^3 t3^3 -
      t1^4 t3^3 - t1^5 t3^3 - t2^2 t3^3 + t1^3 t2^2 t3^3 - t1^4 t2^2 t3^3 - t2^3 t3^3 - t1^2 t2^3 t3^3 -
      t1^3 t2^3 t3^3 - t1^4 t2^3 t3^3 + t1 t2 t3^4 + t1^2 t2 t3^4 + t1^3 t2 t3^4 + t1 t2^2 t3^4)) /
  ((-1 + t1)^3 (1 + t1) (t1 - t2)^2 (t1^3 - t2) (-1 + t2)^2 (t1 + t2) (t1 - t3)^2 (t1^3 - t3)
    (t1 t2 - t3) (t2^2 - t3) (-1 + t3)^2 (t1 + t3) (-t2 + t1 t3) (t1^2 - t2 t3) (t2 - t3^2))
```

```
In[185]:= T56[t1_, t2_, t3_, u_, v_] :=
 Det[DiagonalMatrix[{-u + 1, -t1 * u + 1, -t2 * u + 1, -t3 * u + 1, -t1^2 * u + 1,
    -v + 1, (t1 - v) / t1, (t2 - v) / t2, (t3 - v) / t3, (t1^2 - v) / t1^2}]]
```

```
In[186]:= GT56[t1_, t2_, t3_, u_, v_] := G56[t1, t2, t3] * T56[t1, t2, t3, u, v]
```

```
In[178]:= G5smoothTangentContributions[t1_, t2_, t3_] :=
 {{-t2 + 1, -t3 + 1, -t1^5 + 1, (t1 - t2) / t1, (t1 - t3) / t1, -t1^4 + 1,
    (t1^2 - t2) / t1^2, (t1^2 - t3) / t1^2, -t1^3 + 1, (t1^3 - t2) / t1^3,
    (t1^3 - t3) / t1^3, -t1^2 + 1, (t1^4 - t2) / t1^4, (t1^4 - t3) / t1^4, -t1 + 1},
  {-t3 + 1, (t1 - t3) / t1, -t2 + 1, -t1^3 + 1, (t1^2 - t3) / t1^2,
    (t1 - t2) / t1, -t1^2 + 1, (t1^3 - t3) / t1^3, (t1^2 - t2) / t1^2, -t1 + 1,
    (t1^3 - t2^2) / t1^3, (t2 - t3) / t2, -t1 + 1, (-t1^4 + t2) / t2, -t2 + 1},
  {-t3 + 1, (t1 - t3) / t1, -t1^2 + 1, (-t2^2 + t1) / t1, (t1^2 - t3) / t1^2,
    -t1 + 1, -t2 + 1, (t1^2 - t2^2) / t1^2, (t2 - t3) / t2, (-t1^3 + t2) / t2,
    -t2 + 1, (t1 * t2 - t3) / (t1 * t2), (-t1^2 + t2) / t2, -t1 + 1, (t1 - t2) / t1},
```

```
{-t3 + 1, (t1 - t3) / t1, -t2 + 1, -t1^2 + 1, (t1^2 - t3) / t1^2, (t1 - t2) / t1,
 -t1 + 1, (-t2^3 + t1^2) / t1^2, (t2 - t3) / t2, -t1 + 1, -t2^2 + 1,
 (t2^2 - t3) / t2^2, (-t1 + t2) / t2, (-t1^3 + t2^2) / t2^2, -t2 + 1},
{-t3 + 1, (t1 - t3) / t1, -t1 + 1, -t2^2 + 1, (-t2^3 + t1) / t1, (t2 - t3) / t2,
 (-t1^2 + t2) / t2, (t1 * t2 - t3) / (t1 * t2), (-t1 + t2) / t2, -t2 + 1,
 (-t2^2 + t1) / t1, (t2^2 - t3) / t2^2, (-t1^2 + t2^2) / t2^2, -t1 + 1, -t2 + 1},
{-t3 + 1, (t1 - t3) / t1, -t1 + 1, -t2 + 1, (-t2^4 + t1) / t1, (t2 - t3) / t2,
 -t1 + 1, -t2^3 + 1, (t2^2 - t3) / t2^2, (-t1 + t2) / t2, -t2^2 + 1,
 (t2^3 - t3) / t2^3, (t2^3 - t1^2) / t2^3, (t2^2 - t1) / t2^2, -t2 + 1},
{-t1 + 1, -t3 + 1, -t2^5 + 1, (-t1 + t2) / t2, (t2 - t3) / t2, -t2^4 + 1,
 (t2^2 - t1) / t2^2, (t2^2 - t3) / t2^2, -t2^3 + 1, (t2^3 - t1) / t2^3,
 (t2^3 - t3) / t2^3, -t2^2 + 1, (t2^4 - t1) / t2^4, (t2^4 - t3) / t2^4, -t2 + 1},
{-t2 + 1, (t1 - t2) / t1, -t3 + 1, -t1^3 + 1, (t1^2 - t2) / t1^2,
 (t1 - t3) / t1, -t1^2 + 1, (t1^3 - t2) / t1^3, (t1^2 - t3) / t1^2, -t1 + 1,
 (t1^3 - t3^2) / t1^3, (-t2 + t3) / t3, -t1 + 1, (-t1^4 + t3) / t3, -t3 + 1},
{-t1 + 1, -t3 + 1, (-t2^2 + t1) / t1, (-t1^2 + t2) / t2, -t2 + 1, (-t1 + t2) / t2,
 (t2 - t3) / t2, (t1 - t2) / t1, (t1 - t3) / t1, (t1 * t2 - t3^2) / (t1 * t2),
 (-t1^2 + t3) / t3, -t1 + 1, (-t2^2 + t3) / t3, -t2 + 1, -t3 + 1},
{-t1 + 1, (-t1 + t2) / t2, -t3 + 1, -t2^3 + 1, (t2^2 - t1) / t2^2,
 (t2 - t3) / t2, -t2^2 + 1, (t2^3 - t1) / t2^3, (t2^2 - t3) / t2^2, -t2 + 1,
 (t2^3 - t3^2) / t2^3, (-t1 + t3) / t3, -t2 + 1, (-t2^4 + t3) / t3, -t3 + 1},
{-t2 + 1, (t1 - t2) / t1, -t1^2 + 1, (-t3^2 + t1) / t1, (t1^2 - t2) / t1^2,
 -t1 + 1, -t3 + 1, (t1^2 - t3^2) / t1^2, (-t2 + t3) / t3, (-t1^3 + t3) / t3,
 -t3 + 1, (t1 * t3 - t2) / (t1 * t3), (-t1^2 + t3) / t3, -t1 + 1, (t1 - t3) / t1},
{-t1 + 1, -t2 + 1, -t3 + 1, (-t2^2 + t1) / t1, (-t3^2 + t1) / t1, -t1 + 1, -t2 + 1,
 (-t3^2 + t2) / t2, (-t2^2 + t3) / t3, -t3 + 1, (-t1^2 + t2 * t3) / (t2 * t3),
 (-t1 + t3) / t3, (-t1 + t2) / t2, (-t2 + t3) / t3, (t2 - t3) / t2},
{-t1 + 1, -t2 + 1, (-t3^2 + t1) / t1, (-t1^2 + t2) / t2, -t1 + 1, -t2 + 1,
 -t3 + 1, (-t3^2 + t2) / t2, (-t1^2 + t3) / t3, -t3 + 1, (-t1 + t3) / t3,
 (-t2 + t3) / t3, (-t2^2 + t1 * t3) / (t1 * t3), (t1 - t2) / t1, (t1 - t3) / t1},
{-t1 + 1, (-t1 + t2) / t2, -t2^2 + 1, (-t3^2 + t2) / t2, (t2^2 - t1) / t2^2,
 -t2 + 1, -t3 + 1, (t2^2 - t3^2) / t2^2, (-t1 + t3) / t3, (-t2^3 + t3) / t3,
 -t3 + 1, (t2 * t3 - t1) / (t2 * t3), (-t2^2 + t3) / t3, -t2 + 1, (t2 - t3) / t2},
{-t2 + 1, (t1 - t2) / t1, -t3 + 1, -t1^2 + 1, (t1^2 - t2) / t1^2, (t1 - t3) / t1,
 -t1 + 1, (-t3^3 + t1^2) / t1^2, (-t2 + t3) / t3, -t1 + 1, -t3^2 + 1,
 (t3^2 - t2) / t3^2, (-t1 + t3) / t3, (-t1^3 + t3^2) / t3^2, -t3 + 1},
{-t1 + 1, (-t1 + t2) / t2, -t3 + 1, -t2^2 + 1, (t2^2 - t1) / t2^2, (t2 - t3) / t2,
 -t2 + 1, (-t3^3 + t2^2) / t2^2, (-t1 + t3) / t3, -t2 + 1, -t3^2 + 1,
 (t3^2 - t1) / t3^2, (-t2 + t3) / t3, (-t2^3 + t3^2) / t3^2, -t3 + 1},
{-t2 + 1, (t1 - t2) / t1, -t1 + 1, -t3^2 + 1, (-t3^3 + t1) / t1, (-t2 + t3) / t3,
 (-t1^2 + t3) / t3, (t1 * t3 - t2) / (t1 * t3), (-t1 + t3) / t3, -t3 + 1,
 (-t3^2 + t1) / t1, (t3^2 - t2) / t3^2, (-t1^2 + t3^2) / t3^2, -t1 + 1, -t3 + 1},
{-t1 + 1, (-t1 + t2) / t2, -t2 + 1, -t3^2 + 1, (-t3^3 + t2) / t2, (-t1 + t3) / t3,
 (-t2^2 + t3) / t3, (t2 * t3 - t1) / (t2 * t3), (-t2 + t3) / t3, -t3 + 1,
 (-t3^2 + t2) / t2, (t3^2 - t1) / t3^2, (-t2^2 + t3^2) / t3^2, -t2 + 1, -t3 + 1},
{-t2 + 1, (t1 - t2) / t1, -t1 + 1, -t3 + 1, (-t3^4 + t1) / t1, (-t2 + t3) / t3,
 -t1 + 1, -t3^3 + 1, (t3^2 - t2) / t3^2, (-t1 + t3) / t3, -t3^2 + 1,
```

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   (t3^3 - t2) / t3^3, (t3^3 - t1^2) / t3^3, (t3^2 - t1) / t3^2, -t3 + 1},
  {-t1 + 1, (-t1 + t2) / t2, -t2 + 1, -t3 + 1, (-t3^4 + t2) / t2, (-t1 + t3) / t3,
   -t2 + 1, -t3^3 + 1, (t3^2 - t1) / t3^2, (-t2 + t3) / t3, -t3^2 + 1,
   (t3^3 - t1) / t3^3, (t3^3 - t2^2) / t3^3, (t3^2 - t2) / t3^2, -t3 + 1},
  {-t1 + 1, -t2 + 1, -t3^5 + 1, (-t1 + t3) / t3, (-t2 + t3) / t3, -t3^4 + 1,
   (t3^2 - t1) / t3^2, (t3^2 - t2) / t3^2, -t3^3 + 1, (t3^3 - t1) / t3^3,
   (t3^3 - t2) / t3^3, -t3^2 + 1, (t3^4 - t1) / t3^4, (t3^4 - t2) / t3^4, -t3 + 1}}
```

In[149]:=
```
Length[G5smoothTangentContributions[t1, t2, t3]]
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Out[149]= 21

In[187]:=
```
GT5smoothPointsContributions[t1_, t2_, t3_, u_, v_] :=
 {{(-1) / (t2 - 1), (-1) / (t3 - 1), (-1) / (t1^5 - 1), t1 / (t1 - t2),
   t1 / (t1 - t3), (-1) / (t1^4 - 1), t1^2 / (t1^2 - t2), t1^2 / (t1^2 - t3),
   (-1) / (t1^3 - 1), t1^3 / (t1^3 - t2), t1^3 / (t1^3 - t3),
   (-1) / (t1^2 - 1), t1^4 / (t1^4 - t2), t1^4 / (t1^4 - t3), (-1) / (t1 - 1),
   -u + 1, -t1 * u + 1, -t1^2 * u + 1, -t1^3 * u + 1, -t1^4 * u + 1, -v + 1,
   (t1 - v) / t1, (t1^2 - v) / t1^2, (t1^3 - v) / t1^3, (t1^4 - v) / t1^4},
  {(-1) / (t3 - 1), t1 / (t1 - t3), (-1) / (t2 - 1), (-1) / (t1^3 - 1), t1^2 / (t1^2 - t3),
   t1 / (t1 - t2), (-1) / (t1^2 - 1), t1^3 / (t1^3 - t3), t1^2 / (t1^2 - t2),
   (-1) / (t1 - 1), t1^3 / (t1^3 - t2^2), t2 / (t2 - t3), (-1) / (t1 - 1),
   (-t2) / (t1^4 - t2), (-1) / (t2 - 1), -u + 1, -t1 * u + 1, -t1^2 * u + 1, -t1^3 * u + 1,
   -t2 * u + 1, -v + 1, (t1 - v) / t1, (t1^2 - v) / t1^2, (t1^3 - v) / t1^3, (t2 - v) / t2},
  {(-1) / (t3 - 1), t1 / (t1 - t3), (-1) / (t1^2 - 1), (-t1) / (t2^2 - t1),
   t1^2 / (t1^2 - t3), (-1) / (t1 - 1), (-1) / (t2 - 1), t1^2 / (t1^2 - t2^2),
   t2 / (t2 - t3), (-t2) / (t1^3 - t2), (-1) / (t2 - 1), (t1 * t2) / (t1 * t2 - t3),
   (-t2) / (t1^2 - t2), (-1) / (t1 - 1), t1 / (t1 - t2), -u + 1, -t1 * u + 1,
   -t1^2 * u + 1, -t2 * u + 1, -t1 * t2 * u + 1, -v + 1, (t1 - v) / t1,
   (t1^2 - v) / t1^2, (t2 - v) / t2, (t1 * t2 - v) / (t1 * t2)},
  {(-1) / (t3 - 1), t1 / (t1 - t3), (-1) / (t2 - 1), (-1) / (t1^2 - 1),
   t1^2 / (t1^2 - t3), t1 / (t1 - t2), (-1) / (t1 - 1), (-t1^2) / (t2^3 - t1^2),
   t2 / (t2 - t3), (-1) / (t1 - 1), (-1) / (t2^2 - 1), t2^2 / (t2^2 - t3),
   (-t2) / (t1 - t2), (-t2^2) / (t1^3 - t2^2), (-1) / (t2 - 1),
   -u + 1, -t1 * u + 1, -t1^2 * u + 1, -t2 * u + 1, -t2^2 * u + 1, -v + 1,
   (t1 - v) / t1, (t1^2 - v) / t1^2, (t2 - v) / t2, (t2^2 - v) / t2^2},
  {(-1) / (t3 - 1), t1 / (t1 - t3), (-1) / (t1 - 1), (-1) / (t2^2 - 1),
   (-t1) / (t2^3 - t1), t2 / (t2 - t3), (-t2) / (t1^2 - t2), (t1 * t2) / (t1 * t2 - t3),
   (-t2) / (t1 - t2), (-1) / (t2 - 1), (-t1) / (t2^2 - t1), t2^2 / (t2^2 - t3),
   (-t2^2) / (t1^2 - t2^2), (-1) / (t1 - 1), (-1) / (t2 - 1), -u + 1,
   -t1 * u + 1, -t2 * u + 1, -t1 * t2 * u + 1, -t2^2 * u + 1, -v + 1,
   (t1 - v) / t1, (t2 - v) / t2, (t1 * t2 - v) / (t1 * t2), (t2^2 - v) / t2^2},
  {(-1) / (t3 - 1), t1 / (t1 - t3), (-1) / (t1 - 1), (-1) / (t2 - 1),
   (-t1) / (t2^4 - t1), t2 / (t2 - t3), (-1) / (t1 - 1), (-1) / (t2^3 - 1),
   t2^2 / (t2^2 - t3), (-t2) / (t1 - t2), (-1) / (t2^2 - 1), t2^3 / (t2^3 - t3),
   t2^3 / (t2^3 - t1^2), t2^2 / (t2^2 - t1), (-1) / (t2 - 1),
   -u + 1, -t1 * u + 1, -t2 * u + 1, -t2^2 * u + 1, -t2^3 * u + 1, -v + 1,
   (t1 - v) / t1, (t2 - v) / t2, (t2^2 - v) / t2^2, (t2^3 - v) / t2^3},
  {(-1) / (t1 - 1), (-1) / (t3 - 1), (-1) / (t2^5 - 1), (-t2) / (t1 - t2),
```

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 t2 / (t2 - t3), (-1) / (t2^4 - 1), t2^2 / (t2^2 - t1), t2^2 / (t2^2 - t3),
 (-1) / (t2^3 - 1), t2^3 / (t2^3 - t1), t2^3 / (t2^3 - t3),
 (-1) / (t2^2 - 1), t2^4 / (t2^4 - t1), t2^4 / (t2^4 - t3), (-1) / (t2 - 1),
 -u + 1, -t2 * u + 1, -t2^2 * u + 1, -t2^3 * u + 1, -t2^4 * u + 1, -v + 1,
 (t2 - v) / t2, (t2^2 - v) / t2^2, (t2^3 - v) / t2^3, (t2^4 - v) / t2^4},
{(-1) / (t2 - 1), t1 / (t1 - t2), (-1) / (t3 - 1), (-1) / (t1^3 - 1), t1^2 / (t1^2 - t2),
 t1 / (t1 - t3), (-1) / (t1^2 - 1), t1^3 / (t1^3 - t2), t1^2 / (t1^2 - t3),
 (-1) / (t1 - 1), t1^3 / (t1^3 - t3^2), (-t3) / (t2 - t3), (-1) / (t1 - 1),
 (-t3) / (t1^4 - t3), (-1) / (t3 - 1), -u + 1, -t1 * u + 1, -t1^2 * u + 1, -t1^3 * u + 1,
 -t3 * u + 1, -v + 1, (t1 - v) / t1, (t1^2 - v) / t1^2, (t1^3 - v) / t1^3, (t3 - v) / t3},
{(-1) / (t1 - 1), (-1) / (t3 - 1), (-t1) / (t2^2 - t1), (-t2) / (t1^2 - t2),
 (-1) / (t2 - 1), (-t2) / (t1 - t2), t2 / (t2 - t3), t1 / (t1 - t2), t1 / (t1 - t3),
 (t1 * t2) / (t1 * t2 - t3^2), (-t3) / (t1^2 - t3), (-1) / (t1 - 1), (-t3) / (t2^2 - t3),
 (-1) / (t2 - 1), (-1) / (t3 - 1), -u + 1, -t1 * u + 1, -t2 * u + 1, -t1 * t2 * u + 1,
 -t3 * u + 1, -v + 1, (t1 - v) / t1, (t2 - v) / t2, (t1 * t2 - v) / (t1 * t2), (t3 - v) / t3},
{(-1) / (t1 - 1), (-t2) / (t1 - t2), (-1) / (t3 - 1), (-1) / (t2^3 - 1),
 t2^2 / (t2^2 - t1), t2 / (t2 - t3), (-1) / (t2^2 - 1), t2^3 / (t2^3 - t1),
 t2^2 / (t2^2 - t3), (-1) / (t2 - 1), t2^3 / (t2^3 - t3^2),
 (-t3) / (t1 - t3), (-1) / (t2 - 1), (-t3) / (t2^4 - t3), (-1) / (t3 - 1),
 -u + 1, -t2 * u + 1, -t2^2 * u + 1, -t2^3 * u + 1, -t3 * u + 1, -v + 1,
 (t2 - v) / t2, (t2^2 - v) / t2^2, (t2^3 - v) / t2^3, (t3 - v) / t3},
{(-1) / (t2 - 1), t1 / (t1 - t2), (-1) / (t1^2 - 1), (-t1) / (t3^2 - t1),
 t1^2 / (t1^2 - t2), (-1) / (t1 - 1), (-1) / (t3 - 1), t1^2 / (t1^2 - t3^2),
 (-t3) / (t2 - t3), (-t3) / (t1^3 - t3), (-1) / (t3 - 1),
 (t1 * t3) / (t1 * t3 - t2), (-t3) / (t1^2 - t3), (-1) / (t1 - 1), t1 / (t1 - t3),
 -u + 1, -t1 * u + 1, -t1^2 * u + 1, -t3 * u + 1, -t1 * t3 * u + 1, -v + 1,
 (t1 - v) / t1, (t1^2 - v) / t1^2, (t3 - v) / t3, (t1 * t3 - v) / (t1 * t3)},
{(-1) / (t1 - 1), (-1) / (t2 - 1), (-1) / (t3 - 1), (-t1) / (t2^2 - t1),
 (-t1) / (t3^2 - t1), (-1) / (t1 - 1), (-1) / (t2 - 1), (-t2) / (t3^2 - t2),
 (-t3) / (t2^2 - t3), (-1) / (t3 - 1), (-t2 * t3) / (t1^2 - t2 * t3),
 (-t3) / (t1 - t3), (-t2) / (t1 - t2), (-t3) / (t2 - t3), t2 / (t2 - t3),
 -u + 1, -t1 * u + 1, -t2 * u + 1, -t3 * u + 1, -t2 * t3 * u + 1, -v + 1,
 (t1 - v) / t1, (t2 - v) / t2, (t3 - v) / t3, (t2 * t3 - v) / (t2 * t3)},
{(-1) / (t1 - 1), (-1) / (t2 - 1), (-t1) / (t3^2 - t1), (-t2) / (t1^2 - t2),
 (-1) / (t1 - 1), (-1) / (t2 - 1), (-1) / (t3 - 1), (-t2) / (t3^2 - t2),
 (-t3) / (t1^2 - t3), (-1) / (t3 - 1), (-t3) / (t1 - t3), (-t3) / (t2 - t3),
 (-t1 * t3) / (t2^2 - t1 * t3), t1 / (t1 - t2), t1 / (t1 - t3),
 -u + 1, -t1 * u + 1, -t2 * u + 1, -t3 * u + 1, -t1 * t3 * u + 1, -v + 1,
 (t1 - v) / t1, (t2 - v) / t2, (t3 - v) / t3, (t1 * t3 - v) / (t1 * t3)},
{(-1) / (t1 - 1), (-t2) / (t1 - t2), (-1) / (t2^2 - 1), (-t2) / (t3^2 - t2),
 t2^2 / (t2^2 - t1), (-1) / (t2 - 1), (-1) / (t3 - 1), t2^2 / (t2^2 - t3^2),
 (-t3) / (t1 - t3), (-t3) / (t2^3 - t3), (-1) / (t3 - 1),
 (t2 * t3) / (t2 * t3 - t1), (-t3) / (t2^2 - t3), (-1) / (t2 - 1), t2 / (t2 - t3),
 -u + 1, -t2 * u + 1, -t2^2 * u + 1, -t3 * u + 1, -t2 * t3 * u + 1, -v + 1,
 (t2 - v) / t2, (t2^2 - v) / t2^2, (t3 - v) / t3, (t2 * t3 - v) / (t2 * t3)},
{(-1) / (t2 - 1), t1 / (t1 - t2), (-1) / (t3 - 1), (-1) / (t1^2 - 1),
 t1^2 / (t1^2 - t2), t1 / (t1 - t3), (-1) / (t1 - 1), (-t1^2) / (t3^3 - t1^2),
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  (-t3) / (t2 - t3), (-1) / (t1 - 1), (-1) / (t3^2 - 1), t3^2 / (t3^2 - t2),
  (-t3) / (t1 - t3), (-t3^2) / (t1^3 - t3^2), (-1) / (t3 - 1),
  -u + 1, -t1 * u + 1, -t1^2 * u + 1, -t3 * u + 1, -t3^2 * u + 1, -v + 1,
  (t1 - v) / t1, (t1^2 - v) / t1^2, (t3 - v) / t3, (t3^2 - v) / t3^2},
 {(-1) / (t1 - 1), (-t2) / (t1 - t2), (-1) / (t3 - 1), (-1) / (t2^2 - 1),
  t2^2 / (t2^2 - t1), t2 / (t2 - t3), (-1) / (t2 - 1), (-t2^2) / (t3^3 - t2^2),
  (-t3) / (t1 - t3), (-1) / (t2 - 1), (-1) / (t3^2 - 1), t3^2 / (t3^2 - t1),
  (-t3) / (t2 - t3), (-t3^2) / (t2^3 - t3^2), (-1) / (t3 - 1),
  -u + 1, -t2 * u + 1, -t2^2 * u + 1, -t3 * u + 1, -t3^2 * u + 1, -v + 1,
  (t2 - v) / t2, (t2^2 - v) / t2^2, (t3 - v) / t3, (t3^2 - v) / t3^2},
 {(-1) / (t2 - 1), t1 / (t1 - t2), (-1) / (t1 - 1), (-1) / (t3^2 - 1),
  (-t1) / (t3^3 - t1), (-t3) / (t2 - t3), (-t3) / (t1^2 - t3),
  (t1 * t3) / (t1 * t3 - t2), (-t3) / (t1 - t3), (-1) / (t3 - 1), (-t1) / (t3^2 - t1),
  t3^2 / (t3^2 - t2), (-t3^2) / (t1^2 - t3^2), (-1) / (t1 - 1), (-1) / (t3 - 1),
  -u + 1, -t1 * u + 1, -t3 * u + 1, -t1 * t3 * u + 1, -t3^2 * u + 1, -v + 1,
  (t1 - v) / t1, (t3 - v) / t3, (t1 * t3 - v) / (t1 * t3), (t3^2 - v) / t3^2},
 {(-1) / (t1 - 1), (-t2) / (t1 - t2), (-1) / (t2 - 1), (-1) / (t3^2 - 1),
  (-t2) / (t3^3 - t2), (-t3) / (t1 - t3), (-t3) / (t2^2 - t3),
  (t2 * t3) / (t2 * t3 - t1), (-t3) / (t2 - t3), (-1) / (t3 - 1), (-t2) / (t3^2 - t2),
  t3^2 / (t3^2 - t1), (-t3^2) / (t2^2 - t3^2), (-1) / (t2 - 1), (-1) / (t3 - 1),
  -u + 1, -t2 * u + 1, -t3 * u + 1, -t2 * t3 * u + 1, -t3^2 * u + 1, -v + 1,
  (t2 - v) / t2, (t3 - v) / t3, (t2 * t3 - v) / (t2 * t3), (t3^2 - v) / t3^2},
 {(-1) / (t2 - 1), t1 / (t1 - t2), (-1) / (t1 - 1), (-1) / (t3 - 1),
  (-t1) / (t3^4 - t1), (-t3) / (t2 - t3), (-1) / (t1 - 1), (-1) / (t3^3 - 1),
  t3^2 / (t3^2 - t2), (-t3) / (t1 - t3), (-1) / (t3^2 - 1), t3^3 / (t3^3 - t2),
  t3^3 / (t3^3 - t1^2), t3^2 / (t3^2 - t1), (-1) / (t3 - 1),
  -u + 1, -t1 * u + 1, -t3 * u + 1, -t3^2 * u + 1, -t3^3 * u + 1, -v + 1,
  (t1 - v) / t1, (t3 - v) / t3, (t3^2 - v) / t3^2, (t3^3 - v) / t3^3},
 {(-1) / (t1 - 1), (-t2) / (t1 - t2), (-1) / (t2 - 1), (-1) / (t3 - 1),
  (-t2) / (t3^4 - t2), (-t3) / (t1 - t3), (-1) / (t2 - 1), (-1) / (t3^3 - 1),
  t3^2 / (t3^2 - t1), (-t3) / (t2 - t3), (-1) / (t3^2 - 1), t3^3 / (t3^3 - t1),
  t3^3 / (t3^3 - t2^2), t3^2 / (t3^2 - t2), (-1) / (t3 - 1),
  -u + 1, -t2 * u + 1, -t3 * u + 1, -t3^2 * u + 1, -t3^3 * u + 1, -v + 1,
  (t2 - v) / t2, (t3 - v) / t3, (t3^2 - v) / t3^2, (t3^3 - v) / t3^3},
 {(-1) / (t1 - 1), (-1) / (t2 - 1), (-1) / (t3^5 - 1), (-t3) / (t1 - t3),
  (-t3) / (t2 - t3), (-1) / (t3^4 - 1), t3^2 / (t3^2 - t1), t3^2 / (t3^2 - t2),
  (-1) / (t3^3 - 1), t3^3 / (t3^3 - t1), t3^3 / (t3^3 - t2),
  (-1) / (t3^2 - 1), t3^4 / (t3^4 - t1), t3^4 / (t3^4 - t2), (-1) / (t3 - 1),
  -u + 1, -t3 * u + 1, -t3^2 * u + 1, -t3^3 * u + 1, -t3^4 * u + 1, -v + 1,
  (t3 - v) / t3, (t3^2 - v) / t3^2, (t3^3 - v) / t3^3, (t3^4 - v) / t3^4}}
```

In[188]:=
```
Length[GT5smoothPointsContributions[t1, t2, t3, u, v]]
```

Out[188]= 21

In[179]:=
```
G5smooth[t1_, t2_, t3_] :=
  Sum[1 / Det[DiagonalMatrix[G5smoothTangentContributions[t1, t2, t3][[i]]]],
   {i, 1, 21}];
```

In[189]:=
```
GT5smooth[t1_, t2_, t3_, u_, v_] :=
  Sum[Det[DiagonalMatrix[GT5smoothPointsContributions[t1, t2, t3, u, v][[i]]]],
   {i, 1, 21}];
```

In[190]:=
```
Together[GT5smooth[t1, t2, t3, u, v] + GT56[t1, t2, t3, u, v] + GT56[t2, t3, t1, u, v] +
  GT56[t3, t1, t2, u, v] - SeriesCoefficient[Exp[Sum[Q^n * (1 - u^n) *
      (1 - v^n) / (n * (1 - t1^n) * (1 - t2^n) * (1 - t3^n)), {n, 1, 5}]], {Q, 0, 5}]]
```

Out[190]= 0

In[113]:=
```
Solve[{u1 * u2 == t1^3, u2 * u4 == t3, u0 * u3 == t2^2 / t1^3, u3 * u4 == t2 * t3 / t1^3,
  u0 * u4 == t3^2 / t1^3, u1 * u5 == t1^4 / t2, u0 * u5 == t1, u4 * u5 == t1 * t3 / t2,
  u0 * u2 == t2, u1 * u4 == t3^2 / t2, u2 * u5 == t1^4 / t3, u3 * u5 == t1 * t2 / t3,
  u2 * u3 == t2^2 / t3, u1 * u3 == t2, u0 * u1 == t3}, {u0, u1, u2, u3, u4, u5}]
```

Out[113]=
$$\left\{\left\{u0 \to -\frac{\sqrt{t2}\ \sqrt{t3}}{t1^{3/2}},\ u1 \to -\frac{t1^{3/2}\ \sqrt{t3}}{\sqrt{t2}},\ u2 \to -\frac{t1^{3/2}\ \sqrt{t2}}{\sqrt{t3}},\ u3 \to -\frac{t2^{3/2}}{t1^{3/2}\ \sqrt{t3}},\right.\right.$$
$$\left.u4 \to -\frac{t3^{3/2}}{t1^{3/2}\ \sqrt{t2}},\ u5 \to -\frac{t1^{5/2}}{\sqrt{t2}\ \sqrt{t3}}\right\},\ \left\{u0 \to \frac{\sqrt{t2}\ \sqrt{t3}}{t1^{3/2}},\ u1 \to \frac{t1^{3/2}\ \sqrt{t3}}{\sqrt{t2}},\right.$$
$$\left.\left.u2 \to \frac{t1^{3/2}\ \sqrt{t2}}{\sqrt{t3}},\ u3 \to \frac{t2^{3/2}}{t1^{3/2}\ \sqrt{t3}},\ u4 \to \frac{t3^{3/2}}{t1^{3/2}\ \sqrt{t2}},\ u5 \to \frac{t1^{5/2}}{\sqrt{t2}\ \sqrt{t3}}\right\}\right\}$$

```
Together[G[Sqrt[t2] Sqrt[t3]/t1^(3/2), t1^(3/2) Sqrt[t3]/Sqrt[t2], t1^(3/2) Sqrt[t2]/Sqrt[t3],
  t2^(3/2)/(t1^(3/2) Sqrt[t3]), t3^(3/2)/(t1^(3/2) Sqrt[t2]), t1^(5/2)/(Sqrt[t2] Sqrt[t3])]]
```

Out[114]=
$$\frac{1}{t1^3\ t2\ t3}$$
$$\left(-t1^7\ t2^2 + t1^8\ t2^2 - t1^4\ t2^3 + t1^7\ t2^3 + t1^4\ t2^4 - t1^8\ t2^4 + t1^3\ t2\ t3 - t1^7\ t2\ t3 + t1^8\ t2\ t3 - t1^9\ t2\ t3 - 2\ t1^4\ t2^2\ t3 + t1^5\ t2^2\ t3 + 2\ t1^7\ t2^2\ t3 - t1^8\ t2^2\ t3 - t1^3\ t2^3\ t3 + 3\ t1^4\ t2^3\ t3 - t1^5\ t2^3\ t3 - t1^7\ t2^3\ t3 - t1^8\ t2^3\ t3 + t1^9\ t2^3\ t3 + t1\ t2^4\ t3 - t1^4\ t2^4\ t3 - t1^5\ t2^4\ t3 + t1^8\ t2^4\ t3 - t1\ t2^5\ t3 + t1^5\ t2^5\ t3 - t1^7\ t3^2 + t1^8\ t3^2 - 2\ t1^4\ t2\ t3^2 + t1^5\ t2\ t3^2 + 2\ t1^7\ t2\ t3^2 - t1^8\ t2\ t3^2 - t1\ t2^2\ t3^2 - t1^3\ t2^2\ t3^2 + 5\ t1^4\ t2^2\ t3^2 - t1^5\ t2^2\ t3^2 - t1^7\ t2^2\ t3^2 - 2\ t1^8\ t2^2\ t3^2 + t1^9\ t2^2\ t3^2 - t2^3\ t3^2 + 2\ t1\ t2^3\ t3^2 + t1^3\ t2^3\ t3^2 - 2\ t1^4\ t2^3\ t3^2 - 2\ t1^5\ t2^3\ t3^2 + t1^6\ t2^3\ t3^2 + 2\ t1^8\ t2^3\ t3^2 - t1^9\ t2^3\ t3^2 + t2^4\ t3^2 - t1\ t2^4\ t3^2 - t1^2\ t2^4\ t3^2 - t1^4\ t2^4\ t3^2 + 3\ t1^5\ t2^4\ t3^2 - t1^6\ t2^4\ t3^2 + t1^2\ t2^5\ t3^2 - t1^5\ t2^5\ t3^2 - t1^4\ t3^3 + t1^7\ t3^3 - t1^3\ t2\ t3^3 + 3\ t1^4\ t2\ t3^3 - t1^5\ t2\ t3^3 - t1^7\ t2\ t3^3 - t1^8\ t2\ t3^3 + t1^9\ t2\ t3^3 - t2^2\ t3^3 + 2\ t1\ t2^2\ t3^3 + t1^3\ t2^2\ t3^3 - 2\ t1^4\ t2^2\ t3^3 - 2\ t1^5\ t2^2\ t3^3 + t1^6\ t2^2\ t3^3 + 2\ t1^8\ t2^2\ t3^3 - t1^9\ t2^2\ t3^3 + t2^3\ t3^3 - 2\ t1\ t2^3\ t3^3 - t1^2\ t2^3\ t3^3 - t1^4\ t2^3\ t3^3 + 5\ t1^5\ t2^3\ t3^3 - t1^6\ t2^3\ t3^3 - t1^8\ t2^3\ t3^3 - t1\ t2^4\ t3^3 + 2\ t1^2\ t2^4\ t3^3 + t1^4\ t2^4\ t3^3 - 2\ t1^5\ t2^4\ t3^3 + t1\ t2^5\ t3^3 - t1^2\ t2^5\ t3^3 + t1^4\ t3^4 - t1^8\ t3^4 + t1\ t2\ t3^4 - t1^4\ t2\ t3^4 - t1^5\ t2\ t3^4 + t1^8\ t2\ t3^4 + t2^2\ t3^4 - t1\ t2^2\ t3^4 - t1^2\ t2^2\ t3^4 - t1^4\ t2^2\ t3^4 + 3\ t1^5\ t2^2\ t3^4 - t1^6\ t2^2\ t3^4 - t1\ t2^3\ t3^4 + 2\ t1^2\ t2^3\ t3^4 + t1^4\ t2^3\ t3^4 - 2\ t1^5\ t2^3\ t3^4 - t2^4\ t3^4 + t1\ t2^4\ t3^4 - t1^2\ t2^4\ t3^4 + t1^6\ t2^4\ t3^4 - t1\ t2\ t3^5 + t1^5\ t2\ t3^5 + t1^2\ t2^2\ t3^5 - t1^5\ t2^2\ t3^5 + t1\ t2^3\ t3^5 - t1^2\ t2^3\ t3^5\right)$$

In[127]:=
```
G61tangent[t1_, t2_, t3_] :=
 Det[DiagonalMatrix[{-t2 + 1, -t3 + 1, -t1^3 + 1, (t1 - t2) / t1, (t1 - t3) / t1,
    -t1^2 + 1, (t1^2 - t2) / t1^2, (t1^2 - t3) / t1^2, -t1 + 1, (t1^3 - t2^2) / t1^3,
    (t1^3 - t2 * t3) / t1^3, (t1^3 - t3^2) / t1^3, -t1 + 1, (-t1 * t3 + t2) / t2,
    (-t1^4 + t2) / t2, -t2 + 1, -t3 + 1, (-t3^2 + t2) / t2, (-t1 * t2 + t3) / t3,
    -t1 + 1, (-t1^4 + t3) / t3, (-t2^2 + t3) / t3, -t2 + 1, -t3 + 1}]]
```

In[120]:=
```
Together[%114 / G61tangent[t1, t2, t3]]
```

Out[120]=
$$-\Big(\big(t1^{12}\,t2^2\,t3^2\,\big(-t1^7\,t2^2-t1^4\,t2^3-t1^5\,t2^3-t1^6\,t2^3-t1^7\,t2^3+t1^3\,t2\,t3+t1^4\,t2\,t3+t1^5\,t2\,t3+t1^6\,t2\,t3+t1^8\,t2\,t3+t1^3\,t2^2\,t3-t1^4\,t2^2\,t3+t1^8\,t2^2\,t3+t1\,t2^4\,t3+t1^2\,t2^4\,t3+t1^3\,t2^4\,t3+t1^4\,t2^4\,t3-t1^7\,t3^2+t1^3\,t2\,t3^2-t1^4\,t2\,t3^2+t1^8\,t2\,t3^2-t1\,t2^2\,t3^2-t1^2\,t2^2\,t3^2-t1^3\,t2^2\,t3^2+t1^5\,t2^2\,t3^2+t1^6\,t2^2\,t3^2+t1^7\,t2^2\,t3^2-t2^3\,t3^2+t1^4\,t2^3\,t3^2-t1^5\,t2^3\,t3^2+t1\,t2^4\,t3^2-t1^4\,t3^3-t1^5\,t3^3-t1^6\,t3^3-t1^7\,t3^3-t2^2\,t3^3+t1^4\,t2^2\,t3^3-t1^5\,t2^2\,t3^3-t2^3\,t3^3-t1^2\,t2^3\,t3^3-t1^3\,t2^3\,t3^3-t1^4\,t2^3\,t3^3-t1^5\,t2^3\,t3^3+t1\,t2\,t3^4+t1^2\,t2\,t3^4+t1^3\,t2\,t3^4+t1^4\,t2\,t3^4+t1\,t2^2\,t3^4\big)\big)\Big/\big((-1+t1)^4\,(1+t1)\,\big(1+t1+t1^2\big)\,(t1-t2)\,\big(t1^2-t2\big)\,\big(t1^4-t2\big)\,(-1+t2)^2\,\big(t1^3-t2^2\big)\,(t1-t3)\,\big(t1^2-t3\big)\,\big(t1^4-t3\big)\,(t1\,t2-t3)\,\big(t2^2-t3\big)\,(-1+t3)^2\,(-t2+t1\,t3)\,\big(t1^3-t2\,t3\big)\,\big(t1^3-t3^2\big)\,\big(t2-t3^2\big)\big)\big)$$

In[118]:=
```
G61[t1_, t2_, t3_] :=
  -((t1^12 t2^2 t3^2 (-t1^7 t2^2 - t1^4 t2^3 - t1^5 t2^3 - t1^6 t2^3 - t1^7 t2^3 + t1^3 t2 t3 +
          t1^4 t2 t3 + t1^5 t2 t3 + t1^6 t2 t3 + t1^8 t2 t3 + t1^3 t2^2 t3 - t1^4 t2^2 t3 +
          t1^8 t2^2 t3 + t1 t2^4 t3 + t1^2 t2^4 t3 + t1^3 t2^4 t3 + t1^4 t2^4 t3 - t1^7 t3^2 +
          t1^3 t2 t3^2 - t1^4 t2 t3^2 + t1^8 t2 t3^2 - t1 t2^2 t3^2 - t1^2 t2^2 t3^2 - t1^3 t2^2 t3^2 +
          t1^5 t2^2 t3^2 + t1^6 t2^2 t3^2 + t1^7 t2^2 t3^2 - t2^3 t3^2 + t1^4 t2^3 t3^2 - t1^5 t2^3 t3^2 +
          t1 t2 t3^4 + t1^2 t2 t3^4 + t1^3 t2 t3^4 + t1^4 t2 t3^4 + t1 t2^2 t3^4)) /
    ((-1 + t1)^4 (1 + t1) (1 + t1 + t1^2) (t1 - t2) (t1^2 - t2) (t1^4 - t2) (-1 + t2)^2
      (t1^3 - t2^2) (t1 - t3) (t1^2 - t3) (t1^4 - t3) (t1 t2 - t3) (t2^2 - t3)
      (-1 + t3)^2 (-t2 + t1 t3) (t1^3 - t2 t3) (t1^3 - t3^2) (t2 - t3^2)));
```

In[199]:=
```
T61[t1_, t2_, t3_, u_, v_] := Det[DiagonalMatrix[
   {-u + 1, -t1 * u + 1, -t1^2 * u + 1, -t1^3 * u + 1, -t2 * u + 1, -t3 * u + 1, -v + 1,
    (t1 - v) / t1, (t1^2 - v) / t1^2, (t1^3 - v) / t1^3, (t2 - v) / t2, (t3 - v) / t3}]]
```

In[200]:=
```
GT61[t1_, t2_, t3_, u_, v_] := G61[t1, t2, t3] * T61[t1, t2, t3, u, v]
```

In[124]:=
```
Solve[{u1 * u3 == t2 && u0 * u5 == t1^2 && u1 * u2 == t1 &&
    u3 * u5 == t1^2 * t2 / t3 && u2 * u4 == t3 / t1 && u0 * u3 == t2^2 / t1 &&
    u1 * u5 == t1^3 / t2 && u0 * u4 == t3^2 / t1^2 && u1 * u4 == t3^2 / (t1 * t2) &&
    u3 * u4 == t2 * t3 / (t1^2) && u2 * u3 == t2^2 / t3 && u0 * u1 == t3 &&
    u4 * u5 == t1 * t3 / t2 && u2 * u5 == t1^3 / t3 && u0 * u2 == t2}, {u0, u1, u2, u3, u4, u5}]
```

Out[124]=
$$\left\{\left\{u0 \to -\frac{\sqrt{t2}\ \sqrt{t3}}{\sqrt{t1}},\ u1 \to -\frac{\sqrt{t1}\ \sqrt{t3}}{\sqrt{t2}},\ u2 \to -\frac{\sqrt{t1}\ \sqrt{t2}}{\sqrt{t3}},\ u3 \to -\frac{t2^{3/2}}{\sqrt{t1}\ \sqrt{t3}},\right.\right.$$
$$\left.u4 \to -\frac{t3^{3/2}}{t1^{3/2}\ \sqrt{t2}},\ u5 \to -\frac{t1^{5/2}}{\sqrt{t2}\ \sqrt{t3}}\right\},\left\{u0 \to \frac{\sqrt{t2}\ \sqrt{t3}}{\sqrt{t1}},\ u1 \to \frac{\sqrt{t1}\ \sqrt{t3}}{\sqrt{t2}},\right.$$
$$\left.\left.u2 \to \frac{\sqrt{t1}\ \sqrt{t2}}{\sqrt{t3}},\ u3 \to \frac{t2^{3/2}}{\sqrt{t1}\ \sqrt{t3}},\ u4 \to \frac{t3^{3/2}}{t1^{3/2}\ \sqrt{t2}},\ u5 \to \frac{t1^{5/2}}{\sqrt{t2}\ \sqrt{t3}}\right\}\right\}$$

In[125]:=
```
Together[
  G[-(Sqrt[t2] Sqrt[t3])/Sqrt[t1], -(Sqrt[t1] Sqrt[t3])/Sqrt[t2], -(Sqrt[t1] Sqrt[t2])/Sqrt[t3], -t2^(3/2)/(Sqrt[t1] Sqrt[t3]), -t3^(3/2)/(t1^(3/2) Sqrt[t2]), -t1^(5/2)/(Sqrt[t2] Sqrt[t3])]]
```

Out[125]=
$$\frac{1}{t1^3\ t2\ t3}$$
$$\left(-t1^6\ t2^2 + t1^8\ t2^2 - t1^5\ t2^3 + t1^6\ t2^3 + t1^5\ t2^4 - t1^8\ t2^4 + t1^3\ t2\ t3 - t1^6\ t2\ t3 + t1^7\ t2\ t3 - t1^9\ t2\ t3 - t1^4\ t2^2\ t3 + 2\ t1^6\ t2^2\ t3 - t1^7\ t2^2\ t3 - t1^3\ t2^3\ t3 + 2\ t1^4\ t2^3\ t3 - t1^6\ t2^3\ t3 - t1^7\ t2^3\ t3 + t1^9\ t2^3\ t3 + t1^3\ t2^4\ t3 - t1^4\ t2^4\ t3 - t1^6\ t2^4\ t3 + t1^7\ t2^4\ t3 - t1^3\ t2^5\ t3 + t1^6\ t2^5\ t3 - t1^5\ t3^2 + t1^7\ t3^2 - 2\ t1^4\ t2\ t3^2 + 2\ t1^5\ t2\ t3^2 + t1^6\ t2\ t3^2 - t1^7\ t2\ t3^2 - t1^2\ t2^2\ t3^2 - t1^3\ t2^2\ t3^2 + 5\ t1^4\ t2^2\ t3^2 - t1^5\ t2^2\ t3^2 - 2\ t1^6\ t2^2\ t3^2 - t1^7\ t2^2\ t3^2 + t1^8\ t2^2\ t3^2 - t1\ t2^3\ t3^2 + t1^2\ t2^3\ t3^2 + 2\ t1^3\ t2^3\ t3^2 - 2\ t1^4\ t2^3\ t3^2 - t1^5\ t2^3\ t3^2 + 2\ t1^7\ t2^3\ t3^2 - t1^8\ t2^3\ t3^2 + t1\ t2^4\ t3^2 - t1^3\ t2^4\ t3^2 - 2\ t1^4\ t2^4\ t3^2 + 2\ t1^5\ t2^4\ t3^2 + t1^6\ t2^4\ t3^2 - t1^7\ t2^4\ t3^2 + t1^4\ t2^5\ t3^2 - t1^5\ t2^5\ t3^2 - t1^4\ t3^3 + t1^5\ t3^3 - t1^2\ t2\ t3^3 + t1^3\ t2\ t3^3 + 2\ t1^4\ t2\ t3^3 - 2\ t1^5\ t2\ t3^3 - t1^6\ t2\ t3^3 + t1^8\ t2\ t3^3 - t1\ t2^2\ t3^3 + 2\ t1^2\ t2^2\ t3^3 - t1^4\ t2^2\ t3^3 - 2\ t1^5\ t2^2\ t3^3 + 2\ t1^6\ t2^2\ t3^3 + t1^7\ t2^2\ t3^3 - t1^8\ t2^2\ t3^3 + t1\ t2^3\ t3^3 - t1^2\ t2^3\ t3^3 - 2\ t1^3\ t2^3\ t3^3 - t1^4\ t2^3\ t3^3 + 5\ t1^5\ t2^3\ t3^3 - t1^6\ t2^3\ t3^3 - t1^7\ t2^3\ t3^3 - t1^2\ t2^4\ t3^3 + t1^3\ t2^4\ t3^3 + 2\ t1^4\ t2^4\ t3^3 - 2\ t1^5\ t2^4\ t3^3 + t1^2\ t2^5\ t3^3 - t1^4\ t2^5\ t3^3 + t1^3\ t3^4 - t1^6\ t3^4 + t1^2\ t2\ t3^4 - t1^3\ t2\ t3^4 - t1^5\ t2\ t3^4 + t1^6\ t2\ t3^4 + t2^2\ t3^4 - t1^2\ t2^2\ t3^4 - t1^3\ t2^2\ t3^4 + 2\ t1^5\ t2^2\ t3^4 - t1^6\ t2^2\ t3^4 - t1^2\ t2^3\ t3^4 + 2\ t1^3\ t2^3\ t3^4 - t1^5\ t2^3\ t3^4 - t2^4\ t3^4 + t1^2\ t2^4\ t3^4 - t1^3\ t2^4\ t3^4 + t1^6\ t2^4\ t3^4 - t1\ t2\ t3^5 + t1^4\ t2\ t3^5 + t1^3\ t2^2\ t3^5 - t1^4\ t2^2\ t3^5 + t1\ t2^3\ t3^5 - t1^3\ t2^3\ t3^5\right)$$

In[126]:=
```
G62tangent[t1_, t2_, t3_] :=
 Det[DiagonalMatrix[{-t3 + 1, -t1^2 + 1, (-t2^2 + t1) / t1, (t1 - t3) / t1, -t1 + 1,
    -t2 + 1, (t1^2 - t2^2) / t1^2, (t1^2 - t2 * t3) / t1^2, (t1^2 - t3^2) / t1^2,
    (-t1 * t3 + t2) / t2, (-t1^3 + t2) / t2, -t2 + 1, (t2 - t3) / t2, (-t1^2 + t2) / t2,
    -t1 + 1, (t1 - t2) / t1, (t1 - t3) / t1, (t1 * t2 - t3^2) / (t1 * t2), -t1 + 1,
    (-t1^3 + t3) / t3, (-t1^2 * t2 + t3) / t3, (-t2^2 + t3) / t3, -t2 + 1, -t3 + 1}]]
```

In[128]:=
```
Together[%125 / G62tangent[t1, t2, t3]]
```

Out[128]=
$$-\Big(\big(t1^8\,t2^4\,t3^2\,\big(-t1^6\,t2^2-t1^7\,t2^2-t1^5\,t2^3-t1^6\,t2^3-t1^7\,t2^3+t1^3\,t2\,t3+t1^4\,t2\,t3+t1^5\,t2\,t3+t1^7\,t2\,t3+t1^8\,t2\,t3+t1^3\,t2^2\,t3+t1^6\,t2^2\,t3+t1^7\,t2^2\,t3+t1^8\,t2^2\,t3+t1^4\,t2^3\,t3+t1^5\,t2^3\,t3+t1^6\,t2^3\,t3+t1^3\,t2^4\,t3+t1^4\,t2^4\,t3+t1^5\,t2^4\,t3-t1^5\,t3^2-t1^6\,t3^2-2\,t1^4\,t2\,t3^2-t1^5\,t2\,t3^2-t1^2\,t2^2\,t3^2-2\,t1^3\,t2^2\,t3^2+t1^4\,t2^2\,t3^2+t1^5\,t2^2\,t3^2-t1^7\,t2^2\,t3^2-t1\,t2^3\,t3^2-t1^2\,t2^3\,t3^2+t1^4\,t2^3\,t3^2-t1^6\,t2^3\,t3^2-t1^4\,t2^4\,t3^2-t1^4\,t3^3-t1^2\,t2\,t3^3+t1^4\,t2\,t3^3-t1^6\,t2\,t3^3-t1^7\,t2\,t3^3-t1\,t2^2\,t3^3+t1^3\,t2^2\,t3^3+t1^4\,t2^2\,t3^3-2\,t1^5\,t2^2\,t3^3-t1^6\,t2^2\,t3^3-t1^3\,t2^3\,t3^3-2\,t1^4\,t2^3\,t3^3-t1^2\,t2^4\,t3^3-t1^3\,t2^4\,t3^3+t1^3\,t3^4+t1^4\,t3^4+t1^5\,t3^4+t1^2\,t2\,t3^4+t1^3\,t2\,t3^4+t1^4\,t2\,t3^4+t2^2\,t3^4+t1\,t2^2\,t3^4+t1^2\,t2^2\,t3^4+t1^5\,t2^2\,t3^4+t2^3\,t3^4+t1\,t2^3\,t3^4+t1^3\,t2^3\,t3^4+t1^4\,t2^3\,t3^4+t1^5\,t2^3\,t3^4-t1\,t2\,t3^5-t1^2\,t2\,t3^5-t1^3\,t2\,t3^5-t1\,t2^2\,t3^5-t1^2\,t2^2\,t3^5\big)\Big)\Big/\Big((-1+t1)^3\,(1+t1)\,(t1-t2)^2\,\big(t1^2-t2\big)\,\big(t1^3-t2\big)\,(-1+t2)^2\,(t1+t2)\,\big(t1-t2^2\big)\,(t1-t3)^3\,\big(t1^3-t3\big)\,(t2-t3)\,\big(t1^2\,t2-t3\big)\,\big(t2^2-t3\big)\,(-1+t3)^2\,(t1+t3)\,(-t2+t1\,t3)\,\big(t1^2-t2\,t3\big)\,\big(t1\,t2-t3^2\big)\Big)\Big)$$

In[129]:=
```
G62[t1_, t2_, t3_] :=
 -((t1^8 t2^4 t3^2 (-t1^6 t2^2 - t1^7 t2^2 - t1^5 t2^3 - t1^6 t2^3 - t1^7 t2^3 + t1^3 t2 t3 + t1^4 t2 t3 +
        t1^5 t2 t3 + t1^7 t2 t3 + t1^8 t2 t3 + t1^3 t2^2 t3 + t1^6 t2^2 t3 + t1^7 t2^2 t3 +
        t1^8 t2^2 t3 + t1^4 t2^3 t3 + t1^5 t2^3 t3 + t1^6 t2^3 t3 + t1^3 t2^4 t3 + t1^4 t2^4 t3 +
        t1^5 t2^4 t3 - t1^5 t3^2 - t1^6 t3^2 - 2 t1^4 t2 t3^2 - t1^5 t2 t3^2 - t1^2 t2^2 t3^2 -
        2 t1^3 t2^2 t3^2 + t1^4 t2^2 t3^2 + t1^5 t2^2 t3^2 - t1^7 t2^2 t3^2 - t1 t2^3 t3^2 - t1^2 t2^3 t3^2 +
        t1^4 t2^3 t3^2 - t1^6 t2^3 t3^2 - t1^4 t2^4 t3^2 - t1^4 t3^3 - t1^2 t2 t3^3 + t1^4 t2 t3^3 -
        t1^6 t2 t3^3 - t1^7 t2 t3^3 - t1 t2^2 t3^3 + t1^3 t2^2 t3^3 + t1^4 t2^2 t3^3 - 2 t1^5 t2^2 t3^3 -
        t1^6 t2^2 t3^3 - t1^3 t2^3 t3^3 - 2 t1^4 t2^3 t3^3 - t1^2 t2^4 t3^3 - t1^3 t2^4 t3^3 + t1^3 t3^4 +
        t1^4 t3^4 + t1^5 t3^4 + t1^2 t2 t3^4 + t1^3 t2 t3^4 + t1^4 t2 t3^4 + t2^2 t3^4 + t1 t2^2 t3^4 +
        t1^2 t2^2 t3^4 + t1^5 t2^2 t3^4 + t2^3 t3^4 + t1 t2^3 t3^4 + t1^3 t2^3 t3^4 + t1^4 t2^3 t3^4 +
        t1^5 t2^3 t3^4 - t1 t2 t3^5 - t1^2 t2 t3^5 - t1^3 t2 t3^5 - t1 t2^2 t3^5 - t1^2 t2^2 t3^5)) /
    ((-1 + t1)^3 (1 + t1) (t1 - t2)^2 (t1^2 - t2) (t1^3 - t2) (-1 + t2)^2 (t1 + t2)
      (t1 - t2^2) (t1 - t3)^3 (t1^3 - t3) (t2 - t3) (t1^2 t2 - t3) (t2^2 - t3)
      (-1 + t3)^2 (t1 + t3) (-t2 + t1 t3) (t1^2 - t2 t3) (t1 t2 - t3^2)))
```

In[201]:=
```
T62[t1_, t2_, t3_, u_, v_] :=
 Det[DiagonalMatrix[{-u + 1, -t1 * u + 1, -t1 ^ 2 * u + 1, -t2 * u + 1,
    -t1 * t2 * u + 1, -t3 * u + 1, -v + 1, (t1 - v) / t1, (t1 ^ 2 - v) / t1 ^ 2,
    (t2 - v) / t2, (t1 * t2 - v) / (t1 * t2), (t3 - v) / t3}]]
```

In[203]:=
```
GT62[t1_, t2_, t3_, u_, v_] := G62[t1, t2, t3] * T62[t1, t2, t3, u, v]
```

In[130]:=
```
Solve[u1 * u3 == t2 && u1 * u2 == t1^2 && u3 * u4 == t2 * t3 / t1^2 &&
  u0 * u3 == t2^3 / t1^2 && u0 * u4 == t3^2 / t1^2 && u0 * u5 == t1 && u2 * u4 == t3 &&
  u0 * u2 == t2^2 && u4 * u5 == t1 * t3 / t2^2 && u1 * u5 == t1^3 / t2^2 &&
  u1 * u4 == t3^2 / t2^2 && u3 * u5 == t1 * t2 / t3 && u2 * u5 == t1^3 / t3 &&
  u2 * u3 == t2^3 / t3 && u0 * u1 == t3, {u0, u1, u2, u3, u4, u5}]
```

Out[130]=
$$\left\{\left\{u0 \to -\frac{t2\sqrt{t3}}{t1}, u1 \to -\frac{t1\sqrt{t3}}{t2}, u2 \to -\frac{t1\,t2}{\sqrt{t3}}, u3 \to -\frac{t2^2}{t1\sqrt{t3}}, u4 \to -\frac{t3^{3/2}}{t1\,t2}, u5 \to -\frac{t1^2}{t2\sqrt{t3}}\right\}, \left\{u0 \to \frac{t2\sqrt{t3}}{t1}, u1 \to \frac{t1\sqrt{t3}}{t2}, u2 \to \frac{t1\,t2}{\sqrt{t3}}, u3 \to \frac{t2^2}{t1\sqrt{t3}}, u4 \to \frac{t3^{3/2}}{t1\,t2}, u5 \to \frac{t1^2}{t2\sqrt{t3}}\right\}\right\}$$

In[131]:=
```
Together[G[-t2 Sqrt[t3] / t1, -t1 Sqrt[t3] / t2, -t1 t2 / Sqrt[t3], -t2^2 / (t1 Sqrt[t3]), -t3^(3/2) / (t1 t2), -t1^2 / (t2 Sqrt[t3])]]
```

Out[131]=
$$\frac{1}{t1^2\,t2^2\,t3}\Big(-t1^5\,t2^3+t1^6\,t2^3-t1^3\,t2^5+t1^5\,t2^5+t1^3\,t2^6-t1^6\,t2^6+t1^6\,t2\,t3-t1^7\,t2\,t3+t1^2\,t2^2\,t3-t1^5\,t2^2\,t3-2\,t1^3\,t2^3\,t3+t1^4\,t2^3\,t3+2\,t1^5\,t2^3\,t3-t1^6\,t2^3\,t3+t1^3\,t2^4\,t3-t1^4\,t2^4\,t3-t1^6\,t2^4\,t3+t1^7\,t2^4\,t3-t1^2\,t2^5\,t3+2\,t1^3\,t2^5\,t3-t1^5\,t2^5\,t3+t1\,t2^6\,t3-t1^3\,t2^6\,t3-t1^4\,t2^6\,t3+t1^6\,t2^6\,t3-t1\,t2^7\,t3+t1^4\,t2^7\,t3-t1^5\,t3^2+t1^6\,t3^2-t1^3\,t2\,t3^2+t1^4\,t2\,t3^2+t1^5\,t2\,t3^2-t1^6\,t2\,t3^2-t1^3\,t2^2\,t3^2+t1^5\,t2^2\,t3^2-t1^6\,t2^2\,t3^2+t1^7\,t2^2\,t3^2-t1\,t2^3\,t3^2-t1^2\,t2^3\,t3^2+5\,t1^3\,t2^3\,t3^2-t1^4\,t2^3\,t3^2-t1^5\,t2^3\,t3^2-t1^6\,t2^3\,t3^2+t1\,t2^4\,t3^2-t1^3\,t2^4\,t3^2-2\,t1^4\,t2^4\,t3^2+t1^5\,t2^4\,t3^2+2\,t1^6\,t2^4\,t3^2-t1^7\,t2^4\,t3^2-t2^5\,t3^2+t1\,t2^5\,t3^2+t1^2\,t2^5\,t3^2-t1^3\,t2^5\,t3^2+t1^4\,t2^5\,t3^2-t1^5\,t2^5\,t3^2+t2^6\,t3^2-t1\,t2^6\,t3^2-t1^2\,t2^6\,t3^2-t1^3\,t2^6\,t3^2+2\,t1^4\,t2^6\,t3^2+t1^2\,t2^7\,t3^2-t1^4\,t2^7\,t3^2-t1^3\,t3^3+t1^5\,t3^3+2\,t1^3\,t2\,t3^3-t1^4\,t2\,t3^3-t1^5\,t2\,t3^3-t1^6\,t2\,t3^3+t1^7\,t2\,t3^3-t1^2\,t2^2\,t3^3+t1^3\,t2^2\,t3^3-t1^4\,t2^2\,t3^3+t1^5\,t2^2\,t3^3+t1^6\,t2^2\,t3^3-t1^7\,t2^2\,t3^3-t2^3\,t3^3+2\,t1\,t2^3\,t3^3+t1^2\,t2^3\,t3^3-2\,t1^3\,t2^3\,t3^3-t1^4\,t2^3\,t3^3+t1^6\,t2^3\,t3^3-t1\,t2^4\,t3^3-t1^2\,t2^4\,t3^3-t1^3\,t2^4\,t3^3+5\,t1^4\,t2^4\,t3^3-t1^5\,t2^4\,t3^3-t1^6\,t2^4\,t3^3+t2^5\,t3^3-t1\,t2^5\,t3^3+t1^2\,t2^5\,t3^3-t1^4\,t2^5\,t3^3-t1\,t2^6\,t3^3+t1^2\,t2^6\,t3^3+t1^3\,t2^6\,t3^3-t1^4\,t2^6\,t3^3+t1\,t2^7\,t3^3-t1^2\,t2^7\,t3^3+t1^3\,t3^4-t1^6\,t3^4+t1\,t2\,t3^4-t1^3\,t2\,t3^4-t1^4\,t2\,t3^4+t1^6\,t2\,t3^4-t1^2\,t2^2\,t3^4+2\,t1^4\,t2^2\,t3^4-t1^5\,t2^2\,t3^4+t2^3\,t3^4-t1\,t2^3\,t3^4-t1^3\,t2^3\,t3^4+t1^4\,t2^3\,t3^4-t1\,t2^4\,t3^4+2\,t1^2\,t2^4\,t3^4+t1^3\,t2^4\,t3^4-2\,t1^4\,t2^4\,t3^4-t1^2\,t2^5\,t3^4+t1^5\,t2^5\,t3^4-t2^6\,t3^4+t1\,t2^6\,t3^4-t1\,t2\,t3^5+t1^4\,t2\,t3^5+t1^2\,t2^2\,t3^5-t1^4\,t2^2\,t3^5+t1\,t2^4\,t3^5-t1^2\,t2^4\,t3^5\Big)$$

In[132]:=
```
G63tangent[t1_, t2_, t3_] :=
 Det[DiagonalMatrix[{-t2 + 1, -t3 + 1, -t1^2 + 1, (t1 - t2) / t1, (t1 - t3) / t1,
    -t1 + 1, (t1^2 - t2 * t3) / t1^2, (-t2^3 + t1^2) / t1^2, (t1^2 - t3^2) / t1^2,
    -t1 + 1, -t3 + 1, -t2^2 + 1, (-t1 + t2) / t2, (t2^2 - t1 * t3) / t2^2,
    (-t1^3 + t2^2) / t2^2, (t2 - t3) / t2, -t2 + 1, (t2^2 - t3^2) / t2^2,
    (-t1 * t2 + t3) / t3, -t1 + 1, (-t1^3 + t3) / t3, -t2 + 1, (-t2^3 + t3) / t3, -t3 + 1}]]
```

In[133]:=
```
Together[%131 / G63tangent[t1, t2, t3]]
```

Out[133]=
```
(t1^6 t2^6 t3^2
    (-t1^5 t2^3 - t1^5 t2^4 - t1^3 t2^5 - t1^4 t2^5 - t1^5 t2^5 + t1^6 t2 t3 + t1^2 t2^2 t3 + t1^3 t2^2 t3 +
      t1^4 t2^2 t3 + t1^6 t2^2 t3 + t1^2 t2^3 t3 - t1^3 t2^3 t3 + t1^6 t2^3 t3 + t1^2 t2^4 t3 + t1 t2^6 t3 +
      t1^2 t2^6 t3 + t1^3 t2^6 t3 - t1^5 t3^2 - t1^3 t2 t3^2 + t1^6 t2 t3^2 + t1^2 t2^2 t3^2 - t1^3 t2^2 t3^2 -
      t1 t2^3 t3^2 - t1^2 t2^3 t3^2 + t1^4 t2^3 t3^2 + t1^5 t2^3 t3^2 + t1^3 t2^4 t3^2 - t1^4 t2^4 t3^2 -
      t2^5 t3^2 + t1^3 t2^5 t3^2 + t1 t2^6 t3^2 - t1^3 t3^3 - t1^4 t3^3 - t1^5 t3^3 - t1^4 t2^2 t3^3 -
      t2^3 t3^3 + t1^3 t2^3 t3^3 - t1^4 t2^3 t3^3 - t2^4 t3^3 - t1^2 t2^4 t3^3 - t1^3 t2^4 t3^3 - t1^4 t2^4 t3^3 -
      t2^5 t3^3 + t1 t2 t3^4 + t1^2 t2 t3^4 + t1^3 t2 t3^4 + t1 t2^2 t3^4 + t1 t2^3 t3^4)) /
  ((-1 + t1)^3 (1 + t1) (t1 - t2)^2 (-1 + t2)^3 (1 + t2) (t1^3 - t2^2) (t1^2 - t2^3)
    (t1 - t3)^2 (t1^3 - t3) (t2 - t3)^2 (t1 t2 - t3) (t2^3 - t3)
    (-1 + t3)^2 (t1 + t3) (t2 + t3) (-t2^2 + t1 t3) (t1^2 - t2 t3))
```

In[134]:=
```
G63[t1_, t2_, t3_] :=
 (t1^6 t2^6 t3^2 (-t1^5 t2^3 - t1^5 t2^4 - t1^3 t2^5 - t1^4 t2^5 - t1^5 t2^5 + t1^6 t2 t3 + t1^2 t2^2 t3 +
      t1^3 t2^2 t3 + t1^4 t2^2 t3 + t1^6 t2^2 t3 + t1^2 t2^3 t3 - t1^3 t2^3 t3 + t1^6 t2^3 t3 + t1^2 t2^4 t3 +
      t1 t2^6 t3 + t1^2 t2^6 t3 + t1^3 t2^6 t3 - t1^5 t3^2 - t1^3 t2 t3^2 + t1^6 t2 t3^2 + t1^2 t2^2 t3^2 -
      t1^3 t2^2 t3^2 - t1 t2^3 t3^2 - t1^2 t2^3 t3^2 + t1^4 t2^3 t3^2 + t1^5 t2^3 t3^2 + t1^3 t2^4 t3^2 -
      t1^4 t2^4 t3^2 - t2^5 t3^2 + t1^3 t2^5 t3^2 + t1 t2^6 t3^2 - t1^3 t3^3 - t1^4 t3^3 - t1^5 t3^3 -
      t1^4 t2^2 t3^3 - t2^3 t3^3 + t1^3 t2^3 t3^3 - t1^4 t2^3 t3^3 - t2^4 t3^3 - t1^2 t2^4 t3^3 - t1^3 t2^4 t3^3 -
      t1^4 t2^4 t3^3 - t2^5 t3^3 + t1 t2 t3^4 + t1^2 t2 t3^4 + t1^3 t2 t3^4 + t1 t2^2 t3^4 + t1 t2^3 t3^4)) /
  ((-1 + t1)^3 (1 + t1) (t1 - t2)^2 (-1 + t2)^3 (1 + t2) (t1^3 - t2^2) (t1^2 - t2^3)
    (t1 - t3)^2 (t1^3 - t3) (t2 - t3)^2 (t1 t2 - t3) (t2^3 - t3)
    (-1 + t3)^2 (t1 + t3) (t2 + t3) (-t2^2 + t1 t3) (t1^2 - t2 t3))
```

In[204]:=
```
T63[t1_, t2_, t3_, u_, v_] := Det[DiagonalMatrix[
   {-u + 1, -t1 * u + 1, -t1^2 * u + 1, -t2 * u + 1, -t2^2 * u + 1, -t3 * u + 1, -v + 1,
    (t1 - v) / t1, (t1^2 - v) / t1^2, (t2 - v) / t2, (t2^2 - v) / t2^2, (t3 - v) / t3}]]
```

In[205]:=
```
GT63[t1_, t2_, t3_, u_, v_] := G63[t1, t2, t3] * T63[t1, t2, t3, u, v]
```

In[181]:=
```
G6smoothTangentContributions[t1_, t2_, t3_] :=
 {{-t2 + 1, -t3 + 1, -t1^6 + 1, (t1 - t2) / t1, (t1 - t3) / t1, -t1^5 + 1,
   (t1^2 - t2) / t1^2, (t1^2 - t3) / t1^2, -t1^4 + 1, (t1^3 - t2) / t1^3,
   (t1^3 - t3) / t1^3, -t1^3 + 1, (t1^4 - t2) / t1^4, (t1^4 - t3) / t1^4,
   -t1^2 + 1, (t1^5 - t2) / t1^5, (t1^5 - t3) / t1^5, -t1 + 1},
  {-t3 + 1, (t1 - t3) / t1, -t2 + 1, -t1^4 + 1, (t1^2 - t3) / t1^2,
   (t1 - t2) / t1, -t1^3 + 1, (t1^3 - t3) / t1^3, (t1^2 - t2) / t1^2,
   -t1^2 + 1, (t1^4 - t3) / t1^4, (t1^3 - t2) / t1^3, -t1 + 1,
   (t1^4 - t2^2) / t1^4, (t2 - t3) / t2, -t1 + 1, (-t1^5 + t2) / t2, -t2 + 1},
  {-t3 + 1, (t1 - t3) / t1, (t1^2 - t3) / t1^2, -t2 + 1, -t1^2 + 1,
   (t1^2 - t2^2) / t1^2, (t1^3 - t3) / t1^3, (t1 - t2) / t1, -t1 + 1,
   (t1^3 - t2^2) / t1^3, (t2 - t3) / t2, -t1^2 + 1, (-t1^4 + t2) / t2, -t2 + 1,
   (t1 * t2 - t3) / (t1 * t2), -t1 + 1, (-t1^3 + t2) / t2, (t1 - t2) / t1},
  {-t3 + 1, (t1 - t3) / t1, -t2 + 1, -t1^3 + 1, (t1^2 - t3) / t1^2,
   (t1 - t2) / t1, -t1^2 + 1, (t1^3 - t3) / t1^3, (t1^2 - t2) / t1^2,
   -t1 + 1, (t1^3 - t2^3) / t1^3, (t2 - t3) / t2, -t1 + 1, -t2^2 + 1,
```

```
 (t2^2 - t3) / t2^2, (-t1 + t2) / t2, (-t1^4 + t2^2) / t2^2, -t2 + 1},
{-t3 + 1, -t1^3 + 1, -t2^2 + 1, (t1 - t3) / t1, -t1^2 + 1, (-t2^2 + t1) / t1,
 (t1^2 - t3) / t1^2, -t1 + 1, (t1^2 - t2^2) / t1^2, (t2 - t3) / t2,
 (-t1^3 + t2) / t2, -t2 + 1, (t1 * t2 - t3) / (t1 * t2), (-t1^2 + t2) / t2,
 (t1 - t2) / t1, (t1^2 * t2 - t3) / (t1^2 * t2), (-t1 + t2) / t2, (t1^2 - t2) / t1^2},
{-t3 + 1, (t1 - t3) / t1, (t1^2 - t3) / t1^2, -t1 + 1, -t2 + 1, (-t2^2 + t1) / t1,
 (-t2^3 + t1^2) / t1^2, (t2 - t3) / t2, (t1 * t2 - t3) / (t1 * t2),
 (-t1^2 + t2) / t2, -t1 + 1, -t2 + 1, (-t2^2 + t1) / t1, (t2^2 - t3) / t2^2,
 (-t1^3 + t2^2) / t2^2, (-t1^2 + t2) / t2, -t1 + 1, -t2 + 1},
{-t3 + 1, (t1 - t3) / t1, -t2 + 1, -t1^2 + 1, (t1^2 - t3) / t1^2,
 (t1 - t2) / t1, -t1 + 1, (-t2^4 + t1^2) / t1^2, (t2 - t3) / t2,
 -t1 + 1, -t2^3 + 1, (t2^2 - t3) / t2^2, (-t1 + t2) / t2, -t2^2 + 1,
 (t2^3 - t3) / t2^3, (t2^2 - t1) / t2^2, (-t1^3 + t2^3) / t2^3, -t2 + 1},
{-t3 + 1, -t1^2 + 1, -t2^3 + 1, (t1 - t3) / t1, -t1 + 1, (-t2^3 + t1) / t1,
 (t2 - t3) / t2, (-t1^2 + t2) / t2, -t2^2 + 1, (t1 * t2 - t3) / (t1 * t2),
 (-t1 + t2) / t2, (-t2^2 + t1) / t1, (t2^2 - t3) / t2^2, (-t1^2 + t2^2) / t2^2,
 -t2 + 1, (t1 * t2^2 - t3) / (t1 * t2^2), (t2^2 - t1) / t2^2, (t1 - t2) / t1},
{-t3 + 1, (t1 - t3) / t1, -t1 + 1, -t2^2 + 1, (-t2^4 + t1) / t1, (t2 - t3) / t2,
 (t1 * t2 - t3) / (t1 * t2), (-t1 + t2) / t2, -t2 + 1, (-t2^3 + t1) / t1,
 (t2^2 - t3) / t2^2, (-t1^2 + t2^2) / t2^2, -t1 + 1, -t2^2 + 1,
 (t2^3 - t3) / t2^3, (t2^3 - t1^2) / t2^3, (-t1 + t2) / t2, -t2 + 1},
{-t3 + 1, (t1 - t3) / t1, -t1 + 1, -t2 + 1, (-t2^5 + t1) / t1, (t2 - t3) / t2,
 -t1 + 1, -t2^4 + 1, (t2^2 - t3) / t2^2, (-t1 + t2) / t2,
 -t2^3 + 1, (t2^3 - t3) / t2^3, (t2^2 - t1) / t2^2, -t2^2 + 1,
 (t2^4 - t3) / t2^4, (t2^4 - t1^2) / t2^4, (t2^3 - t1) / t2^3, -t2 + 1},
{-t1 + 1, -t3 + 1, -t2^6 + 1, (-t1 + t2) / t2, (t2 - t3) / t2, -t2^5 + 1,
 (t2^2 - t1) / t2^2, (t2^2 - t3) / t2^2, -t2^4 + 1, (t2^3 - t1) / t2^3,
 (t2^3 - t3) / t2^3, -t2^3 + 1, (t2^4 - t1) / t2^4, (t2^4 - t3) / t2^4,
 -t2^2 + 1, (t2^5 - t1) / t2^5, (t2^5 - t3) / t2^5, -t2 + 1},
{-t2 + 1, (t1 - t2) / t1, -t3 + 1, -t1^4 + 1, (t1^2 - t2) / t1^2,
 (t1 - t3) / t1, -t1^3 + 1, (t1^3 - t2) / t1^3, (t1^2 - t3) / t1^2,
 -t1^2 + 1, (t1^4 - t2) / t1^4, (t1^3 - t3) / t1^3, -t1 + 1,
 (t1^4 - t3^2) / t1^4, (-t2 + t3) / t3, -t1 + 1, (-t1^5 + t3) / t3, -t3 + 1},
{-t1 + 1, (-t1 + t2) / t2, -t3 + 1, -t2^4 + 1, (t2^2 - t1) / t2^2,
 (t2 - t3) / t2, -t2^3 + 1, (t2^3 - t1) / t2^3, (t2^2 - t3) / t2^2,
 -t2^2 + 1, (t2^4 - t1) / t2^4, (t2^3 - t3) / t2^3, -t2 + 1,
 (t2^4 - t3^2) / t2^4, (-t1 + t3) / t3, -t2 + 1, (-t2^5 + t3) / t3, -t3 + 1},
{-t2 + 1, (t1 - t2) / t1, (t1^2 - t2) / t1^2, -t3 + 1, -t1^2 + 1,
 (t1^2 - t3^2) / t1^2, (t1^3 - t2) / t1^3, (t1 - t3) / t1, -t1 + 1,
 (t1^3 - t3^2) / t1^3, (-t2 + t3) / t3, -t1^2 + 1, (-t1^4 + t3) / t3,
 -t3 + 1, (t1 * t3 - t2) / (t1 * t3), -t1 + 1, (-t1^3 + t3) / t3, (t1 - t3) / t1},
{-t2 + 1, -t3 + 1, -t1^2 + 1, (t1 - t2) / t1, (t1 - t3) / t1, -t1 + 1,
 (t1^2 - t2^2) / t1^2, (t1^2 - t3^2) / t1^2, -t1 + 1, -t2 + 1,
 (-t3^2 + t2) / t2, (-t2^2 + t3) / t3, -t3 + 1, (-t1 + t3) / t3,
 (-t1 + t2) / t2, (-t1^3 + t2 * t3) / (t2 * t3), (-t2 + t3) / t3, (t2 - t3) / t2},
{-t2^2 + 1, -t1 + 1, -t3 + 1, (-t2^2 + t1) / t1, (-t3^2 + t1) / t1, -t2 + 1,
 (-t1 + t2) / t2, (t2 - t3) / t2, (t1 - t2) / t1, (t1 * t2 - t3^2) / (t1 * t2),
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 (-t1^2 + t3) / t3, -t1 + 1, (-t2^2 + t3) / t3, -t3 + 1,
 (-t1^2 + t2 * t3) / (t2 * t3), (-t1 + t2) / t2, (-t2 + t3) / t3, (t2 - t3) / t2},
{-t1^2 + 1, -t1 + 1, (-t1^2 + t2) / t2, -t2 + 1, -t3 + 1, (-t3^2 + t2) / t2,
 (-t1 + t2) / t2, (t1 - t2) / t1, (t1 - t3) / t1, (t1 * t2 - t3^2) / (t1 * t2),
 (-t1^2 + t3) / t3, (-t2^2 + t3) / t3, -t2 + 1, -t3 + 1, (-t1 + t3) / t3,
 (-t2^2 + t1 * t3) / (t1 * t3), (t1 - t2) / t1, (t1 - t3) / t1},
{-t1 + 1, -t2 + 1, (-t3^2 + t1) / t1, -t1 + 1, -t3 + 1, -t2^2 + 1,
 (-t1^2 + t2^2) / t2^2, (-t1 + t2) / t2, (t2 - t3) / t2, -t2 + 1,
 (t2^2 - t3^2) / t2^2, (-t1^2 + t3) / t3, -t3 + 1, (-t1 + t3) / t3,
 (-t2 + t3) / t3, (t1 - t2) / t1, (-t2^3 + t1 * t3) / (t1 * t3), (t1 - t3) / t1},
{-t1 + 1, (-t1 + t2) / t2, (t2^2 - t1) / t2^2, -t3 + 1, -t2^2 + 1,
 (t2^2 - t3^2) / t2^2, (t2^3 - t1) / t2^3, (t2 - t3) / t2, -t2 + 1,
 (t2^3 - t3^2) / t2^3, (-t1 + t3) / t3, -t2^2 + 1, (-t2^4 + t3) / t3,
 -t3 + 1, (t2 * t3 - t1) / (t2 * t3), -t2 + 1, (-t2^3 + t3) / t3, (t2 - t3) / t2},
{-t2 + 1, (t1 - t2) / t1, -t3 + 1, -t1^3 + 1, (t1^2 - t2) / t1^2,
 (t1 - t3) / t1, -t1^2 + 1, (t1^3 - t2) / t1^3, (t1^2 - t3) / t1^2,
 -t1 + 1, (t1^3 - t3^3) / t1^3, (-t2 + t3) / t3, -t1 + 1, -t3^2 + 1,
 (t3^2 - t2) / t3^2, (-t1 + t3) / t3, (-t1^4 + t3^2) / t3^2, -t3 + 1},
{-t1 + 1, -t3 + 1, (-t2^2 + t1) / t1, (-t1^2 + t2) / t2, -t2 + 1,
 (-t1 + t2) / t2, (t2 - t3) / t2, (t1 - t2) / t1, (t1 - t3) / t1,
 (-t3^3 + t1 * t2) / (t1 * t2), -t1 + 1, -t2 + 1, -t3^2 + 1, (-t1^2 + t3^2) / t3^2,
 (-t1 + t3) / t3, (-t2^2 + t3^2) / t3^2, (-t2 + t3) / t3, -t3 + 1},
{-t1 + 1, (-t1 + t2) / t2, -t3 + 1, -t2^3 + 1, (t2^2 - t1) / t2^2,
 (t2 - t3) / t2, -t2^2 + 1, (t2^3 - t1) / t2^3, (t2^2 - t3) / t2^2,
 -t2 + 1, (t2^3 - t3^3) / t2^3, (-t1 + t3) / t3, -t2 + 1, -t3^2 + 1,
 (t3^2 - t1) / t3^2, (-t2 + t3) / t3, (-t2^4 + t3^2) / t3^2, -t3 + 1},
{-t2 + 1, -t1^3 + 1, -t3^2 + 1, (t1 - t2) / t1, -t1^2 + 1, (-t3^2 + t1) / t1,
 (t1^2 - t2) / t1^2, -t1 + 1, (t1^2 - t3^2) / t1^2, (-t2 + t3) / t3,
 (-t1^3 + t3) / t3, -t3 + 1, (t1 * t3 - t2) / (t1 * t3), (-t1^2 + t3) / t3,
 (t1 - t3) / t1, (t1^2 * t3 - t2) / (t1^2 * t3), (-t1 + t3) / t3, (t1^2 - t3) / t1^2},
{-t3^2 + 1, -t1 + 1, -t2 + 1, (-t2^2 + t1) / t1, (-t3^2 + t1) / t1,
 (-t1^2 + t2) / t2, -t1 + 1, -t2 + 1, (-t3^2 + t2) / t2, -t3 + 1,
 (-t1 + t3) / t3, (-t2 + t3) / t3, (-t2^2 + t1 * t3) / (t1 * t3), (t1 - t3) / t1,
 (-t1^2 + t2 * t3) / (t2 * t3), (-t1 + t3) / t3, (-t2 + t3) / t3, (t2 - t3) / t2},
{-t1 + 1, -t2^3 + 1, -t3^2 + 1, (-t1 + t2) / t2, -t2^2 + 1, (-t3^2 + t2) / t2,
 (t2^2 - t1) / t2^2, -t2 + 1, (t2^2 - t3^2) / t2^2, (-t1 + t3) / t3,
 (-t2^3 + t3) / t3, -t3 + 1, (t2 * t3 - t1) / (t2 * t3), (-t2^2 + t3) / t3,
 (t2 - t3) / t2, (t2^2 * t3 - t1) / (t2^2 * t3), (-t2 + t3) / t3, (t2^2 - t3) / t2^2},
{-t2 + 1, (t1 - t2) / t1, (t1^2 - t2) / t1^2, -t1 + 1, -t3 + 1, (-t3^2 + t1) / t1,
 (-t3^3 + t1^2) / t1^2, (-t2 + t3) / t3, (t1 * t3 - t2) / (t1 * t3),
 (-t1^2 + t3) / t3, -t1 + 1, -t3 + 1, (-t3^2 + t1) / t1, (t3^2 - t2) / t3^2,
 (-t1^3 + t3^2) / t3^2, (-t1^2 + t3) / t3, -t1 + 1, -t3 + 1},
{-t1 + 1, (-t1 + t2) / t2, (t2^2 - t1) / t2^2, -t2 + 1, -t3 + 1, (-t3^2 + t2) / t2,
 (-t3^3 + t2^2) / t2^2, (-t1 + t3) / t3, (t2 * t3 - t1) / (t2 * t3),
 (-t2^2 + t3) / t3, -t2 + 1, -t3 + 1, (-t3^2 + t2) / t2, (t3^2 - t1) / t3^2,
 (-t2^3 + t3^2) / t3^2, (-t2^2 + t3) / t3, -t2 + 1, -t3 + 1},
{-t2 + 1, (t1 - t2) / t1, -t3 + 1, -t1^2 + 1, (t1^2 - t2) / t1^2,
```

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  (t1 - t3) / t1, -t1 + 1, (-t3^4 + t1^2) / t1^2, (-t2 + t3) / t3,
  -t1 + 1, -t3^3 + 1, (t3^2 - t2) / t3^2, (-t1 + t3) / t3, -t3^2 + 1,
  (t3^3 - t2) / t3^3, (t3^2 - t1) / t3^2, (-t1^3 + t3^3) / t3^3, -t3 + 1},
 {-t1 + 1, (-t1 + t2) / t2, -t3 + 1, -t2^2 + 1, (t2^2 - t1) / t2^2,
  (t2 - t3) / t2, -t2 + 1, (-t3^4 + t2^2) / t2^2, (-t1 + t3) / t3,
  -t2 + 1, -t3^3 + 1, (t3^2 - t1) / t3^2, (-t2 + t3) / t3, -t3^2 + 1,
  (t3^3 - t1) / t3^3, (t3^2 - t2) / t3^2, (-t2^3 + t3^3) / t3^3, -t3 + 1},
 {-t2 + 1, -t1^2 + 1, -t3^3 + 1, (t1 - t2) / t1, -t1 + 1, (-t3^3 + t1) / t1,
  (-t2 + t3) / t3, (-t1^2 + t3) / t3, -t3^2 + 1, (t1 * t3 - t2) / (t1 * t3),
  (-t1 + t3) / t3, (-t3^2 + t1) / t1, (t3^2 - t2) / t3^2, (-t1^2 + t3^2) / t3^2,
  -t3 + 1, (t1 * t3^2 - t2) / (t1 * t3^2), (t3^2 - t1) / t3^2, (t1 - t3) / t1},
 {-t1 + 1, -t2^2 + 1, -t3^3 + 1, (-t1 + t2) / t2, -t2 + 1, (-t3^3 + t2) / t2,
  (-t1 + t3) / t3, (-t2^2 + t3) / t3, -t3^2 + 1, (t2 * t3 - t1) / (t2 * t3),
  (-t2 + t3) / t3, (-t3^2 + t2) / t2, (t3^2 - t1) / t3^2, (-t2^2 + t3^2) / t3^2,
  -t3 + 1, (t2 * t3^2 - t1) / (t2 * t3^2), (t3^2 - t2) / t3^2, (t2 - t3) / t2},
 {-t2 + 1, (t1 - t2) / t1, -t1 + 1, -t3^2 + 1, (-t3^4 + t1) / t1, (-t2 + t3) / t3,
  (t1 * t3 - t2) / (t1 * t3), (-t1 + t3) / t3, -t3 + 1, (-t3^3 + t1) / t1,
  (t3^2 - t2) / t3^2, (-t1^2 + t3^2) / t3^2, -t1 + 1, -t3^2 + 1,
  (t3^3 - t2) / t3^3, (t3^3 - t1^2) / t3^3, (-t1 + t3) / t3, -t3 + 1},
 {-t1 + 1, (-t1 + t2) / t2, -t2 + 1, -t3^2 + 1, (-t3^4 + t2) / t2, (-t1 + t3) / t3,
  (t2 * t3 - t1) / (t2 * t3), (-t2 + t3) / t3, -t3 + 1, (-t3^3 + t2) / t2,
  (t3^2 - t1) / t3^2, (-t2^2 + t3^2) / t3^2, -t2 + 1, -t3^2 + 1,
  (t3^3 - t1) / t3^3, (t3^3 - t2^2) / t3^3, (-t2 + t3) / t3, -t3 + 1},
 {-t2 + 1, (t1 - t2) / t1, -t1 + 1, -t3 + 1, (-t3^5 + t1) / t1, (-t2 + t3) / t3,
  -t1 + 1, -t3^4 + 1, (t3^2 - t2) / t3^2, (-t1 + t3) / t3,
  -t3^3 + 1, (t3^3 - t2) / t3^3, (t3^2 - t1) / t3^2, -t3^2 + 1,
  (t3^4 - t2) / t3^4, (t3^4 - t1^2) / t3^4, (t3^3 - t1) / t3^3, -t3 + 1},
 {-t1 + 1, (-t1 + t2) / t2, -t2 + 1, -t3 + 1, (-t3^5 + t2) / t2,
  (-t1 + t3) / t3, -t2 + 1, -t3^4 + 1, (t3^2 - t1) / t3^2, (-t2 + t3) / t3,
  -t3^3 + 1, (t3^3 - t1) / t3^3, (t3^2 - t2) / t3^2, -t3^2 + 1,
  (t3^4 - t1) / t3^4, (t3^4 - t2^2) / t3^4, (t3^3 - t2) / t3^3, -t3 + 1},
 {-t1 + 1, -t2 + 1, -t3^6 + 1, (-t1 + t3) / t3, (-t2 + t3) / t3, -t3^5 + 1,
  (t3^2 - t1) / t3^2, (t3^2 - t2) / t3^2, -t3^4 + 1, (t3^3 - t1) / t3^3,
  (t3^3 - t2) / t3^3, -t3^3 + 1, (t3^4 - t1) / t3^4, (t3^4 - t2) / t3^4,
  -t3^2 + 1, (t3^5 - t1) / t3^5, (t3^5 - t2) / t3^5, -t3 + 1}}
```

In[137]:=
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Length[G6smoothTangentContributions[t1, t2, t3]]
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Out[137]= 36

In[206]:=
```
GT6smoothPointsContributions[t1_, t2_, t3_, u_, v_] :=
 {{(-1) / (t2 - 1), (-1) / (t3 - 1), (-1) / (t1^6 - 1), t1 / (t1 - t2),
   t1 / (t1 - t3), (-1) / (t1^5 - 1), t1^2 / (t1^2 - t2), t1^2 / (t1^2 - t3),
   (-1) / (t1^4 - 1), t1^3 / (t1^3 - t2), t1^3 / (t1^3 - t3), (-1) / (t1^3 - 1),
   t1^4 / (t1^4 - t2), t1^4 / (t1^4 - t3), (-1) / (t1^2 - 1), t1^5 / (t1^5 - t2),
   t1^5 / (t1^5 - t3), (-1) / (t1 - 1), -u + 1, -t1 * u + 1, -t1^2 * u + 1,
   -t1^3 * u + 1, -t1^4 * u + 1, -t1^5 * u + 1, -v + 1, (t1 - v) / t1,
   (t1^2 - v) / t1^2, (t1^3 - v) / t1^3, (t1^4 - v) / t1^4, (t1^5 - v) / t1^5},
  {(-1) / (t3 - 1), t1 / (t1 - t3), (-1) / (t2 - 1), (-1) / (t1^4 - 1),
```

```
 t1^2 / (t1^2 - t3), t1 / (t1 - t2), (-1) / (t1^3 - 1), t1^3 / (t1^3 - t3),
 t1^2 / (t1^2 - t2), (-1) / (t1^2 - 1), t1^4 / (t1^4 - t3),
 t1^3 / (t1^3 - t2), (-1) / (t1 - 1), t1^4 / (t1^4 - t2^2), t2 / (t2 - t3),
 (-1) / (t1 - 1), (-t2) / (t1^5 - t2), (-1) / (t2 - 1), -u + 1, -t1 * u + 1,
 -t1^2 * u + 1, -t1^3 * u + 1, -t1^4 * u + 1, -t2 * u + 1, -v + 1, (t1 - v) / t1,
 (t1^2 - v) / t1^2, (t1^3 - v) / t1^3, (t1^4 - v) / t1^4, (t2 - v) / t2},
{(-1) / (t3 - 1), t1 / (t1 - t3), t1^2 / (t1^2 - t3), (-1) / (t2 - 1),
 (-1) / (t1^2 - 1), t1^2 / (t1^2 - t2^2), t1^3 / (t1^3 - t3), t1 / (t1 - t2),
 (-1) / (t1 - 1), t1^3 / (t1^3 - t2^2), t2 / (t2 - t3), (-1) / (t1^2 - 1),
 (-t2) / (t1^4 - t2), (-1) / (t2 - 1), (t1 * t2) / (t1 * t2 - t3),
 (-1) / (t1 - 1), (-t2) / (t1^3 - t2), t1 / (t1 - t2), -u + 1, -t1 * u + 1,
 -t1^2 * u + 1, -t1^3 * u + 1, -t2 * u + 1, -t1 * t2 * u + 1, -v + 1, (t1 - v) / t1,
 (t1^2 - v) / t1^2, (t1^3 - v) / t1^3, (t2 - v) / t2, (t1 * t2 - v) / (t1 * t2)},
{(-1) / (t3 - 1), t1 / (t1 - t3), (-1) / (t2 - 1), (-1) / (t1^3 - 1),
 t1^2 / (t1^2 - t3), t1 / (t1 - t2), (-1) / (t1^2 - 1), t1^3 / (t1^3 - t3),
 t1^2 / (t1^2 - t2), (-1) / (t1 - 1), t1^3 / (t1^3 - t2^3), t2 / (t2 - t3),
 (-1) / (t1 - 1), (-1) / (t2^2 - 1), t2^2 / (t2^2 - t3), (-t2) / (t1 - t2),
 (-t2^2) / (t1^4 - t2^2), (-1) / (t2 - 1), -u + 1, -t1 * u + 1,
 -t1^2 * u + 1, -t1^3 * u + 1, -t2 * u + 1, -t2^2 * u + 1, -v + 1, (t1 - v) / t1,
 (t1^2 - v) / t1^2, (t1^3 - v) / t1^3, (t2 - v) / t2, (t2^2 - v) / t2^2},
{(-1) / (t3 - 1), (-1) / (t1^3 - 1), (-1) / (t2^2 - 1), t1 / (t1 - t3), (-1) / (t1^2 - 1),
 (-t1) / (t2^2 - t1), t1^2 / (t1^2 - t3), (-1) / (t1 - 1), t1^2 / (t1^2 - t2^2),
 t2 / (t2 - t3), (-t2) / (t1^3 - t2), (-1) / (t2 - 1), (t1 * t2) / (t1 * t2 - t3),
 (-t2) / (t1^2 - t2), t1 / (t1 - t2), (t1^2 * t2) / (t1^2 * t2 - t3),
 (-t2) / (t1 - t2), t1^2 / (t1^2 - t2), -u + 1, -t1 * u + 1, -t1^2 * u + 1, -t2 * u + 1,
 -t1 * t2 * u + 1, -t1^2 * t2 * u + 1, -v + 1, (t1 - v) / t1, (t1^2 - v) / t1^2,
 (t2 - v) / t2, (t1 * t2 - v) / (t1 * t2), (t1^2 * t2 - v) / (t1^2 * t2)},
{(-1) / (t3 - 1), t1 / (t1 - t3), t1^2 / (t1^2 - t3), (-1) / (t1 - 1),
 (-1) / (t2 - 1), (-t1) / (t2^2 - t1), (-t1^2) / (t2^3 - t1^2), t2 / (t2 - t3),
 (t1 * t2) / (t1 * t2 - t3), (-t2) / (t1^2 - t2), (-1) / (t1 - 1), (-1) / (t2 - 1),
 (-t1) / (t2^2 - t1), t2^2 / (t2^2 - t3), (-t2^2) / (t1^3 - t2^2),
 (-t2) / (t1^2 - t2), (-1) / (t1 - 1), (-1) / (t2 - 1), -u + 1, -t1 * u + 1,
 -t1^2 * u + 1, -t2 * u + 1, -t1 * t2 * u + 1, -t2^2 * u + 1, -v + 1, (t1 - v) / t1,
 (t1^2 - v) / t1^2, (t2 - v) / t2, (t1 * t2 - v) / (t1 * t2), (t2^2 - v) / t2^2},
{(-1) / (t3 - 1), t1 / (t1 - t3), (-1) / (t2 - 1), (-1) / (t1^2 - 1),
 t1^2 / (t1^2 - t3), t1 / (t1 - t2), (-1) / (t1 - 1), (-t1^2) / (t2^4 - t1^2),
 t2 / (t2 - t3), (-1) / (t1 - 1), (-1) / (t2^3 - 1), t2^2 / (t2^2 - t3),
 (-t2) / (t1 - t2), (-1) / (t2^2 - 1), t2^3 / (t2^3 - t3), t2^2 / (t2^2 - t1),
 (-t2^3) / (t1^3 - t2^3), (-1) / (t2 - 1), -u + 1, -t1 * u + 1,
 -t1^2 * u + 1, -t2 * u + 1, -t2^2 * u + 1, -t2^3 * u + 1, -v + 1, (t1 - v) / t1,
 (t1^2 - v) / t1^2, (t2 - v) / t2, (t2^2 - v) / t2^2, (t2^3 - v) / t2^3},
{(-1) / (t3 - 1), (-1) / (t1^2 - 1), (-1) / (t2^3 - 1), t1 / (t1 - t3), (-1) / (t1 - 1),
 (-t1) / (t2^3 - t1), t2 / (t2 - t3), (-t2) / (t1^2 - t2), (-1) / (t2^2 - 1),
 (t1 * t2) / (t1 * t2 - t3), (-t2) / (t1 - t2), (-t1) / (t2^2 - t1), t2^2 / (t2^2 - t3),
 (-t2^2) / (t1^2 - t2^2), (-1) / (t2 - 1), (t1 * t2^2) / (t1 * t2^2 - t3),
 t2^2 / (t2^2 - t1), t1 / (t1 - t2), -u + 1, -t1 * u + 1, -t2 * u + 1, -t1 * t2 * u + 1,
 -t2^2 * u + 1, -t1 * t2^2 * u + 1, -v + 1, (t1 - v) / t1, (t2 - v) / t2,
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 (t1 * t2 - v) / (t1 * t2), (t2^2 - v) / t2^2, (t1 * t2^2 - v) / (t1 * t2^2)},
{(-1) / (t3 - 1), t1 / (t1 - t3), (-1) / (t1 - 1), (-1) / (t2^2 - 1),
 (-t1) / (t2^4 - t1), t2 / (t2 - t3), (t1 * t2) / (t1 * t2 - t3),
 (-t2) / (t1 - t2), (-1) / (t2 - 1), (-t1) / (t2^3 - t1), t2^2 / (t2^2 - t3),
 (-t2^2) / (t1^2 - t2^2), (-1) / (t1 - 1), (-1) / (t2^2 - 1), t2^3 / (t2^3 - t3),
 t2^3 / (t2^3 - t1^2), (-t2) / (t1 - t2), (-1) / (t2 - 1), -u + 1, -t1 * u + 1,
 -t2 * u + 1, -t1 * t2 * u + 1, -t2^2 * u + 1, -t2^3 * u + 1, -v + 1, (t1 - v) / t1,
 (t2 - v) / t2, (t1 * t2 - v) / (t1 * t2), (t2^2 - v) / t2^2, (t2^3 - v) / t2^3},
{(-1) / (t3 - 1), t1 / (t1 - t3), (-1) / (t1 - 1), (-1) / (t2 - 1),
 (-t1) / (t2^5 - t1), t2 / (t2 - t3), (-1) / (t1 - 1), (-1) / (t2^4 - 1),
 t2^2 / (t2^2 - t3), (-t2) / (t1 - t2), (-1) / (t2^3 - 1), t2^3 / (t2^3 - t3),
 t2^2 / (t2^2 - t1), (-1) / (t2^2 - 1), t2^4 / (t2^4 - t3), t2^4 / (t2^4 - t1^2),
 t2^3 / (t2^3 - t1), (-1) / (t2 - 1), -u + 1, -t1 * u + 1, -t2 * u + 1,
 -t2^2 * u + 1, -t2^3 * u + 1, -t2^4 * u + 1, -v + 1, (t1 - v) / t1,
 (t2 - v) / t2, (t2^2 - v) / t2^2, (t2^3 - v) / t2^3, (t2^4 - v) / t2^4},
{(-1) / (t1 - 1), (-1) / (t3 - 1), (-1) / (t2^6 - 1), (-t2) / (t1 - t2),
 t2 / (t2 - t3), (-1) / (t2^5 - 1), t2^2 / (t2^2 - t1), t2^2 / (t2^2 - t3),
 (-1) / (t2^4 - 1), t2^3 / (t2^3 - t1), t2^3 / (t2^3 - t3), (-1) / (t2^3 - 1),
 t2^4 / (t2^4 - t1), t2^4 / (t2^4 - t3), (-1) / (t2^2 - 1), t2^5 / (t2^5 - t1),
 t2^5 / (t2^5 - t3), (-1) / (t2 - 1), -u + 1, -t2 * u + 1, -t2^2 * u + 1,
 -t2^3 * u + 1, -t2^4 * u + 1, -t2^5 * u + 1, -v + 1, (t2 - v) / t2,
 (t2^2 - v) / t2^2, (t2^3 - v) / t2^3, (t2^4 - v) / t2^4, (t2^5 - v) / t2^5},
{(-1) / (t2 - 1), t1 / (t1 - t2), (-1) / (t3 - 1), (-1) / (t1^4 - 1),
 t1^2 / (t1^2 - t2), t1 / (t1 - t3), (-1) / (t1^3 - 1), t1^3 / (t1^3 - t2),
 t1^2 / (t1^2 - t3), (-1) / (t1^2 - 1), t1^4 / (t1^4 - t2), t1^3 / (t1^3 - t3),
 (-1) / (t1 - 1), t1^4 / (t1^4 - t3^2), (-t3) / (t2 - t3), (-1) / (t1 - 1),
 (-t3) / (t1^5 - t3), (-1) / (t3 - 1), -u + 1, -t1 * u + 1, -t1^2 * u + 1,
 -t1^3 * u + 1, -t1^4 * u + 1, -t3 * u + 1, -v + 1, (t1 - v) / t1,
 (t1^2 - v) / t1^2, (t1^3 - v) / t1^3, (t1^4 - v) / t1^4, (t3 - v) / t3},
{(-1) / (t1 - 1), (-t2) / (t1 - t2), (-1) / (t3 - 1), (-1) / (t2^4 - 1),
 t2^2 / (t2^2 - t1), t2 / (t2 - t3), (-1) / (t2^3 - 1), t2^3 / (t2^3 - t1),
 t2^2 / (t2^2 - t3), (-1) / (t2^2 - 1), t2^4 / (t2^4 - t1), t2^3 / (t2^3 - t3),
 (-1) / (t2 - 1), t2^4 / (t2^4 - t3^2), (-t3) / (t1 - t3), (-1) / (t2 - 1),
 (-t3) / (t2^5 - t3), (-1) / (t3 - 1), -u + 1, -t2 * u + 1, -t2^2 * u + 1,
 -t2^3 * u + 1, -t2^4 * u + 1, -t3 * u + 1, -v + 1, (t2 - v) / t2,
 (t2^2 - v) / t2^2, (t2^3 - v) / t2^3, (t2^4 - v) / t2^4, (t3 - v) / t3},
{(-1) / (t2 - 1), t1 / (t1 - t2), t1^2 / (t1^2 - t2), (-1) / (t3 - 1),
 (-1) / (t1^2 - 1), t1^2 / (t1^2 - t3^2), t1^3 / (t1^3 - t2), t1 / (t1 - t3),
 (-1) / (t1 - 1), t1^3 / (t1^3 - t3^2), (-t3) / (t2 - t3), (-1) / (t1^2 - 1),
 (-t3) / (t1^4 - t3), (-1) / (t3 - 1), (t1 * t3) / (t1 * t3 - t2),
 (-1) / (t1 - 1), (-t3) / (t1^3 - t3), t1 / (t1 - t3), -u + 1, -t1 * u + 1,
 -t1^2 * u + 1, -t1^3 * u + 1, -t3 * u + 1, -t1 * t3 * u + 1, -v + 1, (t1 - v) / t1,
 (t1^2 - v) / t1^2, (t1^3 - v) / t1^3, (t3 - v) / t3, (t1 * t3 - v) / (t1 * t3)},
{(-1) / (t2 - 1), (-1) / (t3 - 1), (-1) / (t1^2 - 1), t1 / (t1 - t2), t1 / (t1 - t3),
 (-1) / (t1 - 1), t1^2 / (t1^2 - t2^2), t1^2 / (t1^2 - t3^2), (-1) / (t1 - 1),
 (-1) / (t2 - 1), (-t2) / (t3^2 - t2), (-t3) / (t2^2 - t3), (-1) / (t3 - 1),
 (-t3) / (t1 - t3), (-t2) / (t1 - t2), (-t2 * t3) / (t1^3 - t2 * t3),
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 (-t3) / (t2 - t3), t2 / (t2 - t3), -u + 1, -t1 * u + 1, -t1^2 * u + 1,
 -t2 * u + 1, -t3 * u + 1, -t2 * t3 * u + 1, -v + 1, (t1 - v) / t1,
 (t1^2 - v) / t1^2, (t2 - v) / t2, (t3 - v) / t3, (t2 * t3 - v) / (t2 * t3)},
{(-1) / (t2^2 - 1), (-1) / (t1 - 1), (-1) / (t3 - 1), (-t1) / (t2^2 - t1),
 (-t1) / (t3^2 - t1), (-1) / (t2 - 1), (-t2) / (t1 - t2), t2 / (t2 - t3),
 t1 / (t1 - t2), (t1 * t2) / (t1 * t2 - t3^2), (-t3) / (t1^2 - t3), (-1) / (t1 - 1),
 (-t3) / (t2^2 - t3), (-1) / (t3 - 1), (-t2 * t3) / (t1^2 - t2 * t3),
 (-t2) / (t1 - t2), (-t3) / (t2 - t3), t2 / (t2 - t3), -u + 1, -t1 * u + 1,
 -t2 * u + 1, -t1 * t2 * u + 1, -t3 * u + 1, -t2 * t3 * u + 1, -v + 1, (t1 - v) / t1,
 (t2 - v) / t2, (t1 * t2 - v) / (t1 * t2), (t3 - v) / t3, (t2 * t3 - v) / (t2 * t3)},
{(-1) / (t1^2 - 1), (-1) / (t1 - 1), (-t2) / (t1^2 - t2), (-1) / (t2 - 1),
 (-1) / (t3 - 1), (-t2) / (t3^2 - t2), (-t2) / (t1 - t2), t1 / (t1 - t2),
 t1 / (t1 - t3), (t1 * t2) / (t1 * t2 - t3^2), (-t3) / (t1^2 - t3),
 (-t3) / (t2^2 - t3), (-1) / (t2 - 1), (-1) / (t3 - 1), (-t3) / (t1 - t3),
 (-t1 * t3) / (t2^2 - t1 * t3), t1 / (t1 - t2), t1 / (t1 - t3), -u + 1, -t1 * u + 1,
 -t2 * u + 1, -t1 * t2 * u + 1, -t3 * u + 1, -t1 * t3 * u + 1, -v + 1, (t1 - v) / t1,
 (t2 - v) / t2, (t1 * t2 - v) / (t1 * t2), (t3 - v) / t3, (t1 * t3 - v) / (t1 * t3)},
{(-1) / (t1 - 1), (-1) / (t2 - 1), (-t1) / (t3^2 - t1), (-1) / (t1 - 1),
 (-1) / (t3 - 1), (-1) / (t2^2 - 1), (-t2^2) / (t1^2 - t2^2),
 (-t2) / (t1 - t2), t2 / (t2 - t3), (-1) / (t2 - 1), t2^2 / (t2^2 - t3^2),
 (-t3) / (t1^2 - t3), (-1) / (t3 - 1), (-t3) / (t1 - t3), (-t3) / (t2 - t3),
 t1 / (t1 - t2), (-t1 * t3) / (t2^3 - t1 * t3), t1 / (t1 - t3), -u + 1, -t1 * u + 1,
 -t2 * u + 1, -t2^2 * u + 1, -t3 * u + 1, -t1 * t3 * u + 1, -v + 1, (t1 - v) / t1,
 (t2 - v) / t2, (t2^2 - v) / t2^2, (t3 - v) / t3, (t1 * t3 - v) / (t1 * t3)},
{(-1) / (t1 - 1), (-t2) / (t1 - t2), t2^2 / (t2^2 - t1), (-1) / (t3 - 1),
 (-1) / (t2^2 - 1), t2^2 / (t2^2 - t3^2), t2^3 / (t2^3 - t1), t2 / (t2 - t3),
 (-1) / (t2 - 1), t2^3 / (t2^3 - t3^2), (-t3) / (t1 - t3), (-1) / (t2^2 - 1),
 (-t3) / (t2^4 - t3), (-1) / (t3 - 1), (t2 * t3) / (t2 * t3 - t1),
 (-1) / (t2 - 1), (-t3) / (t2^3 - t3), t2 / (t2 - t3), -u + 1, -t2 * u + 1,
 -t2^2 * u + 1, -t2^3 * u + 1, -t3 * u + 1, -t2 * t3 * u + 1, -v + 1, (t2 - v) / t2,
 (t2^2 - v) / t2^2, (t2^3 - v) / t2^3, (t3 - v) / t3, (t2 * t3 - v) / (t2 * t3)},
{(-1) / (t2 - 1), t1 / (t1 - t2), (-1) / (t3 - 1), (-1) / (t1^3 - 1),
 t1^2 / (t1^2 - t2), t1 / (t1 - t3), (-1) / (t1^2 - 1), t1^3 / (t1^3 - t2),
 t1^2 / (t1^2 - t3), (-1) / (t1 - 1), t1^3 / (t1^3 - t3^3), (-t3) / (t2 - t3),
 (-1) / (t1 - 1), (-1) / (t3^2 - 1), t3^2 / (t3^2 - t2), (-t3) / (t1 - t3),
 (-t3^2) / (t1^4 - t3^2), (-1) / (t3 - 1), -u + 1, -t1 * u + 1,
 -t1^2 * u + 1, -t1^3 * u + 1, -t3 * u + 1, -t3^2 * u + 1, -v + 1, (t1 - v) / t1,
 (t1^2 - v) / t1^2, (t1^3 - v) / t1^3, (t3 - v) / t3, (t3^2 - v) / t3^2},
{(-1) / (t1 - 1), (-1) / (t3 - 1), (-t1) / (t2^2 - t1), (-t2) / (t1^2 - t2),
 (-1) / (t2 - 1), (-t2) / (t1 - t2), t2 / (t2 - t3), t1 / (t1 - t2),
 t1 / (t1 - t3), (-t1 * t2) / (t3^3 - t1 * t2), (-1) / (t1 - 1), (-1) / (t2 - 1),
 (-1) / (t3^2 - 1), (-t3^2) / (t1^2 - t3^2), (-t3) / (t1 - t3),
 (-t3^2) / (t2^2 - t3^2), (-t3) / (t2 - t3), (-1) / (t3 - 1), -u + 1, -t1 * u + 1,
 -t2 * u + 1, -t1 * t2 * u + 1, -t3 * u + 1, -t3^2 * u + 1, -v + 1, (t1 - v) / t1,
 (t2 - v) / t2, (t1 * t2 - v) / (t1 * t2), (t3 - v) / t3, (t3^2 - v) / t3^2},
{(-1) / (t1 - 1), (-t2) / (t1 - t2), (-1) / (t3 - 1), (-1) / (t2^3 - 1),
 t2^2 / (t2^2 - t1), t2 / (t2 - t3), (-1) / (t2^2 - 1), t2^3 / (t2^3 - t1),
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 t2^2 / (t2^2 - t3), (-1) / (t2 - 1), t2^3 / (t2^3 - t3^3), (-t3) / (t1 - t3),
 (-1) / (t2 - 1), (-1) / (t3^2 - 1), t3^2 / (t3^2 - t1), (-t3) / (t2 - t3),
 (-t3^2) / (t2^4 - t3^2), (-1) / (t3 - 1), -u + 1, -t2 * u + 1,
 -t2^2 * u + 1, -t2^3 * u + 1, -t3 * u + 1, -t3^2 * u + 1, -v + 1, (t2 - v) / t2,
 (t2^2 - v) / t2^2, (t2^3 - v) / t2^3, (t3 - v) / t3, (t3^2 - v) / t3^2},
{(-1) / (t2 - 1), (-1) / (t1^3 - 1), (-1) / (t3^2 - 1), t1 / (t1 - t2), (-1) / (t1^2 - 1),
 (-t1) / (t3^2 - t1), t1^2 / (t1^2 - t2), (-1) / (t1 - 1), t1^2 / (t1^2 - t3^2),
 (-t3) / (t2 - t3), (-t3) / (t1^3 - t3), (-1) / (t3 - 1), (t1 * t3) / (t1 * t3 - t2),
 (-t3) / (t1^2 - t3), t1 / (t1 - t3), (t1^2 * t3) / (t1^2 * t3 - t2),
 (-t3) / (t1 - t3), t1^2 / (t1^2 - t3), -u + 1, -t1 * u + 1, -t1^2 * u + 1, -t3 * u + 1,
 -t1 * t3 * u + 1, -t1^2 * t3 * u + 1, -v + 1, (t1 - v) / t1, (t1^2 - v) / t1^2,
 (t3 - v) / t3, (t1 * t3 - v) / (t1 * t3), (t1^2 * t3 - v) / (t1^2 * t3)},
{(-1) / (t3^2 - 1), (-1) / (t1 - 1), (-1) / (t2 - 1), (-t1) / (t2^2 - t1),
 (-t1) / (t3^2 - t1), (-t2) / (t1^2 - t2), (-1) / (t1 - 1), (-1) / (t2 - 1),
 (-t2) / (t3^2 - t2), (-1) / (t3 - 1), (-t3) / (t1 - t3), (-t3) / (t2 - t3),
 (-t1 * t3) / (t2^2 - t1 * t3), t1 / (t1 - t3), (-t2 * t3) / (t1^2 - t2 * t3),
 (-t3) / (t1 - t3), (-t3) / (t2 - t3), t2 / (t2 - t3), -u + 1, -t1 * u + 1,
 -t2 * u + 1, -t3 * u + 1, -t1 * t3 * u + 1, -t2 * t3 * u + 1, -v + 1, (t1 - v) / t1,
 (t2 - v) / t2, (t3 - v) / t3, (t1 * t3 - v) / (t1 * t3), (t2 * t3 - v) / (t2 * t3)},
{(-1) / (t1 - 1), (-1) / (t2^3 - 1), (-1) / (t3^2 - 1), (-t2) / (t1 - t2),
 (-1) / (t2^2 - 1), (-t2) / (t3^2 - t2), t2^2 / (t2^2 - t1), (-1) / (t2 - 1),
 t2^2 / (t2^2 - t3^2), (-t3) / (t1 - t3), (-t3) / (t2^3 - t3),
 (-1) / (t3 - 1), (t2 * t3) / (t2 * t3 - t1), (-t3) / (t2^2 - t3),
 t2 / (t2 - t3), (t2^2 * t3) / (t2^2 * t3 - t1), (-t3) / (t2 - t3),
 t2^2 / (t2^2 - t3), -u + 1, -t2 * u + 1, -t2^2 * u + 1, -t3 * u + 1,
 -t2 * t3 * u + 1, -t2^2 * t3 * u + 1, -v + 1, (t2 - v) / t2, (t2^2 - v) / t2^2,
 (t3 - v) / t3, (t2 * t3 - v) / (t2 * t3), (t2^2 * t3 - v) / (t2^2 * t3)},
{(-1) / (t2 - 1), t1 / (t1 - t2), t1^2 / (t1^2 - t2), (-1) / (t1 - 1),
 (-1) / (t3 - 1), (-t1) / (t3^2 - t1), (-t1^2) / (t3^3 - t1^2), (-t3) / (t2 - t3),
 (t1 * t3) / (t1 * t3 - t2), (-t3) / (t1^2 - t3), (-1) / (t1 - 1), (-1) / (t3 - 1),
 (-t1) / (t3^2 - t1), t3^2 / (t3^2 - t2), (-t3^2) / (t1^3 - t3^2),
 (-t3) / (t1^2 - t3), (-1) / (t1 - 1), (-1) / (t3 - 1), -u + 1, -t1 * u + 1,
 -t1^2 * u + 1, -t3 * u + 1, -t1 * t3 * u + 1, -t3^2 * u + 1, -v + 1, (t1 - v) / t1,
 (t1^2 - v) / t1^2, (t3 - v) / t3, (t1 * t3 - v) / (t1 * t3), (t3^2 - v) / t3^2},
{(-1) / (t1 - 1), (-t2) / (t1 - t2), t2^2 / (t2^2 - t1), (-1) / (t2 - 1),
 (-1) / (t3 - 1), (-t2) / (t3^2 - t2), (-t2^2) / (t3^3 - t2^2), (-t3) / (t1 - t3),
 (t2 * t3) / (t2 * t3 - t1), (-t3) / (t2^2 - t3), (-1) / (t2 - 1), (-1) / (t3 - 1),
 (-t2) / (t3^2 - t2), t3^2 / (t3^2 - t1), (-t3^2) / (t2^3 - t3^2),
 (-t3) / (t2^2 - t3), (-1) / (t2 - 1), (-1) / (t3 - 1), -u + 1, -t2 * u + 1,
 -t2^2 * u + 1, -t3 * u + 1, -t2 * t3 * u + 1, -t3^2 * u + 1, -v + 1, (t2 - v) / t2,
 (t2^2 - v) / t2^2, (t3 - v) / t3, (t2 * t3 - v) / (t2 * t3), (t3^2 - v) / t3^2},
{(-1) / (t2 - 1), t1 / (t1 - t2), (-1) / (t3 - 1), (-1) / (t1^2 - 1),
 t1^2 / (t1^2 - t2), t1 / (t1 - t3), (-1) / (t1 - 1), (-t1^2) / (t3^4 - t1^2),
 (-t3) / (t2 - t3), (-1) / (t1 - 1), (-1) / (t3^3 - 1), t3^2 / (t3^2 - t2),
 (-t3) / (t1 - t3), (-1) / (t3^2 - 1), t3^3 / (t3^3 - t2), t3^2 / (t3^2 - t1),
 (-t3^3) / (t1^3 - t3^3), (-1) / (t3 - 1), -u + 1, -t1 * u + 1,
 -t1^2 * u + 1, -t3 * u + 1, -t3^2 * u + 1, -t3^3 * u + 1, -v + 1, (t1 - v) / t1,
```

```
 (t1^2 - v) / t1^2, (t3 - v) / t3, (t3^2 - v) / t3^2, (t3^3 - v) / t3^3},
{(-1) / (t1 - 1), (-t2) / (t1 - t2), (-1) / (t3 - 1), (-1) / (t2^2 - 1),
 t2^2 / (t2^2 - t1), t2 / (t2 - t3), (-1) / (t2 - 1), (-t2^2) / (t3^4 - t2^2),
 (-t3) / (t1 - t3), (-1) / (t2 - 1), (-1) / (t3^3 - 1), t3^2 / (t3^2 - t1),
 (-t3) / (t2 - t3), (-1) / (t3^2 - 1), t3^3 / (t3^3 - t1), t3^2 / (t3^2 - t2),
 (-t3^3) / (t2^3 - t3^3), (-1) / (t3 - 1), -u + 1, -t2 * u + 1,
 -t2^2 * u + 1, -t3 * u + 1, -t3^2 * u + 1, -t3^3 * u + 1, -v + 1, (t2 - v) / t2,
 (t2^2 - v) / t2^2, (t3 - v) / t3, (t3^2 - v) / t3^2, (t3^3 - v) / t3^3},
{(-1) / (t2 - 1), (-1) / (t1^2 - 1), (-1) / (t3^3 - 1), t1 / (t1 - t2), (-1) / (t1 - 1),
 (-t1) / (t3^3 - t1), (-t3) / (t2 - t3), (-t3) / (t1^2 - t3), (-1) / (t3^2 - 1),
 (t1 * t3) / (t1 * t3 - t2), (-t3) / (t1 - t3), (-t1) / (t3^2 - t1), t3^2 / (t3^2 - t2),
 (-t3^2) / (t1^2 - t3^2), (-1) / (t3 - 1), (t1 * t3^2) / (t1 * t3^2 - t2),
 t3^2 / (t3^2 - t1), t1 / (t1 - t3), -u + 1, -t1 * u + 1, -t3 * u + 1, -t1 * t3 * u + 1,
 -t3^2 * u + 1, -t1 * t3^2 * u + 1, -v + 1, (t1 - v) / t1, (t3 - v) / t3,
 (t1 * t3 - v) / (t1 * t3), (t3^2 - v) / t3^2, (t1 * t3^2 - v) / (t1 * t3^2)},
{(-1) / (t1 - 1), (-1) / (t2^2 - 1), (-1) / (t3^3 - 1), (-t2) / (t1 - t2),
 (-1) / (t2 - 1), (-t2) / (t3^3 - t2), (-t3) / (t1 - t3), (-t3) / (t2^2 - t3),
 (-1) / (t3^2 - 1), (t2 * t3) / (t2 * t3 - t1), (-t3) / (t2 - t3),
 (-t2) / (t3^2 - t2), t3^2 / (t3^2 - t1), (-t3^2) / (t2^2 - t3^2),
 (-1) / (t3 - 1), (t2 * t3^2) / (t2 * t3^2 - t1), t3^2 / (t3^2 - t2),
 t2 / (t2 - t3), -u + 1, -t2 * u + 1, -t3 * u + 1, -t2 * t3 * u + 1,
 -t3^2 * u + 1, -t2 * t3^2 * u + 1, -v + 1, (t2 - v) / t2, (t3 - v) / t3,
 (t2 * t3 - v) / (t2 * t3), (t3^2 - v) / t3^2, (t2 * t3^2 - v) / (t2 * t3^2)},
{(-1) / (t2 - 1), t1 / (t1 - t2), (-1) / (t1 - 1), (-1) / (t3^2 - 1),
 (-t1) / (t3^4 - t1), (-t3) / (t2 - t3), (t1 * t3) / (t1 * t3 - t2),
 (-t3) / (t1 - t3), (-1) / (t3 - 1), (-t1) / (t3^3 - t1), t3^2 / (t3^2 - t2),
 (-t3^2) / (t1^2 - t3^2), (-1) / (t1 - 1), (-1) / (t3^2 - 1), t3^3 / (t3^3 - t2),
 t3^3 / (t3^3 - t1^2), (-t3) / (t1 - t3), (-1) / (t3 - 1), -u + 1, -t1 * u + 1,
 -t3 * u + 1, -t1 * t3 * u + 1, -t3^2 * u + 1, -t3^3 * u + 1, -v + 1, (t1 - v) / t1,
 (t3 - v) / t3, (t1 * t3 - v) / (t1 * t3), (t3^2 - v) / t3^2, (t3^3 - v) / t3^3},
{(-1) / (t1 - 1), (-t2) / (t1 - t2), (-1) / (t2 - 1), (-1) / (t3^2 - 1),
 (-t2) / (t3^4 - t2), (-t3) / (t1 - t3), (t2 * t3) / (t2 * t3 - t1),
 (-t3) / (t2 - t3), (-1) / (t3 - 1), (-t2) / (t3^3 - t2), t3^2 / (t3^2 - t1),
 (-t3^2) / (t2^2 - t3^2), (-1) / (t2 - 1), (-1) / (t3^2 - 1), t3^3 / (t3^3 - t1),
 t3^3 / (t3^3 - t2^2), (-t3) / (t2 - t3), (-1) / (t3 - 1), -u + 1, -t2 * u + 1,
 -t3 * u + 1, -t2 * t3 * u + 1, -t3^2 * u + 1, -t3^3 * u + 1, -v + 1, (t2 - v) / t2,
 (t3 - v) / t3, (t2 * t3 - v) / (t2 * t3), (t3^2 - v) / t3^2, (t3^3 - v) / t3^3},
{(-1) / (t2 - 1), t1 / (t1 - t2), (-1) / (t1 - 1), (-1) / (t3 - 1),
 (-t1) / (t3^5 - t1), (-t3) / (t2 - t3), (-1) / (t1 - 1), (-1) / (t3^4 - 1),
 t3^2 / (t3^2 - t2), (-t3) / (t1 - t3), (-1) / (t3^3 - 1), t3^3 / (t3^3 - t2),
 t3^2 / (t3^2 - t1), (-1) / (t3^2 - 1), t3^4 / (t3^4 - t2), t3^4 / (t3^4 - t1^2),
 t3^3 / (t3^3 - t1), (-1) / (t3 - 1), -u + 1, -t1 * u + 1, -t3 * u + 1,
 -t3^2 * u + 1, -t3^3 * u + 1, -t3^4 * u + 1, -v + 1, (t1 - v) / t1,
 (t3 - v) / t3, (t3^2 - v) / t3^2, (t3^3 - v) / t3^3, (t3^4 - v) / t3^4},
{(-1) / (t1 - 1), (-t2) / (t1 - t2), (-1) / (t2 - 1), (-1) / (t3 - 1),
 (-t2) / (t3^5 - t2), (-t3) / (t1 - t3), (-1) / (t2 - 1), (-1) / (t3^4 - 1),
 t3^2 / (t3^2 - t1), (-t3) / (t2 - t3), (-1) / (t3^3 - 1), t3^3 / (t3^3 - t1),
```

```
    t3^2 / (t3^2 - t2), (-1) / (t3^2 - 1), t3^4 / (t3^4 - t1), t3^4 / (t3^4 - t2^2),
    t3^3 / (t3^3 - t2), (-1) / (t3 - 1), -u + 1, -t2 * u + 1, -t3 * u + 1,
    -t3^2 * u + 1, -t3^3 * u + 1, -t3^4 * u + 1, -v + 1, (t2 - v) / t2,
    (t3 - v) / t3, (t3^2 - v) / t3^2, (t3^3 - v) / t3^3, (t3^4 - v) / t3^4},
   {(-1) / (t1 - 1), (-1) / (t2 - 1), (-1) / (t3^6 - 1), (-t3) / (t1 - t3),
    (-t3) / (t2 - t3), (-1) / (t3^5 - 1), t3^2 / (t3^2 - t1), t3^2 / (t3^2 - t2),
    (-1) / (t3^4 - 1), t3^3 / (t3^3 - t1), t3^3 / (t3^3 - t2), (-1) / (t3^3 - 1),
    t3^4 / (t3^4 - t1), t3^4 / (t3^4 - t2), (-1) / (t3^2 - 1), t3^5 / (t3^5 - t1),
    t3^5 / (t3^5 - t2), (-1) / (t3 - 1), -u + 1, -t3 * u + 1, -t3^2 * u + 1,
    -t3^3 * u + 1, -t3^4 * u + 1, -t3^5 * u + 1, -v + 1, (t3 - v) / t3,
    (t3^2 - v) / t3^2, (t3^3 - v) / t3^3, (t3^4 - v) / t3^4, (t3^5 - v) / t3^5}}
```

In[208]:=
```
Length[GT6smoothPointsContributions[t1, t2, t3, u, v]]
```

Out[208]= 36

In[182]:=
```
G6smooth[t1_, t2_, t3_] :=
 Sum[1 / Det[DiagonalMatrix[G6smoothTangentContributions[t1, t2, t3][[i]]]],
  {i, 1, 36}]
```

In[209]:=
```
GT6smooth[t1_, t2_, t3_, u_, v_] :=
 Sum[Det[DiagonalMatrix[GT6smoothPointsContributions[t1, t2, t3, u, v][[i]]]],
  {i, 1, 36}]
```

In[211]:=
```
Together[GT6smooth[t1, t2, t3, u, v] + GT61[t1, t2, t3, u, v] + GT61[t2, t3, t1, u, v] +
  GT61[t3, t1, t2, u, v] + GT62[t1, t2, t3, u, v] + GT62[t2, t3, t1, u, v] +
  GT62[t3, t1, t2, u, v] + GT62[t1, t3, t2, u, v] + GT62[t3, t2, t1, u, v] +
  GT62[t2, t1, t3, u, v] + GT63[t1, t2, t3, u, v] + GT63[t2, t3, t1, u, v] +
  GT63[t3, t1, t2, u, v] - SeriesCoefficient[Exp[Sum[Q^n * (1 - u^n) *
       (1 - v^n) / (n * (1 - t1^n) * (1 - t2^n) * (1 - t3^n)), {n, 1, 6}]], {Q, 0, 6}]]
```

Out[211]= 0

In[213]:=
```
Solve[u1 * u2 == t1^4 && u0 * u3 == t2^2 / t1^4 &&
  u3 * u4 == t2 * t3 / t1^4 && u0 * u4 == t3^2 / t1^4 && u4 * u5 == t1 * t3 / t2 &&
  u1 * u5 == t1^5 / t2 && u0 * u2 == t2 && u2 * u4 == t3 && u1 * u4 == t3^2 / t2 &&
  u3 * u5 == t1 * t2 / t3 && u0 * u5 == t1 && u2 * u5 == t1^5 / t3 &&
  u2 * u3 == t2^2 / t3 && u1 * u3 == t2 && u0 * u1 == t3, {u0, u1, u2, u3, u4, u5}]
```

Out[213]=
$$\left\{\left\{u0 \to -\frac{\sqrt{t2}\ \sqrt{t3}}{t1^2},\ u1 \to -\frac{t1^2\ \sqrt{t3}}{\sqrt{t2}},\ u2 \to -\frac{t1^2\ \sqrt{t2}}{\sqrt{t3}},\ u3 \to -\frac{t2^{3/2}}{t1^2\ \sqrt{t3}},\right.\right.$$
$$\left.u4 \to -\frac{t3^{3/2}}{t1^2\ \sqrt{t2}},\ u5 \to -\frac{t1^3}{\sqrt{t2}\ \sqrt{t3}}\right\},\ \left\{u0 \to \frac{\sqrt{t2}\ \sqrt{t3}}{t1^2},\ u1 \to \frac{t1^2\ \sqrt{t3}}{\sqrt{t2}},\right.$$
$$\left.\left.u2 \to \frac{t1^2\ \sqrt{t2}}{\sqrt{t3}},\ u3 \to \frac{t2^{3/2}}{t1^2\ \sqrt{t3}},\ u4 \to \frac{t3^{3/2}}{t1^2\ \sqrt{t2}},\ u5 \to \frac{t1^3}{\sqrt{t2}\ \sqrt{t3}}\right\}\right\}$$

In[214]:=
```
Together[G[Sqrt[t2] Sqrt[t3]/t1^2, t1^2 Sqrt[t3]/Sqrt[t2], t1^2 Sqrt[t2]/Sqrt[t3], t2^(3/2)/(t1^2 Sqrt[t3]), t3^(3/2)/(t1^2 Sqrt[t2]), t1^3/(Sqrt[t2] Sqrt[t3])]]
```

Out[214]=
$$\frac{1}{t1^4\, t2\, t3}$$
$$\left(-t1^9\, t2^2 + t1^{10}\, t2^2 - t1^5\, t2^3 + t1^9\, t2^3 + t1^5\, t2^4 - t1^{10}\, t2^4 + t1^4\, t2\, t3 - t1^9\, t2\, t3 + t1^{10}\, t2\, t3 - t1^{11}\, t2\, t3 - 2\, t1^5\, t2^2\, t3 + t1^6\, t2^2\, t3 + 2\, t1^9\, t2^2\, t3 - t1^{10}\, t2^2\, t3 - t1^4\, t2^3\, t3 + 3\, t1^5\, t2^3\, t3 - t1^6\, t2^3\, t3 - t1^9\, t2^3\, t3 - t1^{10}\, t2^3\, t3 + t1^{11}\, t2^3\, t3 + t1\, t2^4\, t3 - t1^5\, t2^4\, t3 - t1^6\, t2^4\, t3 + t1^{10}\, t2^4\, t3 - t1\, t2^5\, t3 + t1^6\, t2^5\, t3 - t1^9\, t3^2 + t1^{10}\, t3^2 - 2\, t1^5\, t2\, t3^2 + t1^6\, t2\, t3^2 + 2\, t1^9\, t2\, t3^2 - t1^{10}\, t2\, t3^2 - t1\, t2^2\, t3^2 - t1^4\, t2^2\, t3^2 + 5\, t1^5\, t2^2\, t3^2 - t1^6\, t2^2\, t3^2 - t1^9\, t2^2\, t3^2 - 2\, t1^{10}\, t2^2\, t3^2 + t1^{11}\, t2^2\, t3^2 - t2^3\, t3^2 + 2\, t1\, t2^3\, t3^2 + t1^4\, t2^3\, t3^2 - 2\, t1^5\, t2^3\, t3^2 - 2\, t1^6\, t2^3\, t3^2 + t1^7\, t2^3\, t3^2 + 2\, t1^{10}\, t2^3\, t3^2 - t1^{11}\, t2^3\, t3^2 + t2^4\, t3^2 - t1\, t2^4\, t3^2 - t1^2\, t2^4\, t3^2 - t1^5\, t2^4\, t3^2 + 3\, t1^6\, t2^4\, t3^2 - t1^7\, t2^4\, t3^2 + t1^2\, t2^5\, t3^2 - t1^6\, t2^5\, t3^2 - t1^5\, t3^3 + t1^9\, t3^3 - t1^4\, t2\, t3^3 + 3\, t1^5\, t2\, t3^3 - t1^6\, t2\, t3^3 - t1^9\, t2\, t3^3 - t1^{10}\, t2\, t3^3 + t1^{11}\, t2\, t3^3 - t2^2\, t3^3 + 2\, t1\, t2^2\, t3^3 + t1^4\, t2^2\, t3^3 - 2\, t1^5\, t2^2\, t3^3 - 2\, t1^6\, t2^2\, t3^3 + t1^7\, t2^2\, t3^3 + 2\, t1^{10}\, t2^2\, t3^3 - t1^{11}\, t2^2\, t3^3 + t2^3\, t3^3 - 2\, t1\, t2^3\, t3^3 - t1^2\, t2^3\, t3^3 - t1^5\, t2^3\, t3^3 + 5\, t1^6\, t2^3\, t3^3 - t1^7\, t2^3\, t3^3 - t1^{10}\, t2^3\, t3^3 - t1\, t2^4\, t3^3 + 2\, t1^2\, t2^4\, t3^3 + t1^5\, t2^4\, t3^3 - 2\, t1^6\, t2^4\, t3^3 + t1\, t2^5\, t3^3 - t1^2\, t2^5\, t3^3 + t1^5\, t3^4 - t1^{10}\, t3^4 + t1\, t2\, t3^4 - t1^5\, t2\, t3^4 - t1^6\, t2\, t3^4 + t1^{10}\, t2\, t3^4 + t2^2\, t3^4 - t1\, t2^2\, t3^4 - t1^2\, t2^2\, t3^4 - t1^5\, t2^2\, t3^4 + 3\, t1^6\, t2^2\, t3^4 - t1^7\, t2^2\, t3^4 - t1\, t2^3\, t3^4 + 2\, t1^2\, t2^3\, t3^4 + t1^5\, t2^3\, t3^4 - 2\, t1^6\, t2^3\, t3^4 - t2^4\, t3^4 + t1\, t2^4\, t3^4 - t1^2\, t2^4\, t3^4 + t1^7\, t2^4\, t3^4 - t1\, t2\, t3^5 + t1^6\, t2\, t3^5 + t1^2\, t2^2\, t3^5 - t1^6\, t2^2\, t3^5 + t1\, t2^3\, t3^5 - t1^2\, t2^3\, t3^5\right)$$

In[215]:=
```
G151tangent[t1_, t2_, t3_] :=
 Det[DiagonalMatrix[{-t2 + 1, -t3 + 1, -t1^4 + 1, (t1 - t2)/t1,
    (t1 - t3)/t1, -t1^3 + 1, (t1^2 - t2)/t1^2, (t1^2 - t3)/t1^2, -t1^2 + 1,
    (t1^3 - t2)/t1^3, (t1^3 - t3)/t1^3, -t1 + 1, (t1^4 - t2^2)/t1^4,
    (t1^4 - t2*t3)/t1^4, (t1^4 - t3^2)/t1^4, -t1 + 1, (-t1*t3 + t2)/t2,
    (-t1^5 + t2)/t2, -t2 + 1, -t3 + 1, (-t3^2 + t2)/t2, (-t1*t2 + t3)/t3,
    -t1 + 1, (-t1^5 + t3)/t3, (-t2^2 + t3)/t3, -t2 + 1, -t3 + 1}]]
```

In[216]:=
```
Together[%214 / G151tangent[t1, t2, t3]]
```

Out[216]=
$$\left(t1^{20}\, t2^2\, t3^2\left(-t1^9\, t2^2 - t1^5\, t2^3 - t1^6\, t2^3 - t1^7\, t2^3 - t1^8\, t2^3 - t1^9\, t2^3 + t1^4\, t2\, t3 + t1^5\, t2\, t3 + t1^6\, t2\, t3 + t1^7\, t2\, t3 + t1^8\, t2\, t3 + t1^{10}\, t2\, t3 + t1^4\, t2^2\, t3 - t1^5\, t2^2\, t3 + t1^{10}\, t2^2\, t3 + t1\, t2^4\, t3 + t1^2\, t2^4\, t3 + t1^3\, t2^4\, t3 + t1^4\, t2^4\, t3 + t1^5\, t2^4\, t3 - t1^9\, t3^2 + t1^4\, t2\, t3^2 - t1^5\, t2\, t3^2 + t1^{10}\, t2\, t3^2 - t1\, t2^2\, t3^2 - t1^2\, t2^2\, t3^2 - t1^3\, t2^2\, t3^2 - t1^4\, t2^2\, t3^2 + t1^6\, t2^2\, t3^2 + t1^7\, t2^2\, t3^2 + t1^8\, t2^2\, t3^2 + t1^9\, t2^2\, t3^2 - t2^3\, t3^2 + t1^5\, t2^3\, t3^2 - t1^6\, t2^3\, t3^2 + t1\, t2^4\, t3^2 - t1^5\, t3^3 - t1^6\, t3^3 - t1^7\, t3^3 - t1^8\, t3^3 - t1^9\, t3^3 - t2^2\, t3^3 + t1^5\, t2^2\, t3^3 - t1^6\, t2^2\, t3^3 - t2^3\, t3^3 - t1^2\, t2^3\, t3^3 - t1^3\, t2^3\, t3^3 - t1^4\, t2^3\, t3^3 - t1^5\, t2^3\, t3^3 - t1^6\, t2^3\, t3^3 + t1\, t2\, t3^4 + t1^2\, t2\, t3^4 + t1^3\, t2\, t3^4 + t1^4\, t2\, t3^4 + t1^5\, t2\, t3^4 + t1\, t2^2\, t3^4\right)\right) \Big/$$
$$\left((-1 + t1)^5\,(1 + t1)^2\left(1 + t1^2\right)\left(1 + t1 + t1^2\right)(t1 - t2)\left(t1^2 - t2\right)^2 \left(t1^3 - t2\right)\left(t1^5 - t2\right)(-1 + t2)^2\left(t1^2 + t2\right)(t1 - t3) \left(t1^2 - t3\right)^2\left(t1^3 - t3\right)\left(t1^5 - t3\right)(t1\, t2 - t3)\left(t2^2 - t3\right) (-1 + t3)^2\left(t1^2 + t3\right)(-t2 + t1\, t3)\left(t1^4 - t2\, t3\right)\left(t2 - t3^2\right)\right)$$

In[217]:=
```
G151[t1_, t2_, t3_] :=
 (t1^20 t2^2 t3^2 (-t1^9 t2^2 - t1^5 t2^3 - t1^6 t2^3 - t1^7 t2^3 - t1^8 t2^3 - t1^9 t2^3 + t1^4 t2 t3 +
      t1^5 t2 t3 + t1^6 t2 t3 + t1^7 t2 t3 + t1^8 t2 t3 + t1^10 t2 t3 + t1^4 t2^2 t3 -
      t1^5 t2^2 t3 + t1^10 t2^2 t3 + t1 t2^4 t3 + t1^2 t2^4 t3 + t1^3 t2^4 t3 + t1^4 t2^4 t3 +
      t1^5 t2^4 t3 - t1^9 t3^2 + t1^4 t2 t3^2 - t1^5 t2 t3^2 + t1^10 t2 t3^2 - t1 t2^2 t3^2 -
      t1^2 t2^2 t3^2 - t1^3 t2^2 t3^2 - t1^4 t2^2 t3^2 + t1^6 t2^2 t3^2 + t1^7 t2^2 t3^2 + t1^8 t2^2 t3^2 +
      t1^9 t2^2 t3^2 - t2^3 t3^2 + t1^5 t2^3 t3^2 - t1^6 t2^3 t3^2 + t1 t2^4 t3^2 - t1^5 t3^3 -
      t1^6 t3^3 - t1^7 t3^3 - t1^8 t3^3 - t1^9 t3^3 - t2^2 t3^3 + t1^5 t2^2 t3^3 - t1^6 t2^2 t3^3 -
      t2^3 t3^3 - t1^2 t2^3 t3^3 - t1^3 t2^3 t3^3 - t1^4 t2^3 t3^3 - t1^5 t2^3 t3^3 - t1^6 t2^3 t3^3 +
      t1 t2 t3^4 + t1^2 t2 t3^4 + t1^3 t2 t3^4 + t1^4 t2 t3^4 + t1^5 t2 t3^4 + t1 t2^2 t3^4)) /
 ((-1 + t1)^5 (1 + t1)^2 (1 + t1^2) (1 + t1 + t1^2) (t1 - t2) (t1^2 - t2)^2 (t1^3 - t2)
   (t1^5 - t2) (-1 + t2)^2 (t1^2 + t2) (t1 - t3) (t1^2 - t3)^2 (t1^3 - t3) (t1^5 - t3)
   (t1 t2 - t3) (t2^2 - t3) (-1 + t3)^2 (t1^2 + t3) (-t2 + t1 t3) (t1^4 - t2 t3) (t2 - t3^2))
```

In[218]:=
```
T151[t1_, t2_, t3_, u_, v_] :=
 Det[DiagonalMatrix[{-u + 1, -t1 * u + 1, -t1^2 * u + 1, -t1^3 * u + 1,
    -t1^4 * u + 1, -t2 * u + 1, -t3 * u + 1, -v + 1, (t1 - v) / t1, (t1^2 - v) / t1^2,
    (t1^3 - v) / t1^3, (t1^4 - v) / t1^4, (t2 - v) / t2, (t3 - v) / t3}]]
```

In[219]:=
```
GT151[t1_, t2_, t3_, u_, v_] := G151[t1, t2, t3] * T151[t1, t2, t3, u, v]
```

In[221]:=
```
Solve[u2 * u4 == t3 / t1 && u1 * u3 == t2 && u1 * u2 == t1^2 &&
  u0 * u3 == t2^2 / t1^2 && u3 * u4 == t2 * t3 / t1^3 && u0 * u4 == t3^2 / t1^3 &&
  u4 * u5 == t1 * t3 / t2 && u0 * u5 == t1^2 && u1 * u5 == t1^4 / t2 &&
  u1 * u4 == t3^2 / (t1 * t2) && u3 * u5 == t1^2 * t2 / t3 && u2 * u5 == t1^4 / t3 &&
  u2 * u3 == t2^2 / t3 && u0 * u2 == t2 && u0 * u1 == t3, {u0, u1, u2, u3, u4, u5}]
```

Out[221]=
$$\left\{\left\{u0 \to -\frac{\sqrt{t2}\ \sqrt{t3}}{t1},\ u1 \to -\frac{t1\ \sqrt{t3}}{\sqrt{t2}},\ u2 \to -\frac{t1\ \sqrt{t2}}{\sqrt{t3}},\ u3 \to -\frac{t2^{3/2}}{t1\ \sqrt{t3}},\right.\right.$$
$$u4 \to -\frac{t3^{3/2}}{t1^2\ \sqrt{t2}},\ u5 \to -\frac{t1^3}{\sqrt{t2}\ \sqrt{t3}}\Big\},\ \Big\{u0 \to \frac{\sqrt{t2}\ \sqrt{t3}}{t1},\ u1 \to \frac{t1\ \sqrt{t3}}{\sqrt{t2}},$$
$$\left.\left.u2 \to \frac{t1\ \sqrt{t2}}{\sqrt{t3}},\ u3 \to \frac{t2^{3/2}}{t1\ \sqrt{t3}},\ u4 \to \frac{t3^{3/2}}{t1^2\ \sqrt{t2}},\ u5 \to \frac{t1^3}{\sqrt{t2}\ \sqrt{t3}}\Big\}\right\}$$

In[222]:=
```
Together[G[Sqrt[t2] Sqrt[t3]/t1, t1 Sqrt[t3]/Sqrt[t2], t1 Sqrt[t2]/Sqrt[t3], t2^(3/2)/(t1 Sqrt[t3]), t3^(3/2)/(t1^2 Sqrt[t2]), t1^3/(Sqrt[t2] Sqrt[t3])]]
```

Out[222]=
$$\frac{1}{t1^4\, t2\, t3}\Big(-t1^8\, t2^2+t1^{10}\, t2^2-t1^6\, t2^3+t1^8\, t2^3+t1^6\, t2^4-t1^{10}\, t2^4+t1^4\, t2\, t3-t1^8\, t2\, t3+t1^9\, t2\, t3-t1^{11}\, t2\, t3-t1^5\, t2^2\, t3-t1^6\, t2^2\, t3+2\, t1^7\, t2^2\, t3+t1^8\, t2^2\, t3-t1^9\, t2^2\, t3-t1^4\, t2^3\, t3+2\, t1^5\, t2^3\, t3+t1^6\, t2^3\, t3-2\, t1^7\, t2^3\, t3-t1^9\, t2^3\, t3+t1^{11}\, t2^3\, t3+t1^3\, t2^4\, t3-t1^5\, t2^4\, t3-t1^7\, t2^4\, t3+t1^9\, t2^4\, t3-t1^3\, t2^5\, t3+t1^7\, t2^5\, t3-t1^7\, t3^2+t1^9\, t3^2-2\, t1^5\, t2\, t3^2+3\, t1^7\, t2\, t3^2-t1^9\, t2\, t3^2-2\, t1^3\, t2^2\, t3^2+5\, t1^5\, t2^2\, t3^2-2\, t1^7\, t2^2\, t3^2-t1^8\, t2^2\, t3^2-t1^9\, t2^2\, t3^2+t1^{10}\, t2^2\, t3^2-t1\, t2^3\, t3^2+3\, t1^3\, t2^3\, t3^2-2\, t1^5\, t2^3\, t3^2-t1^6\, t2^3\, t3^2-t1^7\, t2^3\, t3^2+2\, t1^8\, t2^3\, t3^2+t1^9\, t2^3\, t3^2-t1^{10}\, t2^3\, t3^2+t1\, t2^4\, t3^2-t1^3\, t2^4\, t3^2-t1^4\, t2^4\, t3^2-t1^5\, t2^4\, t3^2+2\, t1^6\, t2^4\, t3^2+t1^7\, t2^4\, t3^2-t1^8\, t2^4\, t3^2+t1^4\, t2^5\, t3^2-t1^6\, t2^5\, t3^2-t1^5\, t3^3+t1^7\, t3^3-t1^3\, t2\, t3^3+t1^4\, t2\, t3^3+2\, t1^5\, t2\, t3^3-t1^6\, t2\, t3^3-t1^7\, t2\, t3^3-t1^8\, t2\, t3^3+t1^{10}\, t2\, t3^3-t1\, t2^2\, t3^3+t1^2\, t2^2\, t3^3+2\, t1^3\, t2^2\, t3^3-t1^4\, t2^2\, t3^3-t1^5\, t2^2\, t3^3-2\, t1^6\, t2^2\, t3^3+3\, t1^8\, t2^2\, t3^3-t1^{10}\, t2^2\, t3^3+t1\, t2^3\, t3^3-t1^2\, t2^3\, t3^3-t1^3\, t2^3\, t3^3-2\, t1^4\, t2^3\, t3^3+5\, t1^6\, t2^3\, t3^3-2\, t1^8\, t2^3\, t3^3-t1^2\, t2^4\, t3^3+3\, t1^4\, t2^4\, t3^3-2\, t1^6\, t2^4\, t3^3+t1^2\, t2^5\, t3^3-t1^4\, t2^5\, t3^3+t1^4\, t3^4-t1^8\, t3^4+t1^2\, t2\, t3^4-t1^4\, t2\, t3^4-t1^6\, t2\, t3^4+t1^8\, t2\, t3^4+t2^2\, t3^4-t1^2\, t2^2\, t3^4-2\, t1^4\, t2^2\, t3^4+t1^5\, t2^2\, t3^4+2\, t1^6\, t2^2\, t3^4-t1^7\, t2^2\, t3^4-t1^2\, t2^3\, t3^4+t1^3\, t2^3\, t3^4+2\, t1^4\, t2^3\, t3^4-t1^5\, t2^3\, t3^4-t1^6\, t2^3\, t3^4-t2^4\, t3^4+t1^2\, t2^4\, t3^4-t1^3\, t2^4\, t3^4+t1^7\, t2^4\, t3^4-t1\, t2\, t3^5+t1^5\, t2\, t3^5+t1^3\, t2^2\, t3^5-t1^5\, t2^2\, t3^5+t1\, t2^3\, t3^5-t1^3\, t2^3\, t3^5\Big)$$

In[223]:=
```
G142tangent[t1_, t2_, t3_] :=
 Det[DiagonalMatrix[{-t3 + 1, (t1 - t3) / t1, -t2 + 1, -t1^2 + 1, (t1^2 - t2^2) / t1^2,
    (t1^2 - t3) / t1^2, (t1 - t2) / t1, -t1 + 1, (t1^3 - t2^2) / t1^3,
    (t1^3 - t2 * t3) / t1^3, (t1^3 - t3^2) / t1^3, (-t1 * t3 + t2) / t2, -t1^2 + 1,
    (-t1^4 + t2) / t2, -t2 + 1, (t2 - t3) / t2, -t1 + 1, (-t1^3 + t2) / t2,
    (t1 - t2) / t1, (t1 - t3) / t1, (t1 * t2 - t3^2) / (t1 * t2), -t1 + 1,
    (-t1^2 * t2 + t3) / t3, (-t1^4 + t3) / t3, (-t2^2 + t3) / t3, -t2 + 1, -t3 + 1}]]
```

In[224]:=
```
Together[%222 / G142tangent[t1, t2, t3]]
```

Out[224]=
$$\Big(t1^{14}\, t2^4\, t3^2\Big(-t1^8\, t2^2-t1^6\, t2^3-t1^8\, t2^3+t1^4\, t2\, t3+t1^6\, t2\, t3+t1^9\, t2\, t3+t1^4\, t2^2\, t3-t1^5\, t2^2\, t3+t1^7\, t2^2\, t3+t1^9\, t2^2\, t3+t1^5\, t2^3\, t3+t1^7\, t2^3\, t3+t1^3\, t2^4\, t3+t1^5\, t2^4\, t3-t1^7\, t3^2-2\, t1^5\, t2\, t3^2-2\, t1^3\, t2^2\, t3^2+t1^5\, t2^2\, t3^2+t1^7\, t2^2\, t3^2-t1^8\, t2^2\, t3^2-t1\, t2^3\, t3^2+t1^5\, t2^3\, t3^2-t1^6\, t2^3\, t3^2-t1^4\, t2^4\, t3^2-t1^5\, t3^3-t1^3\, t2\, t3^3+t1^4\, t2\, t3^3-t1^8\, t2\, t3^3-t1\, t2^2\, t3^3+t1^2\, t2^2\, t3^3+t1^4\, t2^2\, t3^3-2\, t1^6\, t2^2\, t3^3-2\, t1^4\, t2^3\, t3^3-t1^2\, t2^4\, t3^3+t1^4\, t3^4+t1^6\, t3^4+t1^2\, t2\, t3^4+t1^4\, t2\, t3^4+t2^2\, t3^4+t1^2\, t2^2\, t3^4-t1^4\, t2^2\, t3^4+t1^5\, t2^2\, t3^4+t2^3\, t3^4+t1^3\, t2^3\, t3^4+t1^5\, t2^3\, t3^4-t1\, t2\, t3^5-t1^3\, t2\, t3^5-t1\, t2^2\, t3^5\Big)\Big)\Big/\Big((-1+t1)^4\,(1+t1)\,(t1-t2)^3\,\big(t1^3-t2\big)\,\big(t1^4-t2\big)\,(-1+t2)^2\,(t1+t2)\,\big(t1^3-t2^2\big)\,(t1-t3)^2\,\big(t1^2-t3\big)\,\big(t1^4-t3\big)\,(t2-t3)\,\big(t1^2\,t2-t3\big)\,\big(t2^2-t3\big)\,(-1+t3)^2\,(-t2+t1\,t3)\,\big(t1^3-t2\,t3\big)\,\big(t1^3-t3^2\big)\,\big(t1\,t2-t3^2\big)\Big)$$

In[225]:=
```
G142[t1_, t2_, t3_] :=
 (t1^14 t2^4 t3^2 (-t1^8 t2^2 - t1^6 t2^3 - t1^8 t2^3 + t1^4 t2 t3 + t1^6 t2 t3 + t1^9 t2 t3 +
      t1^4 t2^2 t3 - t1^5 t2^2 t3 + t1^7 t2^2 t3 + t1^9 t2^2 t3 + t1^5 t2^3 t3 + t1^7 t2^3 t3 +
      t1^3 t2^4 t3 + t1^5 t2^4 t3 - t1^7 t3^2 - 2 t1^5 t2 t3^2 - 2 t1^3 t2^2 t3^2 + t1^5 t2^2 t3^2 +
      t1^7 t2^2 t3^2 - t1^8 t2^2 t3^2 - t1 t2^3 t3^2 + t1^5 t2^3 t3^2 - t1^6 t2^3 t3^2 - t1^4 t2^4 t3^2 -
      t1^5 t3^3 - t1^3 t2 t3^3 + t1^4 t2 t3^3 - t1^8 t2 t3^3 - t1 t2^2 t3^3 + t1^2 t2^2 t3^3 +
      t1^4 t2^2 t3^3 - 2 t1^6 t2^2 t3^3 - 2 t1^4 t2^3 t3^3 - t1^2 t2^4 t3^3 + t1^4 t3^4 + t1^6 t3^4 +
      t1^2 t2 t3^4 + t1^4 t2 t3^4 + t2^2 t3^4 + t1^2 t2^2 t3^4 - t1^4 t2^2 t3^4 + t1^5 t2^2 t3^4 +
      t2^3 t3^4 + t1^3 t2^3 t3^4 + t1^5 t2^3 t3^4 - t1 t2 t3^5 - t1^3 t2 t3^5 - t1 t2^2 t3^5)) /
  ((-1 + t1)^4 (1 + t1) (t1 - t2)^3 (t1^3 - t2) (t1^4 - t2) (-1 + t2)^2 (t1 + t2)
    (t1^3 - t2^2) (t1 - t3)^2 (t1^2 - t3) (t1^4 - t3) (t2 - t3) (t1^2 t2 - t3)
    (t2^2 - t3) (-1 + t3)^2 (-t2 + t1 t3) (t1^3 - t2 t3) (t1^3 - t3^2) (t1 t2 - t3^2))
```

In[226]:=
```
T142[t1_, t2_, t3_, u_, v_] :=
 Det[DiagonalMatrix[{-u + 1, -t1 * u + 1, -t1^2 * u + 1, -t1^3 * u + 1, -t2 * u + 1,
    -t1 * t2 * u + 1, -t3 * u + 1, -v + 1, (t1 - v) / t1, (t1^2 - v) / t1^2,
    (t1^3 - v) / t1^3, (t2 - v) / t2, (t1 * t2 - v) / (t1 * t2), (t3 - v) / t3}]]
```

In[227]:=
```
GT142[t1_, t2_, t3_, u_, v_] := G142[t1, t2, t3] * T142[t1, t2, t3, u, v]
```

In[228]:=
```
Solve[u1 * u2 == t1^3 && u3 * u4 == t2 * t3 / t1^3 &&
  u0 * u3 == t2^3 / t1^3 && u0 * u4 == t3^2 / t1^3 && u2 * u4 == t3 && u0 * u2 == t2^2 &&
  u4 * u5 == t1 * t3 / t2^2 && u1 * u5 == t1^4 / t2^2 && u1 * u4 == t3^2 / t2^2 &&
  u3 * u5 == t1 * t2 / t3 && u0 * u5 == t1 && u2 * u5 == t1^4 / t3 && u1 * u3 == t2 &&
  u2 * u3 == t2^3 / t3 && u0 * u1 == t3, {u0, u1, u2, u3, u4, u5}]
```

Out[228]=
$$\left\{\left\{u0 \to -\frac{t2\sqrt{t3}}{t1^{3/2}},\ u1 \to -\frac{t1^{3/2}\sqrt{t3}}{t2},\ u2 \to -\frac{t1^{3/2}\,t2}{\sqrt{t3}},\ u3 \to -\frac{t2^2}{t1^{3/2}\sqrt{t3}},\right.\right.$$
$$\left.u4 \to -\frac{t3^{3/2}}{t1^{3/2}\,t2},\ u5 \to -\frac{t1^{5/2}}{t2\sqrt{t3}}\right\},\ \left\{u0 \to \frac{t2\sqrt{t3}}{t1^{3/2}},\ u1 \to \frac{t1^{3/2}\sqrt{t3}}{t2},\right.$$
$$\left.\left.u2 \to \frac{t1^{3/2}\,t2}{\sqrt{t3}},\ u3 \to \frac{t2^2}{t1^{3/2}\sqrt{t3}},\ u4 \to \frac{t3^{3/2}}{t1^{3/2}\,t2},\ u5 \to \frac{t1^{5/2}}{t2\sqrt{t3}}\right\}\right\}$$

In[230]:=
```
Together[G[t2 Sqrt[t3]/t1^(3/2), t1^(3/2) Sqrt[t3]/t2, t1^(3/2) t2/Sqrt[t3], t2^2/(t1^(3/2) Sqrt[t3]), t3^(3/2)/(t1^(3/2) t2), t1^(5/2)/(t2 Sqrt[t3])]]
```

Out[230]=
$$\frac{1}{t1^3\,t2^2\,t3}\Big(-t1^7\,t2^3+t1^8\,t2^3-t1^4\,t2^5+t1^7\,t2^5+t1^4\,t2^6-t1^8\,t2^6+t1^8\,t2\,t3-t1^9\,t2\,t3+t1^3\,t2^2\,t3-t1^7\,t2^2\,t3-2\,t1^4\,t2^3\,t3+t1^5\,t2^3\,t3+2\,t1^7\,t2^3\,t3-t1^8\,t2^3\,t3+t1^4\,t2^4\,t3-t1^5\,t2^4\,t3-t1^8\,t2^4\,t3+t1^9\,t2^4\,t3-t1^3\,t2^5\,t3+2\,t1^4\,t2^5\,t3-t1^7\,t2^5\,t3+t1\,t2^6\,t3-t1^4\,t2^6\,t3-t1^5\,t2^6\,t3+t1^8\,t2^6\,t3-t1\,t2^7\,t3+t1^5\,t2^7\,t3-t1^7\,t3^2+t1^8\,t3^2-t1^4\,t2\,t3^2+t1^5\,t2\,t3^2+t1^7\,t2\,t3^2-t1^8\,t2\,t3^2-t1^4\,t2^2\,t3^2+t1^7\,t2^2\,t3^2-t1^8\,t2^2\,t3^2+t1^9\,t2^2\,t3^2-t1\,t2^3\,t3^2-t1^3\,t2^3\,t3^2+5\,t1^4\,t2^3\,t3^2-t1^5\,t2^3\,t3^2-t1^7\,t2^3\,t3^2-t1^8\,t2^3\,t3^2+t1\,t2^4\,t3^2-t1^4\,t2^4\,t3^2-2\,t1^5\,t2^4\,t3^2+t1^6\,t2^4\,t3^2+2\,t1^8\,t2^4\,t3^2-t1^9\,t2^4\,t3^2-t2^5\,t3^2+t1\,t2^5\,t3^2+t1^3\,t2^5\,t3^2-t1^4\,t2^5\,t3^2+t1^5\,t2^5\,t3^2-t1^6\,t2^5\,t3^2+t2^6\,t3^2-t1\,t2^6\,t3^2-t1^2\,t2^6\,t3^2-t1^4\,t2^6\,t3^2+2\,t1^5\,t2^6\,t3^2+t1^2\,t2^7\,t3^2-t1^5\,t2^7\,t3^2-t1^4\,t3^3+t1^7\,t3^3+2\,t1^4\,t2\,t3^3-t1^5\,t2\,t3^3-t1^7\,t2\,t3^3-t1^8\,t2\,t3^3+t1^9\,t2\,t3^3-t1^3\,t2^2\,t3^3+t1^4\,t2^2\,t3^3-t1^5\,t2^2\,t3^3+t1^6\,t2^2\,t3^3+t1^8\,t2^2\,t3^3-t1^9\,t2^2\,t3^3-t2^3\,t3^3+2\,t1\,t2^3\,t3^3+t1^3\,t2^3\,t3^3-2\,t1^4\,t2^3\,t3^3-t1^5\,t2^3\,t3^3+t1^8\,t2^3\,t3^3-t1\,t2^4\,t3^3-t1^2\,t2^4\,t3^3-t1^4\,t2^4\,t3^3+5\,t1^5\,t2^4\,t3^3-t1^6\,t2^4\,t3^3-t1^8\,t2^4\,t3^3+t2^5\,t3^3-t1\,t2^5\,t3^3+t1^2\,t2^5\,t3^3-t1^5\,t2^5\,t3^3-t1\,t2^6\,t3^3+t1^2\,t2^6\,t3^3+t1^4\,t2^6\,t3^3-t1^5\,t2^6\,t3^3+t1\,t2^7\,t3^3-t1^2\,t2^7\,t3^3+t1^4\,t3^4-t1^8\,t3^4+t1\,t2\,t3^4-t1^4\,t2\,t3^4-t1^5\,t2\,t3^4+t1^8\,t2\,t3^4-t1^2\,t2^2\,t3^4+2\,t1^5\,t2^2\,t3^4-t1^6\,t2^2\,t3^4+t2^3\,t3^4-t1\,t2^3\,t3^4-t1^4\,t2^3\,t3^4+t1^5\,t2^3\,t3^4-t1\,t2^4\,t3^4+2\,t1^2\,t2^4\,t3^4+t1^4\,t2^4\,t3^4-2\,t1^5\,t2^4\,t3^4-t1^2\,t2^5\,t3^4+t1^6\,t2^5\,t3^4-t2^6\,t3^4+t1\,t2^6\,t3^4-t1\,t2\,t3^5+t1^5\,t2\,t3^5+t1^2\,t2^2\,t3^5-t1^5\,t2^2\,t3^5+t1\,t2^4\,t3^5-t1^2\,t2^4\,t3^5\Big)$$

In[231]:=
```
G1411tangent[t1_, t2_, t3_] :=
 Det[DiagonalMatrix[{-t2 + 1, -t3 + 1, -t1^3 + 1, (t1 - t2) / t1,
    (t1 - t3) / t1, -t1^2 + 1, (t1^2 - t2) / t1^2, (t1^2 - t3) / t1^2, -t1 + 1,
    (t1^3 - t2 * t3) / t1^3, (t1^3 - t2^3) / t1^3, (t1^3 - t3^2) / t1^3,
    -t1 + 1, -t3 + 1, -t2^2 + 1, (-t1 + t2) / t2, (t2^2 - t1 * t3) / t2^2,
    (-t1^4 + t2^2) / t2^2, (t2 - t3) / t2, -t2 + 1, (t2^2 - t3^2) / t2^2,
    (-t1 * t2 + t3) / t3, -t1 + 1, (-t1^4 + t3) / t3, -t2 + 1, (-t2^3 + t3) / t3, -t3 + 1}]]
```

In[232]:=
```
Together[%230 / G1411tangent[t1, t2, t3]]
```

Out[232]=
$$-\Big(\big(t1^{12}\,t2^6\,t3^2\,\big(-t1^7\,t2^3-t1^7\,t2^4-t1^4\,t2^5-t1^5\,t2^5-t1^6\,t2^5-t1^7\,t2^5+t1^8\,t2\,t3+t1^3\,t2^2\,t3+t1^4\,t2^2\,t3+t1^5\,t2^2\,t3+t1^6\,t2^2\,t3+t1^8\,t2^2\,t3+t1^3\,t2^3\,t3-t1^4\,t2^3\,t3+t1^8\,t2^3\,t3+t1^3\,t2^4\,t3+t1\,t2^6\,t3+t1^2\,t2^6\,t3+t1^3\,t2^6\,t3+t1^4\,t2^6\,t3-t1^7\,t3^2-t1^4\,t2\,t3^2+t1^8\,t2\,t3^2+t1^3\,t2^2\,t3^2-t1^4\,t2^2\,t3^2-t1\,t2^3\,t3^2-t1^2\,t2^3\,t3^2-t1^3\,t2^3\,t3^2+t1^5\,t2^3\,t3^2+t1^6\,t2^3\,t3^2+t1^7\,t2^3\,t3^2+t1^4\,t2^4\,t3^2-t1^5\,t2^4\,t3^2-t2^5\,t3^2+t1^4\,t2^5\,t3^2+t1\,t2^6\,t3^2-t1^4\,t3^3-t1^5\,t3^3-t1^6\,t3^3-t1^7\,t3^3-t1^5\,t2^2\,t3^3-t2^3\,t3^3+t1^4\,t2^3\,t3^3-t1^5\,t2^3\,t3^3-t2^4\,t3^3-t1^2\,t2^4\,t3^3-t1^3\,t2^4\,t3^3-t1^4\,t2^4\,t3^3-t1^5\,t2^4\,t3^3-t2^5\,t3^3+t1\,t2\,t3^4+t1^2\,t2\,t3^4+t1^3\,t2\,t3^4+t1^4\,t2\,t3^4+t1\,t2^2\,t3^4+t1\,t2^3\,t3^4\big)\Big)\Big/\Big((-1+t1)^4\,(1+t1)\,\big(1+t1+t1^2\big)\,(t1-t2)^3\,\big(t1^2-t2\big)^2\,(-1+t2)^3\,(1+t2)\,\big(t1^2+t2\big)\,\big(t1^2+t1\,t2+t2^2\big)\,(t1-t3)\,\big(t1^2-t3\big)\,\big(t1^4-t3\big)\,(t2-t3)^2\,(t1\,t2-t3)\,\big(t2^3-t3\big)\,(-1+t3)^2\,(t2+t3)\,\big(-t2^2+t1\,t3\big)\,\big(t1^3-t2\,t3\big)\,\big(t1^3-t3^2\big)\Big)\Big)$$

In[233]:=
```
G1411[t1_, t2_, t3_] :=
 -((t1^12 t2^6 t3^2 (-t1^7 t2^3 - t1^7 t2^4 - t1^4 t2^5 - t1^5 t2^5 - t1^6 t2^5 - t1^7 t2^5 + t1^8 t2 t3 +
        t1^3 t2^2 t3 + t1^4 t2^2 t3 + t1^5 t2^2 t3 + t1^6 t2^2 t3 + t1^8 t2^2 t3 + t1^3 t2^3 t3 -
        t1^4 t2^3 t3 + t1^8 t2^3 t3 + t1^3 t2^4 t3 + t1 t2^6 t3 + t1^2 t2^6 t3 + t1^3 t2^6 t3 +
        t1^4 t2^6 t3 - t1^7 t3^2 - t1^4 t2 t3^2 + t1^8 t2 t3^2 + t1^3 t2^2 t3^2 - t1^4 t2^2 t3^2 -
        t1 t2^3 t3^2 - t1^2 t2^3 t3^2 - t1^3 t2^3 t3^2 + t1^5 t2^3 t3^2 + t1^6 t2^3 t3^2 + t1^7 t2^3 t3^2 +
        t1^4 t2^4 t3^2 - t1^5 t2^4 t3^2 - t2^5 t3^2 + t1^4 t2^5 t3^2 + t1 t2^6 t3^2 - t1^4 t3^3 -
        t1^5 t3^3 - t1^6 t3^3 - t1^7 t3^3 - t1^5 t2^2 t3^3 - t2^3 t3^3 + t1^4 t2^3 t3^3 - t1^5 t2^3 t3^3 -
        t2^4 t3^3 - t1^2 t2^4 t3^3 - t1^3 t2^4 t3^3 - t1^4 t2^4 t3^3 - t1^5 t2^4 t3^3 - t2^5 t3^3 +
        t1 t2 t3^4 + t1^2 t2 t3^4 + t1^3 t2 t3^4 + t1^4 t2 t3^4 + t1 t2^2 t3^4 + t1 t2^3 t3^4)) /
   ((-1 + t1)^4 (1 + t1) (1 + t1 + t1^2) (t1 - t2)^3 (t1^2 - t2)^2 (-1 + t2)^3 (1 + t2)
     (t1^2 + t2) (t1^2 + t1 t2 + t2^2) (t1 - t3) (t1^2 - t3) (t1^4 - t3) (t2 - t3)^2 (t1 t2 - t3)
     (t2^3 - t3) (-1 + t3)^2 (t2 + t3) (-t2^2 + t1 t3) (t1^3 - t2 t3) (t1^3 - t3^2)))
```

In[234]:=
```
T1411[t1_, t2_, t3_, u_, v_] :=
 Det[DiagonalMatrix[{-u + 1, -t1 * u + 1, -t1^2 * u + 1, -t1^3 * u + 1,
    -t2 * u + 1, -t2^2 * u + 1, -t3 * u + 1, -v + 1, (t1 - v) / t1, (t1^2 - v) / t1^2,
    (t1^3 - v) / t1^3, (t2 - v) / t2, (t2^2 - v) / t2^2, (t3 - v) / t3}]]
```

In[235]:=
```
GT1411[t1_, t2_, t3_, u_, v_] := G1411[t1, t2, t3] * T1411[t1, t2, t3, u, v]
```

In[244]:=
```
Solve[u1 * u2 == t1^2 && u1 * u3 == t2 && u2 * u4 == t3 && u0 * u3 == t2^2 / t1^2 &&
  u3 * u4 == t2 * t3 / t1^2 && u0 * u4 == t3^2 / t1^2 && u1 * u5 == t1^3 / t2 && u0 * u2 == t2 &&
  u1 * u4 == t3^2 / t2 && u0 * u5 == t1 && u4 * u5 == t1 * t3 / t2 && u2 * u5 == t1^3 / t3 &&
  u2 * u3 == t2^2 / t3 && u0 * u1 == t3 && u3 * u5 == t1 * t2 / t3, {u0, u1, u2, u3, u4, u5}]
```

Out[244]=
$$\left\{\left\{u0 \to -\frac{\sqrt{t2}\ \sqrt{t3}}{t1},\ u1 \to -\frac{t1\sqrt{t3}}{\sqrt{t2}},\ u2 \to -\frac{t1\sqrt{t2}}{\sqrt{t3}},\ u3 \to -\frac{t2^{3/2}}{t1\sqrt{t3}},\right.\right.$$
$$\left.u4 \to -\frac{t3^{3/2}}{t1\sqrt{t2}},\ u5 \to -\frac{t1^2}{\sqrt{t2}\ \sqrt{t3}}\right\},\ \left\{u0 \to \frac{\sqrt{t2}\ \sqrt{t3}}{t1},\ u1 \to \frac{t1\sqrt{t3}}{\sqrt{t2}},\right.$$
$$\left.\left.u2 \to \frac{t1\sqrt{t2}}{\sqrt{t3}},\ u3 \to \frac{t2^{3/2}}{t1\sqrt{t3}},\ u4 \to \frac{t3^{3/2}}{t1\sqrt{t2}},\ u5 \to \frac{t1^2}{\sqrt{t2}\ \sqrt{t3}}\right\}\right\}$$

In[245]:=
```
Together[G[Sqrt[t2] Sqrt[t3] / t1, t1 Sqrt[t3] / Sqrt[t2], t1 Sqrt[t2] / Sqrt[t3], t2^(3/2) / (t1 Sqrt[t3]), t3^(3/2) / (t1 Sqrt[t2]), t1^2 / (Sqrt[t2] Sqrt[t3])]]
```

Out[245]=
$$\frac{1}{t1^2\ t2\ t3}$$
$$\left(-t1^5\ t2^2 + t1^6\ t2^2 - t1^3\ t2^3 + t1^5\ t2^3 + t1^3\ t2^4 - t1^6\ t2^4 + t1^2\ t2\ t3 - t1^5\ t2\ t3 + t1^6\ t2\ t3 - t1^7\ t2\ t3 - 2\ t1^3\ t2^2\ t3 + t1^4\ t2^2\ t3 + 2\ t1^5\ t2^2\ t3 - t1^6\ t2^2\ t3 - t1^2\ t2^3\ t3 + 3\ t1^3\ t2^3\ t3 - t1^4\ t2^3\ t3 - t1^5\ t2^3\ t3 - t1^6\ t2^3\ t3 + t1^7\ t2^3\ t3 + t1\ t2^4\ t3 - t1^3\ t2^4\ t3 - t1^4\ t2^4\ t3 + t1^6\ t2^4\ t3 - t1\ t2^5\ t3 + t1^4\ t2^5\ t3 - t1^5\ t3^2 + t1^6\ t3^2 - 2\ t1^3\ t2\ t3^2 + t1^4\ t2\ t3^2 + 2\ t1^5\ t2\ t3^2 - t1^6\ t2\ t3^2 - t1\ t2^2\ t3^2 - t1^2\ t2^2\ t3^2 + 5\ t1^3\ t2^2\ t3^2 - t1^4\ t2^2\ t3^2 - t1^5\ t2^2\ t3^2 - 2\ t1^6\ t2^2\ t3^2 + t1^7\ t2^2\ t3^2 - t2^3\ t3^2 + 2\ t1\ t2^3\ t3^2 + t1^2\ t2^3\ t3^2 - 2\ t1^3\ t2^3\ t3^2 - 2\ t1^4\ t2^3\ t3^2 + t1^5\ t2^3\ t3^2 + 2\ t1^6\ t2^3\ t3^2 - t1^7\ t2^3\ t3^2 + t2^4\ t3^2 - t1\ t2^4\ t3^2 - t1^2\ t2^4\ t3^2 - t1^3\ t2^4\ t3^2 + 3\ t1^4\ t2^4\ t3^2 - t1^5\ t2^4\ t3^2 + t1^2\ t2^5\ t3^2 - t1^4\ t2^5\ t3^2 - t1^3\ t3^3 + t1^5\ t3^3 - t1^2\ t2\ t3^3 + 3\ t1^3\ t2\ t3^3 - t1^4\ t2\ t3^3 - t1^5\ t2\ t3^3 - t1^6\ t2\ t3^3 + t1^7\ t2\ t3^3 - t2^2\ t3^3 + 2\ t1\ t2^2\ t3^3 + t1^2\ t2^2\ t3^3 - 2\ t1^3\ t2^2\ t3^3 - 2\ t1^4\ t2^2\ t3^3 + t1^5\ t2^2\ t3^3 + 2\ t1^6\ t2^2\ t3^3 - t1^7\ t2^2\ t3^3 + t2^3\ t3^3 - 2\ t1\ t2^3\ t3^3 - t1^2\ t2^3\ t3^3 - t1^3\ t2^3\ t3^3 + 5\ t1^4\ t2^3\ t3^3 - t1^5\ t2^3\ t3^3 - t1^6\ t2^3\ t3^3 - t1\ t2^4\ t3^3 + 2\ t1^2\ t2^4\ t3^3 + t1^3\ t2^4\ t3^3 - 2\ t1^4\ t2^4\ t3^3 + t1\ t2^5\ t3^3 - t1^2\ t2^5\ t3^3 + t1^3\ t3^4 - t1^6\ t3^4 + t1\ t2\ t3^4 - t1^3\ t2\ t3^4 - t1^4\ t2\ t3^4 + t1^6\ t2\ t3^4 + t2^2\ t3^4 - t1\ t2^2\ t3^4 - t1^2\ t2^2\ t3^4 - t1^3\ t2^2\ t3^4 + 3\ t1^4\ t2^2\ t3^4 - t1^5\ t2^2\ t3^4 - t1\ t2^3\ t3^4 + 2\ t1^2\ t2^3\ t3^4 + t1^3\ t2^3\ t3^4 - 2\ t1^4\ t2^3\ t3^4 - t2^4\ t3^4 + t1\ t2^4\ t3^4 - t1^2\ t2^4\ t3^4 + t1^5\ t2^4\ t3^4 - t1\ t2\ t3^5 + t1^4\ t2\ t3^5 + t1^2\ t2^2\ t3^5 - t1^4\ t2^2\ t3^5 + t1\ t2^3\ t3^5 - t1^2\ t2^3\ t3^5\right)$$

In[255]:=
```
G232tangent[t1_, t2_, t3_] :=
 Det[DiagonalMatrix[{-t1^2 + 1, -t1 + 1, -t2 + 1, -t3 + 1, (t1^2 - t2^2) / t1^2,
    (t1^2 - t2 * t3) / t1^2, (t1^2 - t3^2) / t1^2, (-t1^3 + t2) / t2, -t2 + 1,
    -t3 + 1, (-t3^2 + t2) / t2, (-t1^2 + t2) / t2, -t1 + 1, (-t1 * t3 + t2) / t2,
    (t1 - t2) / t1, (t1 - t3) / t1, (t1 * t2 - t3^2) / (t1 * t2), (-t1^3 + t3) / t3,
    (-t2^2 + t3) / t3, -t2 + 1, -t3 + 1, (-t1^2 + t3) / t3, (-t1 * t2 + t3) / t3,
    -t1 + 1, (-t2^2 + t1 * t3) / (t1 * t3), (t1 - t2) / t1, (t1 - t3) / t1}]]
```

In[257]:=
```
Together[%245 / G232tangent[t1, t2, t3]]
```

Out[257]=
$$\Big(t1^{10}\,t2^4\,t3^4\Big(-t1^5\,t2^2-t1^3\,t2^3-t1^4\,t2^3-t1^5\,t2^3+t1^2\,t2\,t3+t1^3\,t2\,t3+t1^4\,t2\,t3+t1^6\,t2\,t3+t1^2\,t2^2\,t3-t1^3\,t2^2\,t3+t1^6\,t2^2\,t3+t1\,t2^4\,t3+t1^2\,t2^4\,t3+t1^3\,t2^4\,t3-t1^5\,t3^2+t1^2\,t2\,t3^2-t1^3\,t2\,t3^2+t1^6\,t2\,t3^2-t1\,t2^2\,t3^2-t1^2\,t2^2\,t3^2+t1^4\,t2^2\,t3^2+t1^5\,t2^2\,t3^2-t2^3\,t3^2+t1^3\,t2^3\,t3^2-t1^4\,t2^3\,t3^2+t1\,t2^4\,t3^2-t1^3\,t3^3-t1^4\,t3^3-t1^5\,t3^3-t2^2\,t3^3+t1^3\,t2^2\,t3^3-t1^4\,t2^2\,t3^3-t2^3\,t3^3-t1^2\,t2^3\,t3^3-t1^3\,t2^3\,t3^3-t1^4\,t2^3\,t3^3+t1\,t2\,t3^4+t1^2\,t2\,t3^4+t1^3\,t2\,t3^4+t1\,t2^2\,t3^4\Big)\Big)\Big/\Big((-1+t1)^3\,(1+t1)\,(t1-t2)^3\,\big(t1^2-t2\big)\,\big(t1^3-t2\big)\,(-1+t2)^2\,(t1+t2)\,(t1-t3)^3\,\big(t1^2-t3\big)\,\big(t1^3-t3\big)\,(t1\,t2-t3)\,\big(t2^2-t3\big)\,(-1+t3)^2\,(t1+t3)\,(-t2+t1\,t3)\,\big(-t2^2+t1\,t3\big)\,\big(t1^2-t2\,t3\big)\,\big(t2-t3^2\big)\,\big(t1\,t2-t3^2\big)\Big)$$

In[264]:=
```
G232[t1_, t2_, t3_] :=
  (t1^10 t2^4 t3^4 (-t1^5 t2^2 - t1^3 t2^3 - t1^4 t2^3 - t1^5 t2^3 + t1^2 t2 t3 + t1^3 t2 t3 + t1^4 t2 t3 +
       t1^6 t2 t3 + t1^2 t2^2 t3 - t1^3 t2^2 t3 + t1^6 t2^2 t3 + t1 t2^4 t3 + t1^2 t2^4 t3 +
       t1^3 t2^4 t3 - t1^5 t3^2 + t1^2 t2 t3^2 - t1^3 t2 t3^2 + t1^6 t2 t3^2 - t1 t2^2 t3^2 - t1^2 t2^2 t3^2 +
       t1^4 t2^2 t3^2 + t1^5 t2^2 t3^2 - t2^3 t3^2 + t1^3 t2^3 t3^2 - t1^4 t2^3 t3^2 + t1 t2^4 t3^2 - t1^3 t3^3 -
       t1^4 t3^3 - t1^5 t3^3 - t2^2 t3^3 + t1^3 t2^2 t3^3 - t1^4 t2^2 t3^3 - t2^3 t3^3 - t1^2 t2^3 t3^3 -
       t1^3 t2^3 t3^3 - t1^4 t2^3 t3^3 + t1 t2 t3^4 + t1^2 t2 t3^4 + t1^3 t2 t3^4 + t1 t2^2 t3^4)) /
   ((-1 + t1)^3 (1 + t1) (t1 - t2)^3 (t1^2 - t2) (t1^3 - t2) (-1 + t2)^2 (t1 + t2)
     (t1 - t3)^3 (t1^2 - t3) (t1^3 - t3) (t1 t2 - t3) (t2^2 - t3) (-1 + t3)^2 (t1 + t3)
     (-t2 + t1 t3) (-t2^2 + t1 t3) (t1^2 - t2 t3) (t2 - t3^2) (t1 t2 - t3^2));

In[267]:=
T232[t1_, t2_, t3_, u_, v_] :=
  Det[DiagonalMatrix[{-u + 1, -t1 * u + 1, -t1^2 * u + 1, -t2 * u + 1, -t1 * t2 * u + 1,
     -t3 * u + 1, -t1 * t3 * u + 1, -v + 1, (t1 - v) / t1, (t1^2 - v) / t1^2,
     (t2 - v) / t2, (t1 * t2 - v) / (t1 * t2), (t3 - v) / t3, (t1 * t3 - v) / (t1 * t3)}]];
GT232[t1_, t2_, t3_, u_, v_] := G232[t1, t2, t3] * T232[t1, t2, t3, u, v]

In[237]:=
Solve[u0 * u5 == t1^2 && u0 * u4 == t3^2 / t1 && u1 * u2 == t1 &&
  u3 * u4 == t2 * t3 / t1^2 && u0 * u3 == t2^3 / t1^2 && u2 * u4 == t3 &&
  u0 * u2 == t2^2 && u1 * u5 == t1^3 / t2^2 && u4 * u5 == t1^2 * t3 / t2^2 &&
  u1 * u4 == t3^2 / t2^2 && u3 * u5 == t1 * t2 / t3 && u2 * u5 == t1^3 / t3 && u0 * u1 == t3 &&
  u1 * u3 == t2 / t1 && u2 * u3 == t2^3 / (t1 * t3), {u0, u1, u2, u3, u4, u5}]
```

Out[237]=
$$\left\{\left\{u0\to-\frac{t2\,\sqrt{t3}}{\sqrt{t1}},\ u1\to-\frac{\sqrt{t1}\,\sqrt{t3}}{t2},\ u2\to-\frac{\sqrt{t1}\,t2}{\sqrt{t3}},\ u3\to-\frac{t2^2}{t1^{3/2}\,\sqrt{t3}},\right.\right.$$
$$\left.u4\to-\frac{t3^{3/2}}{\sqrt{t1}\,t2},\ u5\to-\frac{t1^{5/2}}{t2\,\sqrt{t3}}\right\},\left\{u0\to\frac{t2\,\sqrt{t3}}{\sqrt{t1}},\ u1\to\frac{\sqrt{t1}\,\sqrt{t3}}{t2},\right.$$
$$\left.\left.u2\to\frac{\sqrt{t1}\,t2}{\sqrt{t3}},\ u3\to\frac{t2^2}{t1^{3/2}\,\sqrt{t3}},\ u4\to\frac{t3^{3/2}}{\sqrt{t1}\,t2},\ u5\to\frac{t1^{5/2}}{t2\,\sqrt{t3}}\right\}\right\}$$

In[238]:=
```
Together[G[t2 Sqrt[t3]/Sqrt[t1], Sqrt[t1] Sqrt[t3]/t2, Sqrt[t1] t2/Sqrt[t3], t2^2/(t1^(3/2) Sqrt[t3]), t3^(3/2)/(Sqrt[t1] t2), t1^(5/2)/(t2 Sqrt[t3])]]
```

Out[238]=
$$\frac{1}{t1^3\,t2^2\,t3}\Big(-t1^5\,t2^3+t1^7\,t2^3-t1^4\,t2^5+t1^5\,t2^5+t1^3\,t2^6-t1^6\,t2^6+t1^7\,t2\,t3-t1^9\,t2\,t3+t1^3\,t2^2\,t3-t1^6\,t2^2\,t3-2\,t1^4\,t2^3\,t3+2\,t1^5\,t2^3\,t3+t1^6\,t2^3\,t3-t1^7\,t2^3\,t3+t1^3\,t2^4\,t3-t1^5\,t2^4\,t3-t1^6\,t2^4\,t3+t1^8\,t2^4\,t3-t1^2\,t2^5\,t3+2\,t1^4\,t2^5\,t3-t1^5\,t2^5\,t3+t1^2\,t2^6\,t3-t1^3\,t2^6\,t3-t1^5\,t2^6\,t3+t1^6\,t2^6\,t3-t1\,t2^7\,t3+t1^4\,t2^7\,t3-t1^6\,t3^2+t1^8\,t3^2-t1^4\,t2\,t3^2+t1^5\,t2\,t3^2+t1^6\,t2\,t3^2-t1^7\,t2\,t3^2-t1^5\,t2^2\,t3^2+t1^8\,t2^2\,t3^2-t1^2\,t2^3\,t3^2-t1^3\,t2^3\,t3^2+5\,t1^4\,t2^3\,t3^2-t1^5\,t2^3\,t3^2-t1^6\,t2^3\,t3^2-t1^7\,t2^3\,t3^2+t1^2\,t2^4\,t3^2-t1^3\,t2^4\,t3^2-2\,t1^5\,t2^4\,t3^2+2\,t1^6\,t2^4\,t3^2+t1^7\,t2^4\,t3^2-t1^8\,t2^4\,t3^2-t1\,t2^5\,t3^2+t1^2\,t2^5\,t3^2+t1^3\,t2^5\,t3^2-t1^6\,t2^5\,t3^2+t2^6\,t3^2-t1^2\,t2^6\,t3^2-t1^3\,t2^6\,t3^2-t1^4\,t2^6\,t3^2+2\,t1^5\,t2^6\,t3^2+t1^3\,t2^7\,t3^2-t1^4\,t2^7\,t3^2-t1^5\,t3^3+t1^6\,t3^3+2\,t1^4\,t2\,t3^3-t1^5\,t2\,t3^3-t1^6\,t2\,t3^3-t1^7\,t2\,t3^3+t1^9\,t2\,t3^3-t1^3\,t2^2\,t3^3+t1^6\,t2^2\,t3^3+t1^7\,t2^2\,t3^3-t1^8\,t2^2\,t3^3-t1\,t2^3\,t3^3+t1^2\,t2^3\,t3^3+2\,t1^3\,t2^3\,t3^3-2\,t1^4\,t2^3\,t3^3-t1^6\,t2^3\,t3^3+t1^7\,t2^3\,t3^3-t1^2\,t2^4\,t3^3-t1^3\,t2^4\,t3^3-t1^4\,t2^4\,t3^3+5\,t1^5\,t2^4\,t3^3-t1^6\,t2^4\,t3^3-t1^7\,t2^4\,t3^3+t1\,t2^5\,t3^3-t1^4\,t2^5\,t3^3-t1^2\,t2^6\,t3^3+t1^3\,t2^6\,t3^3+t1^4\,t2^6\,t3^3-t1^5\,t2^6\,t3^3+t1\,t2^7\,t3^3-t1^3\,t2^7\,t3^3+t1^5\,t3^4-t1^8\,t3^4+t1^3\,t2\,t3^4-t1^4\,t2\,t3^4-t1^6\,t2\,t3^4+t1^7\,t2\,t3^4-t1^4\,t2^2\,t3^4+2\,t1^5\,t2^2\,t3^4-t1^7\,t2^2\,t3^4+t1\,t2^3\,t3^4-t1^3\,t2^3\,t3^4-t1^4\,t2^3\,t3^4+t1^6\,t2^3\,t3^4-t1^2\,t2^4\,t3^4+t1^3\,t2^4\,t3^4+2\,t1^4\,t2^4\,t3^4-2\,t1^5\,t2^4\,t3^4-t1^3\,t2^5\,t3^4+t1^6\,t2^5\,t3^4-t2^6\,t3^4+t1^2\,t2^6\,t3^4-t1^3\,t2\,t3^5+t1^6\,t2\,t3^5+t1^4\,t2^2\,t3^5-t1^5\,t2^2\,t3^5+t1^2\,t2^4\,t3^5-t1^4\,t2^4\,t3^5\Big)$$

In[239]:=
```
G2311tangent[t1_, t2_, t3_] :=
 Det[DiagonalMatrix[{-t2 + 1, -t1^2 + 1, (-t3^2 + t1)/t1, (t1 - t2)/t1, -t1 + 1,
    -t3 + 1, (t1^2 - t2*t3)/t1^2, (-t2^3 + t1^2)/t1^2, (t1^2 - t3^2)/t1^2,
    -t1 + 1, -t3 + 1, -t2^2 + 1, (-t1 + t2)/t2, (-t1^3 + t2^2)/t2^2,
    (-t1^2*t3 + t2^2)/t2^2, (t2 - t3)/t2, -t2 + 1, (t2^2 - t3^2)/t2^2,
    (-t1*t2 + t3)/t3, (-t1^3 + t3)/t3, -t3 + 1, (-t2 + t3)/t3, (-t1^2 + t3)/t3,
    -t1 + 1, (t1 - t2)/t1, (-t2^3 + t1*t3)/(t1*t3), (t1 - t3)/t1}]]
```

In[240]:=
```
Together[%238 / G2311tangent[t1, t2, t3]]
```

Out[240]=
```
-((t1^8 t2^6 t3^4 (-t1^5 t2^3 - t1^6 t2^3 - t1^4 t2^5 + t1^3 t2^6 + t1^4 t2^6 + t1^5 t2^6 + t1^7 t2 t3 +
        t1^8 t2 t3 + t1^3 t2^2 t3 + t1^4 t2^2 t3 + t1^5 t2^2 t3 - 2 t1^4 t2^3 t3 - t1^5 t2^3 t3 +
        t1^3 t2^4 t3 + t1^4 t2^4 t3 - t1^6 t2^4 t3 - t1^7 t2^4 t3 - t1^2 t2^5 t3 - t1^3 t2^5 t3 +
        t1^2 t2^6 t3 + t1^3 t2^6 t3 + t1^4 t2^6 t3 - t1 t2^7 t3 - t1^2 t2^7 t3 - t1^3 t2^7 t3 -
        t1^6 t3^2 - t1^7 t3^2 - t1^4 t2 t3^2 + t1^6 t2 t3^2 + t1^7 t2 t3^2 + t1^8 t2 t3^2 + t1^3 t2^2 t3^2 +
        t1^4 t2^2 t3^2 - t1^6 t2^2 t3^2 - t1^7 t2^2 t3^2 - t1^2 t2^3 t3^2 - 2 t1^3 t2^3 t3^2 +
        t1^4 t2^3 t3^2 + t1^5 t2^3 t3^2 + t1^6 t2^3 t3^2 + t1^2 t2^4 t3^2 + t1^3 t2^4 t3^2 + t1^4 t2^4 t3^2 -
        2 t1^5 t2^4 t3^2 - t1^6 t2^4 t3^2 - t1 t2^5 t3^2 - t1^2 t2^5 t3^2 + t1^4 t2^5 t3^2 + t1^5 t2^5 t3^2 +
        t2^6 t3^2 + t1 t2^6 t3^2 + t1^2 t2^6 t3^2 - t1^4 t2^6 t3^2 - t1 t2^7 t3^2 - t1^2 t2^7 t3^2 -
        t1^5 t3^3 - t1^6 t3^3 - t1^7 t3^3 + t1^4 t2 t3^3 + t1^5 t2 t3^3 + t1^6 t2 t3^3 - t1^5 t2^2 t3^3 -
        t1^6 t2^2 t3^3 - t1 t2^3 t3^3 - t1^2 t2^3 t3^3 + t1^4 t2^3 t3^3 + t1^5 t2^3 t3^3 - t1^3 t2^4 t3^3 -
        2 t1^4 t2^4 t3^3 + t1^3 t2^5 t3^3 + t1^4 t2^5 t3^3 + t1^5 t2^5 t3^3 + t2^6 t3^3 + t1 t2^6 t3^3 +
        t1^3 t2 t3^4 + t1^4 t2 t3^4 + t1^5 t2 t3^4 - t1^4 t2^2 t3^4 - t1^2 t2^4 t3^4 - t1^3 t2^4 t3^4)) /
    ((-1 + t1)^3 (1 + t1) (t1 - t2)^3 (-1 + t2)^3 (1 + t2) (t1^3 - t2^2) (t1^2 - t2^3)
      (t1 - t3)^2 (t1^2 - t3) (t1^3 - t3) (t2 - t3)^3 (t1 t2 - t3) (-1 + t3)^2 (t1 + t3)
      (t2 + t3) (-t2^3 + t1 t3) (-t2^2 + t1^2 t3) (t1^2 - t2 t3) (t1 - t3^2)))
```

In[241]:=
```
G2311[t1_, t2_, t3_] :=
 -((t1^8 t2^6 t3^4 (-t1^5 t2^3 - t1^6 t2^3 - t1^4 t2^5 + t1^3 t2^6 + t1^4 t2^6 + t1^5 t2^6 + t1^7 t2 t3 +
        t1^8 t2 t3 + t1^3 t2^2 t3 + t1^4 t2^2 t3 + t1^5 t2^2 t3 - 2 t1^4 t2^3 t3 - t1^5 t2^3 t3 +
        t1^3 t2^4 t3 + t1^4 t2^4 t3 - t1^6 t2^4 t3 - t1^7 t2^4 t3 - t1^2 t2^5 t3 - t1^3 t2^5 t3 +
        t1^2 t2^6 t3 + t1^3 t2^6 t3 + t1^4 t2^6 t3 - t1 t2^7 t3 - t1^2 t2^7 t3 - t1^3 t2^7 t3 -
        t1^6 t3^2 - t1^7 t3^2 - t1^4 t2 t3^2 + t1^6 t2 t3^2 + t1^7 t2 t3^2 + t1^8 t2 t3^2 + t1^3 t2^2 t3^2 +
        t1^4 t2^2 t3^2 - t1^6 t2^2 t3^2 - t1^7 t2^2 t3^2 - t1^2 t2^3 t3^2 - 2 t1^3 t2^3 t3^2 +
        t1^4 t2^3 t3^2 + t1^5 t2^3 t3^2 + t1^6 t2^3 t3^2 + t1^2 t2^4 t3^2 + t1^3 t2^4 t3^2 + t1^4 t2^4 t3^2 -
        2 t1^5 t2^4 t3^2 - t1^6 t2^4 t3^2 - t1 t2^5 t3^2 - t1^2 t2^5 t3^2 + t1^4 t2^5 t3^2 + t1^5 t2^5 t3^2 +
        t2^6 t3^2 + t1 t2^6 t3^2 + t1^2 t2^6 t3^2 - t1^4 t2^6 t3^2 - t1 t2^7 t3^2 - t1^2 t2^7 t3^2 -
        t1^5 t3^3 - t1^6 t3^3 - t1^7 t3^3 + t1^4 t2 t3^3 + t1^5 t2 t3^3 + t1^6 t2 t3^3 - t1^5 t2^2 t3^3 -
        t1^6 t2^2 t3^3 - t1 t2^3 t3^3 - t1^2 t2^3 t3^3 + t1^4 t2^3 t3^3 + t1^5 t2^3 t3^3 - t1^3 t2^4 t3^3 -
        2 t1^4 t2^4 t3^3 + t1^3 t2^5 t3^3 + t1^4 t2^5 t3^3 + t1^5 t2^5 t3^3 + t2^6 t3^3 + t1 t2^6 t3^3 +
        t1^3 t2 t3^4 + t1^4 t2 t3^4 + t1^5 t2 t3^4 - t1^4 t2^2 t3^4 - t1^2 t2^4 t3^4 - t1^3 t2^4 t3^4)) /
    ((-1 + t1)^3 (1 + t1) (t1 - t2)^3 (-1 + t2)^3 (1 + t2) (t1^3 - t2^2) (t1^2 - t2^3)
      (t1 - t3)^2 (t1^2 - t3) (t1^3 - t3) (t2 - t3)^3 (t1 t2 - t3) (-1 + t3)^2 (t1 + t3)
      (t2 + t3) (-t2^3 + t1 t3) (-t2^2 + t1^2 t3) (t1^2 - t2 t3) (t1 - t3^2)))
```

In[242]:=
```
T2311[t1_, t2_, t3_, u_, v_] :=
 Det[DiagonalMatrix[{-u + 1, -t1 * u + 1, -t1^2 * u + 1, -t2 * u + 1, -t2^2 * u + 1,
    -t3 * u + 1, -t1 * t3 * u + 1, -v + 1, (t1 - v) / t1, (t1^2 - v) / t1^2,
    (t2 - v) / t2, (t2^2 - v) / t2^2, (t3 - v) / t3, (t1 * t3 - v) / (t1 * t3)}]]
```

In[243]:=
```
GT2311[t1_, t2_, t3_, u_, v_] := G2311[t1, t2, t3] * T2311[t1, t2, t3, u, v]
```

In[269]:=
```
Solve[u1 * u2 == t1^2 && u3 * u4 == t2 * t3 / t1^2 &&
  u0 * u3 == t2^3 / t1^2 && u0 * u4 == t3^3 / t1^2 && u2 * u4 == t3 && u0 * u2 == t2^2 &&
  u4 * u5 == t1 * t3 / t2^2 && u1 * u5 == t1^3 / t2^2 && u1 * u4 == t3^3 / t2^2 &&
  u0 * u5 == t1 && u1 * u3 == t2 && u0 * u1 == t3^2 && u3 * u5 == t1 * t2 / t3^2 &&
  u2 * u5 == t1^3 / t3^2 && u2 * u3 == t2^3 / t3^2, {u0, u1, u2, u3, u4, u5}]
```

Out[269]=
$$\left\{\left\{u0 \to -\frac{t2\,t3}{t1},\ u1 \to -\frac{t1\,t3}{t2},\ u2 \to -\frac{t1\,t2}{t3},\ u3 \to -\frac{t2^2}{t1\,t3},\ u4 \to -\frac{t3^2}{t1\,t2},\ u5 \to -\frac{t1^2}{t2\,t3}\right\},\right.$$
$$\left.\left\{u0 \to \frac{t2\,t3}{t1},\ u1 \to \frac{t1\,t3}{t2},\ u2 \to \frac{t1\,t2}{t3},\ u3 \to \frac{t2^2}{t1\,t3},\ u4 \to \frac{t3^2}{t1\,t2},\ u5 \to \frac{t1^2}{t2\,t3}\right\}\right\}$$

In[270]:=
```
Together[G[t2 t3 / t1, t1 t3 / t2, t1 t2 / t3, t2^2 / (t1 t3), t3^2 / (t1 t2), t1^2 / (t2 t3)]]
```

Out[270]=
$$\frac{1}{t1^2\,t2^2\,t3^2}$$
$$\left(-t1^5\,t2^3+t1^6\,t2^3-t1^3\,t2^5+t1^5\,t2^5+t1^3\,t2^6-t1^6\,t2^6+t1^6\,t2\,t3-t1^7\,t2\,t3-t1^3\,t2^3\,t3+\right.$$
$$t1^4\,t2^3\,t3+t1^5\,t2^3\,t3-t1^6\,t2^3\,t3+t1^3\,t2^4\,t3-t1^4\,t2^4\,t3-t1^6\,t2^4\,t3+t1^7\,t2^4\,t3+$$
$$t1^3\,t2^5\,t3-t1^5\,t2^5\,t3+t1\,t2^6\,t3-t1^3\,t2^6\,t3-t1^4\,t2^6\,t3+t1^6\,t2^6\,t3-t1\,t2^7\,t3+$$
$$t1^4\,t2^7\,t3+t1^2\,t2^2\,t3^2-t1^5\,t2^2\,t3^2-t1^6\,t2^2\,t3^2+t1^7\,t2^2\,t3^2-t1^3\,t2^3\,t3^2+$$
$$t1^5\,t2^3\,t3^2-t1^4\,t2^4\,t3^2+t1^5\,t2^4\,t3^2+t1^6\,t2^4\,t3^2-t1^7\,t2^4\,t3^2-t1^2\,t2^5\,t3^2+$$
$$t1^3\,t2^5\,t3^2+t1^4\,t2^5\,t3^2-t1^5\,t2^5\,t3^2-t1^2\,t2^6\,t3^2+t1^4\,t2^6\,t3^2+t1^2\,t2^7\,t3^2-$$
$$t1^4\,t2^7\,t3^2-t1^5\,t3^3+t1^6\,t3^3-t1^3\,t2\,t3^3+t1^4\,t2\,t3^3+t1^5\,t2\,t3^3-t1^6\,t2\,t3^3-$$
$$t1^3\,t2^2\,t3^3+t1^5\,t2^2\,t3^3-t1\,t2^3\,t3^3-t1^2\,t2^3\,t3^3+5\,t1^3\,t2^3\,t3^3-t1^4\,t2^3\,t3^3-$$
$$t1^5\,t2^3\,t3^3-t1^6\,t2^3\,t3^3+t1\,t2^4\,t3^3-t1^3\,t2^4\,t3^3-t1^4\,t2^4\,t3^3+t1^6\,t2^4\,t3^3-t2^5\,t3^3+$$
$$t1\,t2^5\,t3^3+t1^2\,t2^5\,t3^3-t1^3\,t2^5\,t3^3+t2^6\,t3^3-t1\,t2^6\,t3^3-t1^3\,t2^6\,t3^3+t1^4\,t2^6\,t3^3+$$
$$t1^3\,t2\,t3^4-t1^4\,t2\,t3^4-t1^6\,t2\,t3^4+t1^7\,t2\,t3^4-t1^4\,t2^2\,t3^4+t1^5\,t2^2\,t3^4+t1^6\,t2^2\,t3^4-$$
$$t1^7\,t2^2\,t3^4+t1\,t2^3\,t3^4-t1^3\,t2^3\,t3^4-t1^4\,t2^3\,t3^4+t1^6\,t2^3\,t3^4-t1\,t2^4\,t3^4-t1^2\,t2^4\,t3^4-$$
$$t1^3\,t2^4\,t3^4+5\,t1^4\,t2^4\,t3^4-t1^5\,t2^4\,t3^4-t1^6\,t2^4\,t3^4+t1^2\,t2^5\,t3^4-t1^4\,t2^5\,t3^4-$$
$$t1\,t2^6\,t3^4+t1^2\,t2^6\,t3^4+t1^3\,t2^6\,t3^4-t1^4\,t2^6\,t3^4+t1\,t2^7\,t3^4-t1^2\,t2^7\,t3^4-t1^3\,t3^5+$$
$$t1^5\,t3^5+t1^3\,t2\,t3^5-t1^5\,t2\,t3^5-t1^2\,t2^2\,t3^5+t1^3\,t2^2\,t3^5+t1^4\,t2^2\,t3^5-t1^5\,t2^2\,t3^5-$$
$$t2^3\,t3^5+t1\,t2^3\,t3^5+t1^2\,t2^3\,t3^5-t1^3\,t2^3\,t3^5+t1^2\,t2^4\,t3^5-t1^4\,t2^4\,t3^5+t2^5\,t3^5-$$
$$t1\,t2^5\,t3^5-t1^2\,t2^5\,t3^5+t1^5\,t2^5\,t3^5+t1^3\,t3^6-t1^6\,t3^6+t1\,t2\,t3^6-t1^3\,t2\,t3^6-$$
$$t1^4\,t2\,t3^6+t1^6\,t2\,t3^6-t1^2\,t2^2\,t3^6+t1^4\,t2^2\,t3^6+t2^3\,t3^6-t1\,t2^3\,t3^6-t1^3\,t2^3\,t3^6+$$
$$t1^4\,t2^3\,t3^6-t1\,t2^4\,t3^6+t1^2\,t2^4\,t3^6+t1^3\,t2^4\,t3^6-t1^4\,t2^4\,t3^6-t2^6\,t3^6+t1\,t2^6\,t3^6-$$
$$\left.t1\,t2\,t3^7+t1^4\,t2\,t3^7+t1^2\,t2^2\,t3^7-t1^4\,t2^2\,t3^7+t1\,t2^4\,t3^7-t1^2\,t2^4\,t3^7\right)$$

In[271]:=
```
G11311tangent[t1_, t2_, t3_] :=
 Det[DiagonalMatrix[{-t2 + 1, -t3 + 1, -t1^2 + 1, (t1 - t2) / t1, (t1 - t3) / t1, -t1 + 1,
    (t1^2 - t2 * t3) / t1^2, (-t2^3 + t1^2) / t1^2, (-t3^3 + t1^2) / t1^2,
    -t1 + 1, -t3 + 1, -t2^2 + 1, (-t1 + t2) / t2, (t2^2 - t1 * t3) / t2^2,
    (-t1^3 + t2^2) / t2^2, (t2 - t3) / t2, -t2 + 1, (-t3^3 + t2^2) / t2^2,
    -t1 + 1, -t2 + 1, -t3^2 + 1, (-t1 * t2 + t3^2) / t3^2, (-t1 + t3) / t3,
    (-t1^3 + t3^2) / t3^2, (-t2 + t3) / t3, (-t2^3 + t3^2) / t3^2, -t3 + 1}]]
```

In[272]:=
```
Together[%270 / G11311tangent[t1, t2, t3]]
```

Out[272]=
$$-\Big(\big(t1^6\,t2^6\,t3^6\,\big(-t1^5\,t2^3-t1^5\,t2^4-t1^3\,t2^5-t1^4\,t2^5-t1^5\,t2^5+t1^6\,t2\,t3+t1^6\,t2^2\,t3-t1^3\,t2^3\,t3+t1^6\,t2^3\,t3+t1\,t2^6\,t3+t1^2\,t2^6\,t3+t1^3\,t2^6\,t3+t1^6\,t2\,t3^2+t1^2\,t2^2\,t3^2+t1^3\,t2^2\,t3^2+t1^4\,t2^2\,t3^2+t1^2\,t2^3\,t3^2-t1^3\,t2^3\,t3^2+t1^2\,t2^4\,t3^2-t1^4\,t2^4\,t3^2+t1\,t2^6\,t3^2-t1^5\,t3^3-t1^3\,t2\,t3^3+t1^6\,t2\,t3^3+t1^2\,t2^2\,t3^3-t1^3\,t2^2\,t3^3-t1\,t2^3\,t3^3-t1^2\,t2^3\,t3^3+t1^4\,t2^3\,t3^3+t1^5\,t2^3\,t3^3+t1^3\,t2^4\,t3^3-t1^4\,t2^4\,t3^3-t2^5\,t3^3+t1^3\,t2^5\,t3^3+t1\,t2^6\,t3^3-t1^5\,t3^4+t1^2\,t2^2\,t3^4-t1^4\,t2^2\,t3^4+t1^3\,t2^3\,t3^4-t1^4\,t2^3\,t3^4-t1^2\,t2^4\,t3^4-t1^3\,t2^4\,t3^4-t1^4\,t2^4\,t3^4-t2^5\,t3^4-t1^3\,t3^5-t1^4\,t3^5-t1^5\,t3^5-t2^3\,t3^5+t1^3\,t2^3\,t3^5-t2^4\,t3^5-t2^5\,t3^5+t1\,t2\,t3^6+t1^2\,t2\,t3^6+t1^3\,t2\,t3^6+t1\,t2^2\,t3^6+t1\,t2^3\,t3^6\big)\big)\Big/\Big((-1+t1)^3\,(1+t1)\,(t1-t2)^2\,(-1+t2)^3\,(1+t2)\,\big(t1^3-t2^2\big)\,\big(t1^2-t2^3\big)\,(t1-t3)^2\,(t2-t3)^2\,(-1+t3)^3\,(1+t3)\,\big(-t2^2+t1\,t3\big)\,\big(t1^2-t2\,t3\big)\,\big(t1^3-t3^2\big)\,\big(t1\,t2-t3^2\big)\,\big(t2^3-t3^2\big)\,\big(t1^2-t3^3\big)\,\big(t2^2-t3^3\big)\Big)\Big)$$

In[273]:=
```
G11311[t1_, t2_, t3_] :=
 -((t1^6 t2^6 t3^6 (-t1^5 t2^3 - t1^5 t2^4 - t1^3 t2^5 - t1^4 t2^5 - t1^5 t2^5 + t1^6 t2 t3 + t1^6 t2^2 t3 -
        t1^3 t2^3 t3 + t1^6 t2^3 t3 + t1 t2^6 t3 + t1^2 t2^6 t3 + t1^3 t2^6 t3 + t1^6 t2 t3^2 +
        t1^2 t2^2 t3^2 + t1^3 t2^2 t3^2 + t1^4 t2^2 t3^2 + t1^2 t2^3 t3^2 - t1^3 t2^3 t3^2 + t1^2 t2^4 t3^2 -
        t1^4 t2^4 t3^2 + t1 t2^6 t3^2 - t1^5 t3^3 - t1^3 t2 t3^3 + t1^6 t2 t3^3 + t1^2 t2^2 t3^3 -
        t1^3 t2^2 t3^3 - t1 t2^3 t3^3 - t1^2 t2^3 t3^3 + t1^4 t2^3 t3^3 + t1^5 t2^3 t3^3 + t1^3 t2^4 t3^3 -
        t1^4 t2^4 t3^3 - t2^5 t3^3 + t1^3 t2^5 t3^3 + t1 t2^6 t3^3 - t1^5 t3^4 + t1^2 t2^2 t3^4 -
        t1^4 t2^2 t3^4 + t1^3 t2^3 t3^4 - t1^4 t2^3 t3^4 - t1^2 t2^4 t3^4 - t1^3 t2^4 t3^4 - t1^4 t2^4 t3^4 -
        t2^5 t3^4 - t1^3 t3^5 - t1^4 t3^5 - t1^5 t3^5 - t2^3 t3^5 + t1^3 t2^3 t3^5 - t2^4 t3^5 -
        t2^5 t3^5 + t1 t2 t3^6 + t1^2 t2 t3^6 + t1^3 t2 t3^6 + t1 t2^2 t3^6 + t1 t2^3 t3^6)) /
    ((-1 + t1)^3 (1 + t1) (t1 - t2)^2 (-1 + t2)^3 (1 + t2) (t1^3 - t2^2) (t1^2 - t2^3)
      (t1 - t3)^2 (t2 - t3)^2 (-1 + t3)^3 (1 + t3) (-t2^2 + t1 t3) (t1^2 - t2 t3)
      (t1^3 - t3^2) (t1 t2 - t3^2) (t2^3 - t3^2) (t1^2 - t3^3) (t2^2 - t3^3)))
```

In[274]:=
```
T11311[t1_, t2_, t3_, u_, v_] :=
 Det[DiagonalMatrix[{-u + 1, -t1 * u + 1, -t1^2 * u + 1, -t2 * u + 1, -t2^2 * u + 1,
    -t3 * u + 1, -t3^2 * u + 1, -v + 1, (t1 - v) / t1, (t1^2 - v) / t1^2,
    (t2 - v) / t2, (t2^2 - v) / t2^2, (t3 - v) / t3, (t3^2 - v) / t3^2}]]
```

In[275]:=
```
GT11311[t1_, t2_, t3_, u_, v_] := G11311[t1, t2, t3] * T11311[t1, t2, t3, u, v]
```

In[276]:=
```
G1321[t1_, t2_, t3_] :=
 -((t1^8 t2^8 t3^2 (-t1^8 t2^6 - t1^7 t2^7 - t1^8 t2^7 - t1^6 t2^8 - t1^7 t2^8 - t1^8 t2^8 + t1^6 t2^4 t3 +
        t1^7 t2^4 t3 + t1^9 t2^4 t3 + t1^5 t2^5 t3 + 2 t1^6 t2^5 t3 + t1^8 t2^5 t3 + t1^9 t2^5 t3 +
        t1^4 t2^6 t3 + 2 t1^5 t2^6 t3 + t1^7 t2^6 t3 + t1^8 t2^6 t3 + t1^9 t2^6 t3 + t1^4 t2^7 t3 +
        t1^6 t2^7 t3 + t1^7 t2^7 t3 + t1^8 t2^7 t3 + t1^5 t2^8 t3 + t1^6 t2^8 t3 + t1^7 t2^8 t3 +
        t1^4 t2^9 t3 + t1^5 t2^9 t3 + t1^6 t2^9 t3 - t1^8 t2^2 t3^2 - t1^3 t2^3 t3^2 - t1^4 t2^3 t3^2 -
        t1^5 t2^3 t3^2 - 2 t1^7 t2^3 t3^2 - t1^8 t2^3 t3^2 - t1^3 t2^4 t3^2 + t1^5 t2^4 t3^2 - 3 t1^6 t2^4 t3^2 -
        2 t1^7 t2^4 t3^2 - t1^3 t2^5 t3^2 + t1^4 t2^5 t3^2 - 3 t1^5 t2^5 t3^2 - 3 t1^6 t2^5 t3^2 +
        t1^7 t2^5 t3^2 + t1^8 t2^5 t3^2 - t1^9 t2^5 t3^2 - 3 t1^4 t2^6 t3^2 - 3 t1^5 t2^6 t3^2 + t1^6 t2^6 t3^2 +
        2 t1^7 t2^6 t3^2 - 2 t1^3 t2^7 t3^2 - 2 t1^4 t2^7 t3^2 + t1^5 t2^7 t3^2 + 2 t1^6 t2^7 t3^2 -
        t1^7 t2^7 t3^2 - t1^2 t2^8 t3^2 - t1^3 t2^8 t3^2 + t1^5 t2^8 t3^2 - t1^5 t2^9 t3^2 + t1^6 t2 t3^3 +
        2 t1^5 t2^2 t3^3 - t1^7 t2^2 t3^3 + 3 t1^4 t2^3 t3^3 - 2 t1^6 t2^3 t3^3 - t1^9 t2^3 t3^3 +
        3 t1^3 t2^4 t3^3 - t1^4 t2^4 t3^3 - 4 t1^5 t2^4 t3^3 + t1^7 t2^4 t3^3 - 2 t1^8 t2^4 t3^3 - t1^9 t2^4 t3^3 +
        2 t1^2 t2^5 t3^3 - 4 t1^4 t2^5 t3^3 + 2 t1^6 t2^5 t3^3 - 3 t1^7 t2^5 t3^3 - 2 t1^8 t2^5 t3^3 +
        t1 t2^6 t3^3 - 2 t1^3 t2^6 t3^3 + 2 t1^5 t2^6 t3^3 - 3 t1^6 t2^6 t3^3 - 3 t1^7 t2^6 t3^3 - t1^2 t2^7 t3^3 +
        t1^4 t2^7 t3^3 - 3 t1^5 t2^7 t3^3 - 3 t1^6 t2^7 t3^3 - 2 t1^4 t2^8 t3^3 - 2 t1^5 t2^8 t3^3 -
        t1^3 t2^9 t3^3 - t1^4 t2^9 t3^3 + t1^4 t2 t3^4 + t1^5 t2 t3^4 + t1^7 t2 t3^4 + t1^8 t2 t3^4 +
        t1^3 t2^2 t3^4 + t1^4 t2^2 t3^4 - t1^5 t2^2 t3^4 + t1^6 t2^2 t3^4 + 3 t1^7 t2^2 t3^4 + t1^8 t2^2 t3^4 +
        t1^2 t2^3 t3^4 + t1^3 t2^3 t3^4 - 2 t1^4 t2^3 t3^4 + 2 t1^5 t2^3 t3^4 + 6 t1^6 t2^3 t3^4 + t1^7 t2^3 t3^4 +
        t1 t2^4 t3^4 + t1^2 t2^4 t3^4 - 2 t1^3 t2^4 t3^4 + t1^4 t2^4 t3^4 + 8 t1^5 t2^4 t3^4 + 2 t1^6 t2^4 t3^4 -
        t1^7 t2^4 t3^4 + t1^8 t2^4 t3^4 + t1 t2^5 t3^4 - t1^2 t2^5 t3^4 + 2 t1^3 t2^5 t3^4 + 8 t1^4 t2^5 t3^4 +
        t1^5 t2^5 t3^4 - 2 t1^6 t2^5 t3^4 + t1^7 t2^5 t3^4 + t1^8 t2^5 t3^4 + t1^2 t2^6 t3^4 + 6 t1^3 t2^6 t3^4 +
        2 t1^4 t2^6 t3^4 - 2 t1^5 t2^6 t3^4 + t1^6 t2^6 t3^4 + t1^7 t2^6 t3^4 + t1 t2^7 t3^4 + 3 t1^2 t2^7 t3^4 +
        t1^3 t2^7 t3^4 - t1^4 t2^7 t3^4 + t1^5 t2^7 t3^4 + t1^6 t2^7 t3^4 + t1 t2^8 t3^4 + t1^2 t2^8 t3^4 +
        t1^4 t2^8 t3^4 + t1^5 t2^8 t3^4 - t1^5 t3^5 - t1^6 t3^5 - 2 t1^4 t2 t3^5 - 2 t1^5 t2 t3^5 -
        3 t1^3 t2^2 t3^5 - 3 t1^4 t2^2 t3^5 + t1^5 t2^2 t3^5 - t1^7 t2^2 t3^5 - 3 t1^2 t2^3 t3^5 -
        3 t1^3 t2^3 t3^5 + 2 t1^4 t2^3 t3^5 - 2 t1^6 t2^3 t3^5 + t1^8 t2^3 t3^5 - 2 t1 t2^4 t3^5 -
        3 t1^2 t2^4 t3^5 + 2 t1^3 t2^4 t3^5 - 4 t1^5 t2^4 t3^5 + 2 t1^7 t2^4 t3^5 - t2^5 t3^5 - 2 t1 t2^5 t3^5 +
        t1^2 t2^5 t3^5 - 4 t1^4 t2^5 t3^5 - t1^5 t2^5 t3^5 + 3 t1^6 t2^5 t3^5 - t2^6 t3^5 - 2 t1^3 t2^6 t3^5 +
        3 t1^5 t2^6 t3^5 - t1^2 t2^7 t3^5 + 2 t1^4 t2^7 t3^5 + t1^3 t2^8 t3^5 - t1^4 t3^6 + t1^4 t2 t3^6 -
        t1^6 t2 t3^6 - t1^7 t2 t3^6 - t1^2 t2^2 t3^6 + 2 t1^3 t2^2 t3^6 + t1^4 t2^2 t3^6 - 2 t1^5 t2^2 t3^6 -
        2 t1^6 t2^2 t3^6 + 2 t1^2 t2^3 t3^6 + t1^3 t2^3 t3^6 - 3 t1^4 t2^3 t3^6 - 3 t1^5 t2^3 t3^6 - t2^4 t3^6 +
        t1 t2^4 t3^6 + t1^2 t2^4 t3^6 - 3 t1^3 t2^4 t3^6 - 3 t1^4 t2^4 t3^6 + t1^5 t2^4 t3^6 - t1^6 t2^4 t3^6 -
        2 t1^2 t2^5 t3^6 - 3 t1^3 t2^5 t3^6 + t1^4 t2^5 t3^6 - t1^6 t2^5 t3^6 - t1 t2^6 t3^6 - 2 t1^2 t2^6 t3^6 -
        t1^4 t2^6 t3^6 - t1^5 t2^6 t3^6 - t1^6 t2^6 t3^6 - t1 t2^7 t3^6 + t1^3 t3^7 + t1^4 t3^7 + t1^5 t3^7 +
        t1^2 t2 t3^7 + t1^3 t2 t3^7 + t1^4 t2 t3^7 + t1 t2^2 t3^7 + t1^2 t2^2 t3^7 + t1^3 t2^2 t3^7 +
        t1^5 t2^2 t3^7 + t2^3 t3^7 + t1 t2^3 t3^7 + t1^2 t2^3 t3^7 + 2 t1^4 t2^3 t3^7 + t1^5 t2^3 t3^7 + t2^4 t3^7 +
        t1 t2^4 t3^7 + 2 t1^3 t2^4 t3^7 + t1^4 t2^4 t3^7 + t2^5 t3^7 + t1^2 t2^5 t3^7 + t1^3 t2^5 t3^7 -
        t1 t2 t3^8 - t1^2 t2 t3^8 - t1^3 t2 t3^8 - t1 t2^2 t3^8 - t1^2 t2^2 t3^8 - t1 t2^3 t3^8)) /
   ((-1 + t1)^3 (t1^2 - t2)^2 (-1 + t2)^3 (t1 - t2^2)^2 (t1^3 - t2^2) (t1^2 - t2^3)
     (t1 - t3)^3 (t1^3 - t3) (t2 - t3)^3 (t1^2 t2 - t3) (t1 t2^2 - t3) (t2^3 - t3)
     (-1 + t3)^2 (t1 + t3) (t2 + t3) (-t2^2 + t1 t3) (t1^2 - t2 t3) (t1 t2 - t3^2)))
```

```
In[277]:= T1321[t1_, t2_, t3_, u_, v_] :=
 Det[DiagonalMatrix[{-u + 1, -t1 * u + 1, -t1^2 * u + 1, -t2 * u + 1, -t1 * t2 * u + 1,
    -t2^2 * u + 1, -t3 * u + 1, -v + 1, (t1 - v) / t1, (t1^2 - v) / t1^2,
    (t2 - v) / t2, (t1 * t2 - v) / (t1 * t2), (t2^2 - v) / t2^2, (t3 - v) / t3}]]

In[278]:= GT1321[t1_, t2_, t3_, u_, v_] := G1321[t1, t2, t3] * T1321[t1, t2, t3, u, v]

In[279]:= GT7smoothPointsContributions[t1_, t2_, t3_, u_, v_] :=
 {{(-1) / (t2 - 1), (-1) / (t3 - 1), (-1) / (t1^7 - 1), t1 / (t1 - t2),
   t1 / (t1 - t3), (-1) / (t1^6 - 1), t1^2 / (t1^2 - t2), t1^2 / (t1^2 - t3),
   (-1) / (t1^5 - 1), t1^3 / (t1^3 - t2), t1^3 / (t1^3 - t3), (-1) / (t1^4 - 1),
   t1^4 / (t1^4 - t2), t1^4 / (t1^4 - t3), (-1) / (t1^3 - 1), t1^5 / (t1^5 - t2),
   t1^5 / (t1^5 - t3), (-1) / (t1^2 - 1), t1^6 / (t1^6 - t2), t1^6 / (t1^6 - t3),
   (-1) / (t1 - 1), -u + 1, -t1 * u + 1, -t1^2 * u + 1, -t1^3 * u + 1, -t1^4 * u + 1,
   -t1^5 * u + 1, -t1^6 * u + 1, -v + 1, (t1 - v) / t1, (t1^2 - v) / t1^2,
   (t1^3 - v) / t1^3, (t1^4 - v) / t1^4, (t1^5 - v) / t1^5, (t1^6 - v) / t1^6},
  {(-1) / (t3 - 1), t1 / (t1 - t3), (-1) / (t2 - 1), (-1) / (t1^5 - 1),
   t1^2 / (t1^2 - t3), t1 / (t1 - t2), (-1) / (t1^4 - 1), t1^3 / (t1^3 - t3),
   t1^2 / (t1^2 - t2), (-1) / (t1^3 - 1), t1^4 / (t1^4 - t3), t1^3 / (t1^3 - t2),
   (-1) / (t1^2 - 1), t1^5 / (t1^5 - t3), t1^4 / (t1^4 - t2), (-1) / (t1 - 1),
   t1^5 / (t1^5 - t2^2), t2 / (t2 - t3), (-1) / (t1 - 1), (-t2) / (t1^6 - t2),
   (-1) / (t2 - 1), -u + 1, -t1 * u + 1, -t1^2 * u + 1, -t1^3 * u + 1, -t1^4 * u + 1,
   -t1^5 * u + 1, -t2 * u + 1, -v + 1, (t1 - v) / t1, (t1^2 - v) / t1^2,
   (t1^3 - v) / t1^3, (t1^4 - v) / t1^4, (t1^5 - v) / t1^5, (t2 - v) / t2},
  {(-1) / (t3 - 1), t1 / (t1 - t3), t1^2 / (t1^2 - t3), (-1) / (t2 - 1),
   (-1) / (t1^3 - 1), t1^3 / (t1^3 - t3), t1 / (t1 - t2), (-1) / (t1^2 - 1),
   t1^3 / (t1^3 - t2^2), t1^4 / (t1^4 - t3), t1^2 / (t1^2 - t2), (-1) / (t1 - 1),
   t1^4 / (t1^4 - t2^2), t2 / (t2 - t3), (-1) / (t1^2 - 1), (-t2) / (t1^5 - t2),
   (-1) / (t2 - 1), (t1 * t2) / (t1 * t2 - t3), (-1) / (t1 - 1), (-t2) / (t1^4 - t2),
   t1 / (t1 - t2), -u + 1, -t1 * u + 1, -t1^2 * u + 1, -t1^3 * u + 1, -t1^4 * u + 1,
   -t2 * u + 1, -t1 * t2 * u + 1, -v + 1, (t1 - v) / t1, (t1^2 - v) / t1^2,
   (t1^3 - v) / t1^3, (t1^4 - v) / t1^4, (t2 - v) / t2, (t1 * t2 - v) / (t1 * t2)},
  {(-1) / (t3 - 1), t1 / (t1 - t3), (-1) / (t2 - 1), (-1) / (t1^4 - 1),
   t1^2 / (t1^2 - t3), t1 / (t1 - t2), (-1) / (t1^3 - 1), t1^3 / (t1^3 - t3),
   t1^2 / (t1^2 - t2), (-1) / (t1^2 - 1), t1^4 / (t1^4 - t3), t1^3 / (t1^3 - t2),
   (-1) / (t1 - 1), t1^4 / (t1^4 - t2^3), t2 / (t2 - t3), (-1) / (t1 - 1),
   (-1) / (t2^2 - 1), t2^2 / (t2^2 - t3), (-t2) / (t1 - t2), (-t2^2) / (t1^5 - t2^2),
   (-1) / (t2 - 1), -u + 1, -t1 * u + 1, -t1^2 * u + 1, -t1^3 * u + 1, -t1^4 * u + 1,
   -t2 * u + 1, -t2^2 * u + 1, -v + 1, (t1 - v) / t1, (t1^2 - v) / t1^2,
   (t1^3 - v) / t1^3, (t1^4 - v) / t1^4, (t2 - v) / t2, (t2^2 - v) / t2^2},
  {(-1) / (t3 - 1), t1 / (t1 - t3), (-1) / (t1^3 - 1), (-t1) / (t2^2 - t1),
   t1^2 / (t1^2 - t3), (-1) / (t1^2 - 1), t1^2 / (t1^2 - t2^2),
   t1^3 / (t1^3 - t3), (-1) / (t1 - 1), (-1) / (t2 - 1), t1^3 / (t1^3 - t2^2),
   t2 / (t2 - t3), (-t2) / (t1^4 - t2), (-1) / (t2 - 1), (t1 * t2) / (t1 * t2 - t3),
   (-t2) / (t1^3 - t2), t1 / (t1 - t2), (t1^2 * t2) / (t1^2 * t2 - t3),
   (-t2) / (t1^2 - t2), (-1) / (t1 - 1), t1^2 / (t1^2 - t2), -u + 1,
   -t1 * u + 1, -t1^2 * u + 1, -t1^3 * u + 1, -t2 * u + 1, -t1 * t2 * u + 1,
   -t1^2 * t2 * u + 1, -v + 1, (t1 - v) / t1, (t1^2 - v) / t1^2, (t1^3 - v) / t1^3,
```

```
 (t2 - v) / t2, (t1 * t2 - v) / (t1 * t2), (t1^2 * t2 - v) / (t1^2 * t2)},
{(-1) / (t3 - 1), t1 / (t1 - t3), t1^2 / (t1^2 - t3), (-1) / (t2 - 1),
 (-1) / (t1^2 - 1), t1^3 / (t1^3 - t3), t1 / (t1 - t2), (-1) / (t1 - 1),
 t1^2 / (t1^2 - t2^2), t1^3 / (t1^3 - t2^3), t2 / (t2 - t3), (t1 * t2) / (t1 * t2 - t3),
 (-1) / (t1 - 1), (-t2) / (t1^3 - t2), (-1) / (t2 - 1), (-t1) / (t2^2 - t1),
 t2^2 / (t2^2 - t3), (-t2) / (t1^2 - t2), (-t2^2) / (t1^4 - t2^2), (-1) / (t1 - 1),
 (-1) / (t2 - 1), -u + 1, -t1 * u + 1, -t1^2 * u + 1, -t1^3 * u + 1, -t2 * u + 1,
 -t1 * t2 * u + 1, -t2^2 * u + 1, -v + 1, (t1 - v) / t1, (t1^2 - v) / t1^2,
 (t1^3 - v) / t1^3, (t2 - v) / t2, (t1 * t2 - v) / (t1 * t2), (t2^2 - v) / t2^2},
{(-1) / (t3 - 1), t1 / (t1 - t3), (-1) / (t2 - 1), (-1) / (t1^3 - 1),
 t1^2 / (t1^2 - t3), t1 / (t1 - t2), (-1) / (t1^2 - 1), t1^3 / (t1^3 - t3),
 t1^2 / (t1^2 - t2), (-1) / (t1 - 1), (-t1^3) / (t2^4 - t1^3), t2 / (t2 - t3),
 (-1) / (t1 - 1), (-1) / (t2^3 - 1), t2^2 / (t2^2 - t3), (-t2) / (t1 - t2),
 (-1) / (t2^2 - 1), t2^3 / (t2^3 - t3), t2^2 / (t2^2 - t1), (-t2^3) / (t1^4 - t2^3),
 (-1) / (t2 - 1), -u + 1, -t1 * u + 1, -t1^2 * u + 1, -t1^3 * u + 1, -t2 * u + 1,
 -t2^2 * u + 1, -t2^3 * u + 1, -v + 1, (t1 - v) / t1, (t1^2 - v) / t1^2,
 (t1^3 - v) / t1^3, (t2 - v) / t2, (t2^2 - v) / t2^2, (t2^3 - v) / t2^3},
{(-1) / (t3 - 1), t1 / (t1 - t3), (-1) / (t1^2 - 1), (-1) / (t2^2 - 1),
 t1^2 / (t1^2 - t3), (-1) / (t1 - 1), (-t1) / (t2^2 - t1), (-t1^2) / (t2^3 - t1^2),
 t2 / (t2 - t3), (-t2) / (t1^3 - t2), (t1 * t2) / (t1 * t2 - t3), (-t2) / (t1^2 - t2),
 (-1) / (t2 - 1), (t1^2 * t2) / (t1^2 * t2 - t3), (-t2) / (t1 - t2), t1 / (t1 - t2),
 t1^2 / (t1^2 - t2^2), t2^2 / (t2^2 - t3), (-t2^2) / (t1^3 - t2^2), (-1) / (t1 - 1),
 (-1) / (t2 - 1), -u + 1, -t1 * u + 1, -t1^2 * u + 1, -t2 * u + 1, -t1 * t2 * u + 1,
 -t1^2 * t2 * u + 1, -t2^2 * u + 1, -v + 1, (t1 - v) / t1, (t1^2 - v) / t1^2, (t2 - v) / t2,
 (t1 * t2 - v) / (t1 * t2), (t1^2 * t2 - v) / (t1^2 * t2), (t2^2 - v) / t2^2},
{(-1) / (t3 - 1), t1 / (t1 - t3), (-1) / (t1^2 - 1), (-t1) / (t2^3 - t1),
 t1^2 / (t1^2 - t3), (-1) / (t1 - 1), (-1) / (t2 - 1), (-t1^2) / (t2^3 - t1^2),
 t2 / (t2 - t3), (-1) / (t2^2 - 1), (t1 * t2) / (t1 * t2 - t3),
 (-t2) / (t1^2 - t2), (-1) / (t1 - 1), (-t1) / (t2^2 - t1), t2^2 / (t2^2 - t3),
 (-t2^2) / (t1^3 - t2^2), (-1) / (t2 - 1), (t1 * t2^2) / (t1 * t2^2 - t3),
 (-t2^2) / (t1^2 - t2^2), (-t2) / (t1 - t2), t1 / (t1 - t2), -u + 1,
 -t1 * u + 1, -t1^2 * u + 1, -t2 * u + 1, -t1 * t2 * u + 1, -t2^2 * u + 1,
 -t1 * t2^2 * u + 1, -v + 1, (t1 - v) / t1, (t1^2 - v) / t1^2, (t2 - v) / t2,
 (t1 * t2 - v) / (t1 * t2), (t2^2 - v) / t2^2, (t1 * t2^2 - v) / (t1 * t2^2)},
{(-1) / (t3 - 1), t1 / (t1 - t3), t1^2 / (t1^2 - t3), (-1) / (t1 - 1),
 (-1) / (t2 - 1), (-t1) / (t2^2 - t1), (-t1^2) / (t2^4 - t1^2), t2 / (t2 - t3),
 (t1 * t2) / (t1 * t2 - t3), (-t2) / (t1^2 - t2), (-1) / (t1 - 1), (-1) / (t2 - 1),
 (-t1) / (t2^3 - t1), t2^2 / (t2^2 - t3), (-1) / (t1 - 1), (-1) / (t2^2 - 1),
 t2^3 / (t2^3 - t3), (-t2^3) / (t1^3 - t2^3), (-t2^2) / (t1^2 - t2^2),
 (-t2) / (t1 - t2), (-1) / (t2 - 1), -u + 1, -t1 * u + 1, -t1^2 * u + 1, -t2 * u + 1,
 -t1 * t2 * u + 1, -t2^2 * u + 1, -t2^3 * u + 1, -v + 1, (t1 - v) / t1, (t1^2 - v) / t1^2,
 (t2 - v) / t2, (t1 * t2 - v) / (t1 * t2), (t2^2 - v) / t2^2, (t2^3 - v) / t2^3},
{(-1) / (t3 - 1), t1 / (t1 - t3), (-1) / (t2 - 1), (-1) / (t1^2 - 1),
 t1^2 / (t1^2 - t3), t1 / (t1 - t2), (-1) / (t1 - 1), (-t1^2) / (t2^5 - t1^2),
 t2 / (t2 - t3), (-1) / (t1 - 1), (-1) / (t2^4 - 1), t2^2 / (t2^2 - t3),
 (-t2) / (t1 - t2), (-1) / (t2^3 - 1), t2^3 / (t2^3 - t3), t2^2 / (t2^2 - t1),
 (-1) / (t2^2 - 1), t2^4 / (t2^4 - t3), t2^3 / (t2^3 - t1), t2^4 / (t2^4 - t1^3),
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 (-1) / (t2 - 1), -u + 1, -t1 * u + 1, -t1^2 * u + 1, -t2 * u + 1, -t2^2 * u + 1,
 -t2^3 * u + 1, -t2^4 * u + 1, -v + 1, (t1 - v) / t1, (t1^2 - v) / t1^2,
 (t2 - v) / t2, (t2^2 - v) / t2^2, (t2^3 - v) / t2^3, (t2^4 - v) / t2^4},
{(-1) / (t3 - 1), t1 / (t1 - t3), (-1) / (t1 - 1), (-1) / (t2^3 - 1),
 (-t1) / (t2^4 - t1), t2 / (t2 - t3), (-t2) / (t1^2 - t2), (t1 * t2) / (t1 * t2 - t3),
 (-t2) / (t1 - t2), (-1) / (t2^2 - 1), (-t1) / (t2^3 - t1),
 t2^2 / (t2^2 - t3), (-t2^2) / (t1^2 - t2^2), (t1 * t2^2) / (t1 * t2^2 - t3),
 t2^2 / (t2^2 - t1), (-1) / (t2 - 1), (-t1) / (t2^2 - t1), t2^3 / (t2^3 - t3),
 t2^3 / (t2^3 - t1^2), (-1) / (t1 - 1), (-1) / (t2 - 1), -u + 1,
 -t1 * u + 1, -t2 * u + 1, -t1 * t2 * u + 1, -t2^2 * u + 1, -t1 * t2^2 * u + 1,
 -t2^3 * u + 1, -v + 1, (t1 - v) / t1, (t2 - v) / t2, (t1 * t2 - v) / (t1 * t2),
 (t2^2 - v) / t2^2, (t1 * t2^2 - v) / (t1 * t2^2), (t2^3 - v) / t2^3},
{(-1) / (t3 - 1), t1 / (t1 - t3), (-1) / (t1 - 1), (-1) / (t2^2 - 1),
 (-t1) / (t2^5 - t1), t2 / (t2 - t3), (t1 * t2) / (t1 * t2 - t3), (-t2) / (t1 - t2),
 (-1) / (t2 - 1), (-t1) / (t2^4 - t1), t2^2 / (t2^2 - t3), (-1) / (t1 - 1),
 (-1) / (t2^3 - 1), t2^3 / (t2^3 - t3), t2^3 / (t2^3 - t1^2), (-t2) / (t1 - t2),
 (-1) / (t2^2 - 1), t2^4 / (t2^4 - t3), t2^4 / (t2^4 - t1^2), t2^2 / (t2^2 - t1),
 (-1) / (t2 - 1), -u + 1, -t1 * u + 1, -t2 * u + 1, -t1 * t2 * u + 1, -t2^2 * u + 1,
 -t2^3 * u + 1, -t2^4 * u + 1, -v + 1, (t1 - v) / t1, (t2 - v) / t2,
 (t1 * t2 - v) / (t1 * t2), (t2^2 - v) / t2^2, (t2^3 - v) / t2^3, (t2^4 - v) / t2^4},
{(-1) / (t3 - 1), t1 / (t1 - t3), (-1) / (t1 - 1), (-1) / (t2 - 1),
 (-t1) / (t2^6 - t1), t2 / (t2 - t3), (-1) / (t1 - 1), (-1) / (t2^5 - 1),
 t2^2 / (t2^2 - t3), (-t2) / (t1 - t2), (-1) / (t2^4 - 1), t2^3 / (t2^3 - t3),
 t2^2 / (t2^2 - t1), (-1) / (t2^3 - 1), t2^4 / (t2^4 - t3), t2^3 / (t2^3 - t1),
 (-1) / (t2^2 - 1), t2^5 / (t2^5 - t3), t2^5 / (t2^5 - t1^2), t2^4 / (t2^4 - t1),
 (-1) / (t2 - 1), -u + 1, -t1 * u + 1, -t2 * u + 1, -t2^2 * u + 1, -t2^3 * u + 1,
 -t2^4 * u + 1, -t2^5 * u + 1, -v + 1, (t1 - v) / t1, (t2 - v) / t2,
 (t2^2 - v) / t2^2, (t2^3 - v) / t2^3, (t2^4 - v) / t2^4, (t2^5 - v) / t2^5},
{(-1) / (t1 - 1), (-1) / (t3 - 1), (-1) / (t2^7 - 1), (-t2) / (t1 - t2),
 t2 / (t2 - t3), (-1) / (t2^6 - 1), t2^2 / (t2^2 - t1), t2^2 / (t2^2 - t3),
 (-1) / (t2^5 - 1), t2^3 / (t2^3 - t1), t2^3 / (t2^3 - t3), (-1) / (t2^4 - 1),
 t2^4 / (t2^4 - t1), t2^4 / (t2^4 - t3), (-1) / (t2^3 - 1), t2^5 / (t2^5 - t1),
 t2^5 / (t2^5 - t3), (-1) / (t2^2 - 1), t2^6 / (t2^6 - t1), t2^6 / (t2^6 - t3),
 (-1) / (t2 - 1), -u + 1, -t2 * u + 1, -t2^2 * u + 1, -t2^3 * u + 1, -t2^4 * u + 1,
 -t2^5 * u + 1, -t2^6 * u + 1, -v + 1, (t2 - v) / t2, (t2^2 - v) / t2^2,
 (t2^3 - v) / t2^3, (t2^4 - v) / t2^4, (t2^5 - v) / t2^5, (t2^6 - v) / t2^6},
{(-1) / (t2 - 1), t1 / (t1 - t2), (-1) / (t3 - 1), (-1) / (t1^5 - 1),
 t1^2 / (t1^2 - t2), t1 / (t1 - t3), (-1) / (t1^4 - 1), t1^3 / (t1^3 - t2),
 t1^2 / (t1^2 - t3), (-1) / (t1^3 - 1), t1^4 / (t1^4 - t2), t1^3 / (t1^3 - t3),
 (-1) / (t1^2 - 1), t1^5 / (t1^5 - t2), t1^4 / (t1^4 - t3), (-1) / (t1 - 1),
 t1^5 / (t1^5 - t3^2), (-t3) / (t2 - t3), (-1) / (t1 - 1), (-t3) / (t1^6 - t3),
 (-1) / (t3 - 1), -u + 1, -t1 * u + 1, -t1^2 * u + 1, -t1^3 * u + 1, -t1^4 * u + 1,
 -t1^5 * u + 1, -t3 * u + 1, -v + 1, (t1 - v) / t1, (t1^2 - v) / t1^2,
 (t1^3 - v) / t1^3, (t1^4 - v) / t1^4, (t1^5 - v) / t1^5, (t3 - v) / t3},
{(-1) / (t3 - 1), (-1) / (t1^2 - 1), (-t1) / (t2^2 - t1), t1 / (t1 - t3), (-1) / (t1 - 1),
 t1^2 / (t1^2 - t2^2), (-t2) / (t1^3 - t2), (-1) / (t2 - 1), t2 / (t2 - t3),
 (-t2) / (t1^2 - t2), t1 / (t1 - t2), (t1 * t2) / (t1 * t2 - t3), (-t2) / (t1 - t2),
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 t1^2 / (t1^2 - t2), t1^2 / (t1^2 - t3), (t1^2 * t2) / (t1^2 * t2 - t3^2),
 (-1) / (t1 - 1), (-t3) / (t1^3 - t3), (-t3) / (t2^2 - t3), (-1) / (t2 - 1),
 (-1) / (t3 - 1), -u + 1, -t1 * u + 1, -t1^2 * u + 1, -t2 * u + 1, -t1 * t2 * u + 1,
 -t1^2 * t2 * u + 1, -t3 * u + 1, -v + 1, (t1 - v) / t1, (t1^2 - v) / t1^2,
 (t2 - v) / t2, (t1 * t2 - v) / (t1 * t2), (t1^2 * t2 - v) / (t1^2 * t2), (t3 - v) / t3},
{(-1) / (t1 - 1), (-1) / (t3 - 1), (-t1) / (t2^3 - t1), (-t2) / (t1^2 - t2),
 (-1) / (t2^2 - 1), (-t2) / (t1 - t2), t2 / (t2 - t3), t1 / (t1 - t3),
 (-t1) / (t2^2 - t1), (-t2^2) / (t1^2 - t2^2), (-1) / (t2 - 1),
 t2^2 / (t2^2 - t1), t2^2 / (t2^2 - t3), (t1 * t2) / (t1 * t2 - t3),
 t1 / (t1 - t2), (t1 * t2^2) / (t1 * t2^2 - t3^2), (-t3) / (t1^2 - t3),
 (-1) / (t1 - 1), (-1) / (t2 - 1), (-t3) / (t2^3 - t3), (-1) / (t3 - 1), -u + 1,
 -t1 * u + 1, -t2 * u + 1, -t1 * t2 * u + 1, -t2^2 * u + 1, -t1 * t2^2 * u + 1,
 -t3 * u + 1, -v + 1, (t1 - v) / t1, (t2 - v) / t2, (t1 * t2 - v) / (t1 * t2),
 (t2^2 - v) / t2^2, (t1 * t2^2 - v) / (t1 * t2^2), (t3 - v) / t3},
{(-1) / (t1 - 1), (-t2) / (t1 - t2), (-1) / (t3 - 1), (-1) / (t2^5 - 1),
 t2^2 / (t2^2 - t1), t2 / (t2 - t3), (-1) / (t2^4 - 1), t2^3 / (t2^3 - t1),
 t2^2 / (t2^2 - t3), (-1) / (t2^3 - 1), t2^4 / (t2^4 - t1), t2^3 / (t2^3 - t3),
 (-1) / (t2^2 - 1), t2^5 / (t2^5 - t1), t2^4 / (t2^4 - t3), (-1) / (t2 - 1),
 t2^5 / (t2^5 - t3^2), (-t3) / (t1 - t3), (-1) / (t2 - 1), (-t3) / (t2^6 - t3),
 (-1) / (t3 - 1), -u + 1, -t2 * u + 1, -t2^2 * u + 1, -t2^3 * u + 1, -t2^4 * u + 1,
 -t2^5 * u + 1, -t3 * u + 1, -v + 1, (t2 - v) / t2, (t2^2 - v) / t2^2,
 (t2^3 - v) / t2^3, (t2^4 - v) / t2^4, (t2^5 - v) / t2^5, (t3 - v) / t3},
{(-1) / (t2 - 1), t1 / (t1 - t2), t1^2 / (t1^2 - t2), (-1) / (t3 - 1),
 (-1) / (t1^3 - 1), t1^3 / (t1^3 - t2), t1 / (t1 - t3), (-1) / (t1^2 - 1),
 t1^3 / (t1^3 - t3^2), t1^4 / (t1^4 - t2), t1^2 / (t1^2 - t3), (-1) / (t1 - 1),
 t1^4 / (t1^4 - t3^2), (-t3) / (t2 - t3), (-1) / (t1^2 - 1), (-t3) / (t1^5 - t3),
 (-1) / (t3 - 1), (t1 * t3) / (t1 * t3 - t2), (-1) / (t1 - 1), (-t3) / (t1^4 - t3),
 t1 / (t1 - t3), -u + 1, -t1 * u + 1, -t1^2 * u + 1, -t1^3 * u + 1, -t1^4 * u + 1,
 -t3 * u + 1, -t1 * t3 * u + 1, -v + 1, (t1 - v) / t1, (t1^2 - v) / t1^2,
 (t1^3 - v) / t1^3, (t1^4 - v) / t1^4, (t3 - v) / t3, (t1 * t3 - v) / (t1 * t3)},
{(-1) / (t2 - 1), (-1) / (t3 - 1), (-1) / (t1^3 - 1), t1 / (t1 - t2), t1 / (t1 - t3),
 (-1) / (t1^2 - 1), t1^2 / (t1^2 - t2), t1^2 / (t1^2 - t3), (-1) / (t1 - 1),
 t1^3 / (t1^3 - t2^2), t1^3 / (t1^3 - t3^2), (-1) / (t1 - 1), (-1) / (t2 - 1),
 (-t2) / (t3^2 - t2), (-t3) / (t2^2 - t3), (-1) / (t3 - 1), (-t3) / (t1 - t3),
 (-t2) / (t1 - t2), (-t2 * t3) / (t1^4 - t2 * t3), (-t3) / (t2 - t3),
 t2 / (t2 - t3), -u + 1, -t1 * u + 1, -t1^2 * u + 1, -t1^3 * u + 1, -t2 * u + 1,
 -t3 * u + 1, -t2 * t3 * u + 1, -v + 1, (t1 - v) / t1, (t1^2 - v) / t1^2,
 (t1^3 - v) / t1^3, (t2 - v) / t2, (t3 - v) / t3, (t2 * t3 - v) / (t2 * t3)},
{(-1) / (t3 - 1), (-t1) / (t2^2 - t1), t1 / (t1 - t3), (-1) / (t1 - 1), (-1) / (t2 - 1),
 t1^2 / (t1^2 - t2^2), t1^2 / (t1^2 - t3^2), (-1) / (t2 - 1), t2 / (t2 - t3),
 (-t2) / (t1^2 - t2), (-1) / (t1 - 1), t1 / (t1 - t2), (t1 * t2) / (t1 * t2 - t3^2),
 (-1) / (t1 - 1), (-t3) / (t2^2 - t3), (-1) / (t3 - 1), (-t2) / (t1 - t2),
 (-t2 * t3) / (t1^3 - t2 * t3), (-t3) / (t1^2 - t3), (-t3) / (t2 - t3),
 t2 / (t2 - t3), -u + 1, -t1 * u + 1, -t1^2 * u + 1, -t2 * u + 1, -t1 * t2 * u + 1,
 -t3 * u + 1, -t2 * t3 * u + 1, -v + 1, (t1 - v) / t1, (t1^2 - v) / t1^2,
 (t2 - v) / t2, (t1 * t2 - v) / (t1 * t2), (t3 - v) / t3, (t2 * t3 - v) / (t2 * t3)},
{(-1) / (t1 - 1), (-t2) / (t1^2 - t2), (-1) / (t3 - 1), (-t2) / (t1 - t2),
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 t1 / (t1 - t3), (-1) / (t2 - 1), (-t1) / (t2^2 - t1), (t1 * t2) / (t1 * t2 - t3^2),
 (-t2^2) / (t1^2 - t2^2), t2 / (t2 - t3), (-1) / (t1 - 1), (-1) / (t2 - 1),
 t2^2 / (t2^2 - t3^2), (-t3) / (t1^2 - t3), (-1) / (t2 - 1), (-1) / (t3 - 1),
 (-t3) / (t1 - t3), t1 / (t1 - t2), (-t3) / (t2^2 - t3), (-t1 * t3) / (t2^3 - t1 * t3),
 t1 / (t1 - t3), -u + 1, -t1 * u + 1, -t2 * u + 1, -t1 * t2 * u + 1, -t2^2 * u + 1,
 -t3 * u + 1, -t1 * t3 * u + 1, -v + 1, (t1 - v) / t1, (t2 - v) / t2,
 (t1 * t2 - v) / (t1 * t2), (t2^2 - v) / t2^2, (t3 - v) / t3, (t1 * t3 - v) / (t1 * t3)},
{(-1) / (t1 - 1), (-1) / (t2 - 1), (-t1) / (t3^2 - t1), (-1) / (t1 - 1),
 (-1) / (t3 - 1), (-1) / (t2^3 - 1), (-t2) / (t1 - t2), t2 / (t2 - t3),
 (-1) / (t2^2 - 1), t2^3 / (t2^3 - t1^2), t2^2 / (t2^2 - t1), t2^2 / (t2^2 - t3),
 (-1) / (t2 - 1), t2^3 / (t2^3 - t3^2), (-t3) / (t1^2 - t3), (-1) / (t3 - 1),
 (-t3) / (t1 - t3), (-t3) / (t2 - t3), t1 / (t1 - t2), (-t1 * t3) / (t2^4 - t1 * t3),
 t1 / (t1 - t3), -u + 1, -t1 * u + 1, -t2 * u + 1, -t2^2 * u + 1, -t2^3 * u + 1,
 -t3 * u + 1, -t1 * t3 * u + 1, -v + 1, (t1 - v) / t1, (t2 - v) / t2,
 (t2^2 - v) / t2^2, (t2^3 - v) / t2^3, (t3 - v) / t3, (t1 * t3 - v) / (t1 * t3)},
{(-1) / (t1 - 1), (-t2) / (t1 - t2), t2^2 / (t2^2 - t1), (-1) / (t3 - 1),
 (-1) / (t2^3 - 1), t2^3 / (t2^3 - t1), t2 / (t2 - t3), (-1) / (t2^2 - 1),
 t2^3 / (t2^3 - t3^2), t2^4 / (t2^4 - t1), t2^2 / (t2^2 - t3), (-1) / (t2 - 1),
 t2^4 / (t2^4 - t3^2), (-t3) / (t1 - t3), (-1) / (t2^2 - 1), (-t3) / (t2^5 - t3),
 (-1) / (t3 - 1), (t2 * t3) / (t2 * t3 - t1), (-1) / (t2 - 1), (-t3) / (t2^4 - t3),
 t2 / (t2 - t3), -u + 1, -t2 * u + 1, -t2^2 * u + 1, -t2^3 * u + 1, -t2^4 * u + 1,
 -t3 * u + 1, -t2 * t3 * u + 1, -v + 1, (t2 - v) / t2, (t2^2 - v) / t2^2,
 (t2^3 - v) / t2^3, (t2^4 - v) / t2^4, (t3 - v) / t3, (t2 * t3 - v) / (t2 * t3)},
{(-1) / (t2 - 1), t1 / (t1 - t2), (-1) / (t3 - 1), (-1) / (t1^4 - 1),
 t1^2 / (t1^2 - t2), t1 / (t1 - t3), (-1) / (t1^3 - 1), t1^3 / (t1^3 - t2),
 t1^2 / (t1^2 - t3), (-1) / (t1^2 - 1), t1^4 / (t1^4 - t2), t1^3 / (t1^3 - t3),
 (-1) / (t1 - 1), t1^4 / (t1^4 - t3^3), (-t3) / (t2 - t3), (-1) / (t1 - 1),
 (-1) / (t3^2 - 1), t3^2 / (t3^2 - t2), (-t3) / (t1 - t3), (-t3^2) / (t1^5 - t3^2),
 (-1) / (t3 - 1), -u + 1, -t1 * u + 1, -t1^2 * u + 1, -t1^3 * u + 1, -t1^4 * u + 1,
 -t3 * u + 1, -t3^2 * u + 1, -v + 1, (t1 - v) / t1, (t1^2 - v) / t1^2,
 (t1^3 - v) / t1^3, (t1^4 - v) / t1^4, (t3 - v) / t3, (t3^2 - v) / t3^2},
{(-1) / (t1 - 1), (-t2) / (t1 - t2), (-1) / (t3 - 1), (-1) / (t2^4 - 1),
 t2^2 / (t2^2 - t1), t2 / (t2 - t3), (-1) / (t2^3 - 1), t2^3 / (t2^3 - t1),
 t2^2 / (t2^2 - t3), (-1) / (t2^2 - 1), t2^4 / (t2^4 - t1), t2^3 / (t2^3 - t3),
 (-1) / (t2 - 1), t2^4 / (t2^4 - t3^3), (-t3) / (t1 - t3), (-1) / (t2 - 1),
 (-1) / (t3^2 - 1), t3^2 / (t3^2 - t1), (-t3) / (t2 - t3), (-t3^2) / (t2^5 - t3^2),
 (-1) / (t3 - 1), -u + 1, -t2 * u + 1, -t2^2 * u + 1, -t2^3 * u + 1, -t2^4 * u + 1,
 -t3 * u + 1, -t3^2 * u + 1, -v + 1, (t2 - v) / t2, (t2^2 - v) / t2^2,
 (t2^3 - v) / t2^3, (t2^4 - v) / t2^4, (t3 - v) / t3, (t3^2 - v) / t3^2},
{(-1) / (t2 - 1), t1 / (t1 - t2), (-1) / (t1^3 - 1), (-t1) / (t3^2 - t1),
 t1^2 / (t1^2 - t2), (-1) / (t1^2 - 1), t1^2 / (t1^2 - t3^2), t1^3 / (t1^3 - t2),
 (-1) / (t1 - 1), (-1) / (t3 - 1), t1^3 / (t1^3 - t3^2), (-t3) / (t2 - t3),
 (-t3) / (t1^4 - t3), (-1) / (t3 - 1), (t1 * t3) / (t1 * t3 - t2),
 (-t3) / (t1^3 - t3), t1 / (t1 - t3), (t1^2 * t3) / (t1^2 * t3 - t2),
 (-t3) / (t1^2 - t3), (-1) / (t1 - 1), t1^2 / (t1^2 - t3), -u + 1,
 -t1 * u + 1, -t1^2 * u + 1, -t1^3 * u + 1, -t3 * u + 1, -t1 * t3 * u + 1,
 -t1^2 * t3 * u + 1, -v + 1, (t1 - v) / t1, (t1^2 - v) / t1^2, (t1^3 - v) / t1^3,
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 (t3 - v) / t3, (t1 * t3 - v) / (t1 * t3), (t1^2 * t3 - v) / (t1^2 * t3)},
{(-1) / (t2 - 1), (-1) / (t1^2 - 1), (-t1) / (t3^2 - t1), t1 / (t1 - t2),
 (-1) / (t1 - 1), t1^2 / (t1^2 - t3^2), (-1) / (t1 - 1), (-t2) / (t1^3 - t2),
 (-1) / (t2 - 1), (-1) / (t3 - 1), (-t2) / (t3^2 - t2), (-t3) / (t1^3 - t3),
 (-1) / (t3 - 1), (-t3) / (t2 - t3), (-t3) / (t1^2 - t3), t1 / (t1 - t3),
 (t1 * t3) / (t1 * t3 - t2), (-t3) / (t1 - t3), (t1^2 * t3) / (t1^2 * t3 - t2^2),
 t1^2 / (t1^2 - t2), t1^2 / (t1^2 - t3), -u + 1, -t1 * u + 1, -t1^2 * u + 1, -t2 * u + 1,
 -t3 * u + 1, -t1 * t3 * u + 1, -t1^2 * t3 * u + 1, -v + 1, (t1 - v) / t1, (t1^2 - v) / t1^2,
 (t2 - v) / t2, (t3 - v) / t3, (t1 * t3 - v) / (t1 * t3), (t1^2 * t3 - v) / (t1^2 * t3)},
{(-1) / (t2 - 1), (-t1) / (t3^2 - t1), t1 / (t1 - t2), (-1) / (t1 - 1),
 (-1) / (t3 - 1), t1^2 / (t1^2 - t2^2), t1^2 / (t1^2 - t3^2), (-1) / (t1 - 1),
 (-1) / (t2 - 1), (-t2) / (t3^2 - t2), (-1) / (t3 - 1), (-t3) / (t2 - t3),
 (-t3) / (t1^2 - t3), (-1) / (t1 - 1), (-t1 * t3) / (t2^2 - t1 * t3), t1 / (t1 - t3),
 (-t3) / (t1 - t3), (-t2 * t3) / (t1^3 - t2 * t3), (-t2) / (t1^2 - t2),
 (-t3) / (t2 - t3), t2 / (t2 - t3), -u + 1, -t1 * u + 1, -t1^2 * u + 1, -t2 * u + 1,
 -t3 * u + 1, -t1 * t3 * u + 1, -t2 * t3 * u + 1, -v + 1, (t1 - v) / t1, (t1^2 - v) / t1^2,
 (t2 - v) / t2, (t3 - v) / t3, (t1 * t3 - v) / (t1 * t3), (t2 * t3 - v) / (t2 * t3)},
{(-1) / (t1 - 1), (-t1) / (t2^2 - t1), (-t1) / (t3^2 - t1), (-t2) / (t1^2 - t2),
 (-1) / (t2 - 1), (-t2) / (t3^2 - t2), (-t2) / (t1 - t2), t1 / (t1 - t2), (-1) / (t3 - 1),
 (t1 * t2) / (t1 * t2 - t3^2), (-t3) / (t1^2 - t3), (-t3) / (t2^2 - t3), (-1) / (t3 - 1),
 (-t3) / (t1 - t3), (-t1 * t3) / (t2^2 - t1 * t3), (-1) / (t2 - 1), t1 / (t1 - t3),
 (-t2 * t3) / (t1^2 - t2 * t3), (-t3) / (t2 - t3), (-1) / (t1 - 1), t2 / (t2 - t3),
 -u + 1, -t1 * u + 1, -t2 * u + 1, -t1 * t2 * u + 1, -t3 * u + 1, -t1 * t3 * u + 1,
 -t2 * t3 * u + 1, -v + 1, (t1 - v) / t1, (t2 - v) / t2, (t1 * t2 - v) / (t1 * t2),
 (t3 - v) / t3, (t1 * t3 - v) / (t1 * t3), (t2 * t3 - v) / (t2 * t3)},
{(-1) / (t1 - 1), (-1) / (t2 - 1), (-t1) / (t3^2 - t1), (-1) / (t1 - 1),
 (-t2) / (t3^2 - t2), (-t2^2) / (t1^2 - t2^2), (-t2) / (t1 - t2), (-1) / (t2 - 1),
 (-1) / (t3 - 1), t2^2 / (t2^2 - t3^2), (-1) / (t3 - 1), (-t3) / (t1 - t3),
 (-t3) / (t2 - t3), (-t1 * t3) / (t2^3 - t1 * t3), (-t1) / (t2^2 - t1), t1 / (t1 - t3),
 (-t2 * t3) / (t1^2 - t2 * t3), (-t3) / (t1 - t3), (-t3) / (t2^2 - t3),
 (-1) / (t2 - 1), t2 / (t2 - t3), -u + 1, -t1 * u + 1, -t2 * u + 1, -t2^2 * u + 1,
 -t3 * u + 1, -t1 * t3 * u + 1, -t2 * t3 * u + 1, -v + 1, (t1 - v) / t1, (t2 - v) / t2,
 (t2^2 - v) / t2^2, (t3 - v) / t3, (t1 * t3 - v) / (t1 * t3), (t2 * t3 - v) / (t2 * t3)},
{(-1) / (t1 - 1), (-1) / (t2 - 1), (-1) / (t3 - 1), (-t1) / (t2^3 - t1),
 (-t1) / (t3^2 - t1), (-1) / (t1 - 1), (-1) / (t2^2 - 1), (-t2) / (t3^2 - t2),
 (-t2) / (t1 - t2), (-1) / (t2 - 1), t2^2 / (t2^2 - t3^2), (-t3) / (t2^3 - t3),
 (-1) / (t3 - 1), (-t3) / (t1 - t3), (-t3) / (t2^2 - t3), t2 / (t2 - t3),
 (t2^2 * t3) / (t2^2 * t3 - t1^2), (t2 * t3) / (t2 * t3 - t1),
 t2^2 / (t2^2 - t1), (-t3) / (t2 - t3), t2^2 / (t2^2 - t3), -u + 1,
 -t1 * u + 1, -t2 * u + 1, -t2^2 * u + 1, -t3 * u + 1, -t2 * t3 * u + 1,
 -t2^2 * t3 * u + 1, -v + 1, (t1 - v) / t1, (t2 - v) / t2, (t2^2 - v) / t2^2,
 (t3 - v) / t3, (t2 * t3 - v) / (t2 * t3), (t2^2 * t3 - v) / (t2^2 * t3)},
{(-1) / (t1 - 1), (-t2) / (t1 - t2), (-1) / (t2^3 - 1), (-t2) / (t3^2 - t2),
 t2^2 / (t2^2 - t1), (-1) / (t2^2 - 1), t2^2 / (t2^2 - t3^2), t2^3 / (t2^3 - t1),
 (-1) / (t2 - 1), (-1) / (t3 - 1), t2^3 / (t2^3 - t3^2), (-t3) / (t1 - t3),
 (-t3) / (t2^4 - t3), (-1) / (t3 - 1), (t2 * t3) / (t2 * t3 - t1),
 (-t3) / (t2^3 - t3), t2 / (t2 - t3), (t2^2 * t3) / (t2^2 * t3 - t1),
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 (-t3) / (t2^2 - t3), (-1) / (t2 - 1), t2^2 / (t2^2 - t3), -u + 1,
 -t2 * u + 1, -t2^2 * u + 1, -t2^3 * u + 1, -t3 * u + 1, -t2 * t3 * u + 1,
 -t2^2 * t3 * u + 1, -v + 1, (t2 - v) / t2, (t2^2 - v) / t2^2, (t2^3 - v) / t2^3,
 (t3 - v) / t3, (t2 * t3 - v) / (t2 * t3), (t2^2 * t3 - v) / (t2^2 * t3)},
{(-1) / (t2 - 1), t1 / (t1 - t2), t1^2 / (t1^2 - t2), (-1) / (t3 - 1), (-1) / (t1^2 - 1),
 t1^3 / (t1^3 - t2), t1 / (t1 - t3), (-1) / (t1 - 1), t1^2 / (t1^2 - t3^2),
 t1^3 / (t1^3 - t3^3), (-t3) / (t2 - t3), (t1 * t3) / (t1 * t3 - t2),
 (-1) / (t1 - 1), (-t3) / (t1^3 - t3), (-1) / (t3 - 1), (-t1) / (t3^2 - t1),
 t3^2 / (t3^2 - t2), (-t3) / (t1^2 - t3), (-t3^2) / (t1^4 - t3^2), (-1) / (t1 - 1),
 (-1) / (t3 - 1), -u + 1, -t1 * u + 1, -t1^2 * u + 1, -t1^3 * u + 1, -t3 * u + 1,
 -t1 * t3 * u + 1, -t3^2 * u + 1, -v + 1, (t1 - v) / t1, (t1^2 - v) / t1^2,
 (t1^3 - v) / t1^3, (t3 - v) / t3, (t1 * t3 - v) / (t1 * t3), (t3^2 - v) / t3^2},
{(-1) / (t1 - 1), (-1) / (t3 - 1), (-t1) / (t2^2 - t1), (-1) / (t2 - 1),
 (-t2) / (t1 - t2), t2 / (t2 - t3), t1 / (t1 - t2), (-t1) / (t3^2 - t1),
 (-t1 * t2) / (t3^3 - t1 * t2), (-1) / (t1 - 1), (-t3) / (t2^2 - t3),
 (-t2 * t3) / (t1^2 - t2 * t3), (-t2) / (t1 - t2), (-t3) / (t2 - t3),
 (-1) / (t3 - 1), (-t2) / (t3^2 - t2), (-t3^2) / (t1^2 - t3^2),
 (-t3) / (t1 - t3), (-t3^2) / (t2^2 - t3^2), (-1) / (t2 - 1), (-1) / (t3 - 1),
 -u + 1, -t1 * u + 1, -t2 * u + 1, -t1 * t2 * u + 1, -t3 * u + 1, -t2 * t3 * u + 1,
 -t3^2 * u + 1, -v + 1, (t1 - v) / t1, (t2 - v) / t2, (t1 * t2 - v) / (t1 * t2),
 (t3 - v) / t3, (t2 * t3 - v) / (t2 * t3), (t3^2 - v) / t3^2},
{(-1) / (t1 - 1), (-t2) / (t1^2 - t2), (-1) / (t2 - 1), (-1) / (t3 - 1),
 (-t2) / (t1 - t2), t1 / (t1 - t2), t1 / (t1 - t3), (-t2) / (t3^2 - t2),
 (-t1 * t2) / (t3^3 - t1 * t2), (-t3) / (t1^2 - t3), (-1) / (t2 - 1), (-t3) / (t1 - t3),
 (-t1 * t3) / (t2^2 - t1 * t3), t1 / (t1 - t2), (-1) / (t3 - 1), (-t1) / (t3^2 - t1),
 (-t3^2) / (t1^2 - t3^2), (-t3^2) / (t2^2 - t3^2), (-t3) / (t2 - t3),
 (-1) / (t1 - 1), (-1) / (t3 - 1), -u + 1, -t1 * u + 1, -t2 * u + 1, -t1 * t2 * u + 1,
 -t3 * u + 1, -t1 * t3 * u + 1, -t3^2 * u + 1, -v + 1, (t1 - v) / t1, (t2 - v) / t2,
 (t1 * t2 - v) / (t1 * t2), (t3 - v) / t3, (t1 * t3 - v) / (t1 * t3), (t3^2 - v) / t3^2},
{(-1) / (t1 - 1), (-t2) / (t1 - t2), t2^2 / (t2^2 - t1), (-1) / (t3 - 1),
 (-1) / (t2^2 - 1), t2^3 / (t2^3 - t1), t2 / (t2 - t3), (-1) / (t2 - 1),
 t2^2 / (t2^2 - t3^2), t2^3 / (t2^3 - t3^3), (-t3) / (t1 - t3),
 (t2 * t3) / (t2 * t3 - t1), (-1) / (t2 - 1), (-t3) / (t2^3 - t3),
 (-1) / (t3 - 1), (-t2) / (t3^2 - t2), t3^2 / (t3^2 - t1), (-t3) / (t2^2 - t3),
 (-t3^2) / (t2^4 - t3^2), (-1) / (t2 - 1), (-1) / (t3 - 1), -u + 1,
 -t2 * u + 1, -t2^2 * u + 1, -t2^3 * u + 1, -t3 * u + 1, -t2 * t3 * u + 1,
 -t3^2 * u + 1, -v + 1, (t2 - v) / t2, (t2^2 - v) / t2^2, (t2^3 - v) / t2^3,
 (t3 - v) / t3, (t2 * t3 - v) / (t2 * t3), (t3^2 - v) / t3^2},
{(-1) / (t2 - 1), t1 / (t1 - t2), (-1) / (t3 - 1), (-1) / (t1^3 - 1),
 t1^2 / (t1^2 - t2), t1 / (t1 - t3), (-1) / (t1^2 - 1), t1^3 / (t1^3 - t2),
 t1^2 / (t1^2 - t3), (-1) / (t1 - 1), (-t1^3) / (t3^4 - t1^3), (-t3) / (t2 - t3),
 (-1) / (t1 - 1), (-1) / (t3^3 - 1), t3^2 / (t3^2 - t2), (-t3) / (t1 - t3),
 (-1) / (t3^2 - 1), t3^3 / (t3^3 - t2), t3^2 / (t3^2 - t1), (-t3^3) / (t1^4 - t3^3),
 (-1) / (t3 - 1), -u + 1, -t1 * u + 1, -t1^2 * u + 1, -t1^3 * u + 1, -t3 * u + 1,
 -t3^2 * u + 1, -t3^3 * u + 1, -v + 1, (t1 - v) / t1, (t1^2 - v) / t1^2,
 (t1^3 - v) / t1^3, (t3 - v) / t3, (t3^2 - v) / t3^2, (t3^3 - v) / t3^3},
{(-1) / (t1 - 1), (-1) / (t3 - 1), (-t1) / (t2^2 - t1), (-t2) / (t1^2 - t2),
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 (-1) / (t2 - 1), (-t2) / (t1 - t2), t2 / (t2 - t3), t1 / (t1 - t2),
 t1 / (t1 - t3), (-t1 * t2) / (t3^4 - t1 * t2), (-1) / (t1 - 1), (-1) / (t2 - 1),
 (-1) / (t3^3 - 1), (-t3) / (t1 - t3), (-t3) / (t2 - t3), (-1) / (t3^2 - 1),
 t3^3 / (t3^3 - t1^2), t3^2 / (t3^2 - t1), t3^3 / (t3^3 - t2^2),
 t3^2 / (t3^2 - t2), (-1) / (t3 - 1), -u + 1, -t1 * u + 1, -t2 * u + 1, -t1 * t2 * u + 1,
 -t3 * u + 1, -t3^2 * u + 1, -t3^3 * u + 1, -v + 1, (t1 - v) / t1, (t2 - v) / t2,
 (t1 * t2 - v) / (t1 * t2), (t3 - v) / t3, (t3^2 - v) / t3^2, (t3^3 - v) / t3^3},
{(-1) / (t1 - 1), (-t2) / (t1 - t2), (-1) / (t3 - 1), (-1) / (t2^3 - 1),
 t2^2 / (t2^2 - t1), t2 / (t2 - t3), (-1) / (t2^2 - 1), t2^3 / (t2^3 - t1),
 t2^2 / (t2^2 - t3), (-1) / (t2 - 1), (-t2^3) / (t3^4 - t2^3), (-t3) / (t1 - t3),
 (-1) / (t2 - 1), (-1) / (t3^3 - 1), t3^2 / (t3^2 - t1), (-t3) / (t2 - t3),
 (-1) / (t3^2 - 1), t3^3 / (t3^3 - t1), t3^2 / (t3^2 - t2), (-t3^3) / (t2^4 - t3^3),
 (-1) / (t3 - 1), -u + 1, -t2 * u + 1, -t2^2 * u + 1, -t2^3 * u + 1, -t3 * u + 1,
 -t3^2 * u + 1, -t3^3 * u + 1, -v + 1, (t2 - v) / t2, (t2^2 - v) / t2^2,
 (t2^3 - v) / t2^3, (t3 - v) / t3, (t3^2 - v) / t3^2, (t3^3 - v) / t3^3},
{(-1) / (t2 - 1), t1 / (t1 - t2), (-1) / (t1^2 - 1), (-1) / (t3^2 - 1),
 t1^2 / (t1^2 - t2), (-1) / (t1 - 1), (-t1) / (t3^2 - t1), (-t1^2) / (t3^3 - t1^2),
 (-t3) / (t2 - t3), (-t3) / (t1^3 - t3), (t1 * t3) / (t1 * t3 - t2), (-t3) / (t1^2 - t3),
 (-1) / (t3 - 1), (t1^2 * t3) / (t1^2 * t3 - t2), (-t3) / (t1 - t3), t1 / (t1 - t3),
 t1^2 / (t1^2 - t3^2), t3^2 / (t3^2 - t2), (-t3^2) / (t1^3 - t3^2), (-1) / (t1 - 1),
 (-1) / (t3 - 1), -u + 1, -t1 * u + 1, -t1^2 * u + 1, -t3 * u + 1, -t1 * t3 * u + 1,
 -t1^2 * t3 * u + 1, -t3^2 * u + 1, -v + 1, (t1 - v) / t1, (t1^2 - v) / t1^2, (t3 - v) / t3,
 (t1 * t3 - v) / (t1 * t3), (t1^2 * t3 - v) / (t1^2 * t3), (t3^2 - v) / t3^2},
{(-1) / (t1 - 1), (-t2) / (t1 - t2), (-1) / (t2^2 - 1), (-1) / (t3^2 - 1),
 t2^2 / (t2^2 - t1), (-1) / (t2 - 1), (-t2) / (t3^2 - t2), (-t2^2) / (t3^3 - t2^2),
 (-t3) / (t1 - t3), (-t3) / (t2^3 - t3), (t2 * t3) / (t2 * t3 - t1), (-t3) / (t2^2 - t3),
 (-1) / (t3 - 1), (t2^2 * t3) / (t2^2 * t3 - t1), (-t3) / (t2 - t3), t2 / (t2 - t3),
 t2^2 / (t2^2 - t3^2), t3^2 / (t3^2 - t1), (-t3^2) / (t2^3 - t3^2), (-1) / (t2 - 1),
 (-1) / (t3 - 1), -u + 1, -t2 * u + 1, -t2^2 * u + 1, -t3 * u + 1, -t2 * t3 * u + 1,
 -t2^2 * t3 * u + 1, -t3^2 * u + 1, -v + 1, (t2 - v) / t2, (t2^2 - v) / t2^2, (t3 - v) / t3,
 (t2 * t3 - v) / (t2 * t3), (t2^2 * t3 - v) / (t2^2 * t3), (t3^2 - v) / t3^2},
{(-1) / (t2 - 1), t1 / (t1 - t2), (-1) / (t1^2 - 1), (-t1) / (t3^3 - t1),
 t1^2 / (t1^2 - t2), (-1) / (t1 - 1), (-1) / (t3 - 1), (-t1^2) / (t3^3 - t1^2),
 (-t3) / (t2 - t3), (-1) / (t3^2 - 1), (t1 * t3) / (t1 * t3 - t2),
 (-t3) / (t1^2 - t3), (-1) / (t1 - 1), (-t1) / (t3^2 - t1), t3^2 / (t3^2 - t2),
 (-t3^2) / (t1^3 - t3^2), (-1) / (t3 - 1), (t1 * t3^2) / (t1 * t3^2 - t2),
 (-t3^2) / (t1^2 - t3^2), (-t3) / (t1 - t3), t1 / (t1 - t3), -u + 1,
 -t1 * u + 1, -t1^2 * u + 1, -t3 * u + 1, -t1 * t3 * u + 1, -t3^2 * u + 1,
 -t1 * t3^2 * u + 1, -v + 1, (t1 - v) / t1, (t1^2 - v) / t1^2, (t3 - v) / t3,
 (t1 * t3 - v) / (t1 * t3), (t3^2 - v) / t3^2, (t1 * t3^2 - v) / (t1 * t3^2)},
{(-1) / (t1 - 1), (-1) / (t2 - 1), (-1) / (t3 - 1), (-t1) / (t2^2 - t1),
 (-t1) / (t3^3 - t1), (-1) / (t1 - 1), (-1) / (t2 - 1), (-t2) / (t3^3 - t2),
 (-t3) / (t2^2 - t3), (-1) / (t3^2 - 1), (-t3) / (t1 - t3), (-t2) / (t1 - t2),
 (-t3) / (t2 - t3), (-t2) / (t3^2 - t2), (-t3^2) / (t2^2 - t3^2),
 (-1) / (t3 - 1), (t2 * t3^2) / (t2 * t3^2 - t1^2), t3^2 / (t3^2 - t1),
 (t2 * t3) / (t2 * t3 - t1), t3^2 / (t3^2 - t2), t2 / (t2 - t3), -u + 1,
 -t1 * u + 1, -t2 * u + 1, -t3 * u + 1, -t2 * t3 * u + 1, -t3^2 * u + 1,
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 -t2 * t3^2 * u + 1, -v + 1, (t1 - v) / t1, (t2 - v) / t2, (t3 - v) / t3,
 (t2 * t3 - v) / (t2 * t3), (t3^2 - v) / t3^2, (t2 * t3^2 - v) / (t2 * t3^2)},
{(-1) / (t1 - 1), (-1) / (t2 - 1), (-t1) / (t3^3 - t1), (-t2) / (t1^2 - t2),
 (-1) / (t1 - 1), (-1) / (t2 - 1), (-1) / (t3 - 1), (-t2) / (t3^3 - t2),
 (-t3) / (t1^2 - t3), (-1) / (t3^2 - 1), (-t3) / (t1 - t3), (-t3) / (t2 - t3),
 t1 / (t1 - t2), (-t1) / (t3^2 - t1), (-t3^2) / (t1^2 - t3^2),
 (-1) / (t3 - 1), t3^2 / (t3^2 - t1), t3^2 / (t3^2 - t2),
 (t1 * t3^2) / (t1 * t3^2 - t2^2), (t1 * t3) / (t1 * t3 - t2), t1 / (t1 - t3),
 -u + 1, -t1 * u + 1, -t2 * u + 1, -t3 * u + 1, -t1 * t3 * u + 1, -t3^2 * u + 1,
 -t1 * t3^2 * u + 1, -v + 1, (t1 - v) / t1, (t2 - v) / t2, (t3 - v) / t3,
 (t1 * t3 - v) / (t1 * t3), (t3^2 - v) / t3^2, (t1 * t3^2 - v) / (t1 * t3^2)},
{(-1) / (t1 - 1), (-t2) / (t1 - t2), (-1) / (t2^2 - 1), (-t2) / (t3^3 - t2),
 t2^2 / (t2^2 - t1), (-1) / (t2 - 1), (-1) / (t3 - 1), (-t2^2) / (t3^3 - t2^2),
 (-t3) / (t1 - t3), (-1) / (t3^2 - 1), (t2 * t3) / (t2 * t3 - t1),
 (-t3) / (t2^2 - t3), (-1) / (t2 - 1), (-t2) / (t3^2 - t2), t3^2 / (t3^2 - t1),
 (-t3^2) / (t2^3 - t3^2), (-1) / (t3 - 1), (t2 * t3^2) / (t2 * t3^2 - t1),
 (-t3^2) / (t2^2 - t3^2), (-t3) / (t2 - t3), t2 / (t2 - t3), -u + 1,
 -t2 * u + 1, -t2^2 * u + 1, -t3 * u + 1, -t2 * t3 * u + 1, -t3^2 * u + 1,
 -t2 * t3^2 * u + 1, -v + 1, (t2 - v) / t2, (t2^2 - v) / t2^2, (t3 - v) / t3,
 (t2 * t3 - v) / (t2 * t3), (t3^2 - v) / t3^2, (t2 * t3^2 - v) / (t2 * t3^2)},
{(-1) / (t2 - 1), t1 / (t1 - t2), t1^2 / (t1^2 - t2), (-1) / (t1 - 1),
 (-1) / (t3 - 1), (-t1) / (t3^2 - t1), (-t1^2) / (t3^4 - t1^2), (-t3) / (t2 - t3),
 (t1 * t3) / (t1 * t3 - t2), (-t3) / (t1^2 - t3), (-1) / (t1 - 1), (-1) / (t3 - 1),
 (-t1) / (t3^3 - t1), t3^2 / (t3^2 - t2), (-1) / (t1 - 1), (-1) / (t3^2 - 1),
 t3^3 / (t3^3 - t2), (-t3^3) / (t1^3 - t3^3), (-t3^2) / (t1^2 - t3^2),
 (-t3) / (t1 - t3), (-1) / (t3 - 1), -u + 1, -t1 * u + 1, -t1^2 * u + 1, -t3 * u + 1,
 -t1 * t3 * u + 1, -t3^2 * u + 1, -t3^3 * u + 1, -v + 1, (t1 - v) / t1, (t1^2 - v) / t1^2,
 (t3 - v) / t3, (t1 * t3 - v) / (t1 * t3), (t3^2 - v) / t3^2, (t3^3 - v) / t3^3},
{(-1) / (t1 - 1), (-t2) / (t1 - t2), t2^2 / (t2^2 - t1), (-1) / (t2 - 1),
 (-1) / (t3 - 1), (-t2) / (t3^2 - t2), (-t2^2) / (t3^4 - t2^2), (-t3) / (t1 - t3),
 (t2 * t3) / (t2 * t3 - t1), (-t3) / (t2^2 - t3), (-1) / (t2 - 1), (-1) / (t3 - 1),
 (-t2) / (t3^3 - t2), t3^2 / (t3^2 - t1), (-1) / (t2 - 1), (-1) / (t3^2 - 1),
 t3^3 / (t3^3 - t1), (-t3^3) / (t2^3 - t3^3), (-t3^2) / (t2^2 - t3^2),
 (-t3) / (t2 - t3), (-1) / (t3 - 1), -u + 1, -t2 * u + 1, -t2^2 * u + 1, -t3 * u + 1,
 -t2 * t3 * u + 1, -t3^2 * u + 1, -t3^3 * u + 1, -v + 1, (t2 - v) / t2, (t2^2 - v) / t2^2,
 (t3 - v) / t3, (t2 * t3 - v) / (t2 * t3), (t3^2 - v) / t3^2, (t3^3 - v) / t3^3},
{(-1) / (t2 - 1), t1 / (t1 - t2), (-1) / (t3 - 1), (-1) / (t1^2 - 1),
 t1^2 / (t1^2 - t2), t1 / (t1 - t3), (-1) / (t1 - 1), (-t1^2) / (t3^5 - t1^2),
 (-t3) / (t2 - t3), (-1) / (t1 - 1), (-1) / (t3^4 - 1), t3^2 / (t3^2 - t2),
 (-t3) / (t1 - t3), (-1) / (t3^3 - 1), t3^3 / (t3^3 - t2), t3^2 / (t3^2 - t1),
 (-1) / (t3^2 - 1), t3^4 / (t3^4 - t2), t3^3 / (t3^3 - t1), t3^4 / (t3^4 - t1^3),
 (-1) / (t3 - 1), -u + 1, -t1 * u + 1, -t1^2 * u + 1, -t3 * u + 1, -t3^2 * u + 1,
 -t3^3 * u + 1, -t3^4 * u + 1, -v + 1, (t1 - v) / t1, (t1^2 - v) / t1^2,
 (t3 - v) / t3, (t3^2 - v) / t3^2, (t3^3 - v) / t3^3, (t3^4 - v) / t3^4},
{(-1) / (t1 - 1), (-t2) / (t1 - t2), (-1) / (t3 - 1), (-1) / (t2^2 - 1),
 t2^2 / (t2^2 - t1), t2 / (t2 - t3), (-1) / (t2 - 1), (-t2^2) / (t3^5 - t2^2),
 (-t3) / (t1 - t3), (-1) / (t2 - 1), (-1) / (t3^4 - 1), t3^2 / (t3^2 - t1),
```

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 (-t3) / (t2 - t3), (-1) / (t3^3 - 1), t3^3 / (t3^3 - t1), t3^2 / (t3^2 - t2),
 (-1) / (t3^2 - 1), t3^4 / (t3^4 - t1), t3^3 / (t3^3 - t2), t3^4 / (t3^4 - t2^3),
 (-1) / (t3 - 1), -u + 1, -t2 * u + 1, -t2^2 * u + 1, -t3 * u + 1, -t3^2 * u + 1,
 -t3^3 * u + 1, -t3^4 * u + 1, -v + 1, (t2 - v) / t2, (t2^2 - v) / t2^2,
 (t3 - v) / t3, (t3^2 - v) / t3^2, (t3^3 - v) / t3^3, (t3^4 - v) / t3^4},
{(-1) / (t2 - 1), t1 / (t1 - t2), (-1) / (t1 - 1), (-1) / (t3^3 - 1),
 (-t1) / (t3^4 - t1), (-t3) / (t2 - t3), (-t3) / (t1^2 - t3),
 (t1 * t3) / (t1 * t3 - t2), (-t3) / (t1 - t3), (-1) / (t3^2 - 1), (-t1) / (t3^3 - t1),
 t3^2 / (t3^2 - t2), (-t3^2) / (t1^2 - t3^2), (t1 * t3^2) / (t1 * t3^2 - t2),
 t3^2 / (t3^2 - t1), (-1) / (t3 - 1), (-t1) / (t3^2 - t1), t3^3 / (t3^3 - t2),
 t3^3 / (t3^3 - t1^2), (-1) / (t1 - 1), (-1) / (t3 - 1), -u + 1,
 -t1 * u + 1, -t3 * u + 1, -t1 * t3 * u + 1, -t3^2 * u + 1, -t1 * t3^2 * u + 1,
 -t3^3 * u + 1, -v + 1, (t1 - v) / t1, (t3 - v) / t3, (t1 * t3 - v) / (t1 * t3),
 (t3^2 - v) / t3^2, (t1 * t3^2 - v) / (t1 * t3^2), (t3^3 - v) / t3^3},
{(-1) / (t1 - 1), (-t2) / (t1 - t2), (-1) / (t2 - 1), (-1) / (t3^3 - 1),
 (-t2) / (t3^4 - t2), (-t3) / (t1 - t3), (-t3) / (t2^2 - t3),
 (t2 * t3) / (t2 * t3 - t1), (-t3) / (t2 - t3), (-1) / (t3^2 - 1), (-t2) / (t3^3 - t2),
 t3^2 / (t3^2 - t1), (-t3^2) / (t2^2 - t3^2), (t2 * t3^2) / (t2 * t3^2 - t1),
 t3^2 / (t3^2 - t2), (-1) / (t3 - 1), (-t2) / (t3^2 - t2), t3^3 / (t3^3 - t1),
 t3^3 / (t3^3 - t2^2), (-1) / (t2 - 1), (-1) / (t3 - 1), -u + 1,
 -t2 * u + 1, -t3 * u + 1, -t2 * t3 * u + 1, -t3^2 * u + 1, -t2 * t3^2 * u + 1,
 -t3^3 * u + 1, -v + 1, (t2 - v) / t2, (t3 - v) / t3, (t2 * t3 - v) / (t2 * t3),
 (t3^2 - v) / t3^2, (t2 * t3^2 - v) / (t2 * t3^2), (t3^3 - v) / t3^3},
{(-1) / (t2 - 1), t1 / (t1 - t2), (-1) / (t1 - 1), (-1) / (t3^2 - 1),
 (-t1) / (t3^5 - t1), (-t3) / (t2 - t3), (t1 * t3) / (t1 * t3 - t2),
 (-t3) / (t1 - t3), (-1) / (t3 - 1), (-t1) / (t3^4 - t1), t3^2 / (t3^2 - t2),
 (-1) / (t1 - 1), (-1) / (t3^3 - 1), t3^3 / (t3^3 - t2), t3^3 / (t3^3 - t1^2),
 (-t3) / (t1 - t3), (-1) / (t3^2 - 1), t3^4 / (t3^4 - t2), t3^4 / (t3^4 - t1^2),
 t3^2 / (t3^2 - t1), (-1) / (t3 - 1), -u + 1, -t1 * u + 1, -t3 * u + 1, -t1 * t3 * u + 1,
 -t3^2 * u + 1, -t3^3 * u + 1, -t3^4 * u + 1, -v + 1, (t1 - v) / t1, (t3 - v) / t3,
 (t1 * t3 - v) / (t1 * t3), (t3^2 - v) / t3^2, (t3^3 - v) / t3^3, (t3^4 - v) / t3^4},
{(-1) / (t1 - 1), (-t2) / (t1 - t2), (-1) / (t2 - 1), (-1) / (t3^2 - 1),
 (-t2) / (t3^5 - t2), (-t3) / (t1 - t3), (t2 * t3) / (t2 * t3 - t1),
 (-t3) / (t2 - t3), (-1) / (t3 - 1), (-t2) / (t3^4 - t2), t3^2 / (t3^2 - t1),
 (-1) / (t2 - 1), (-1) / (t3^3 - 1), t3^3 / (t3^3 - t1), t3^3 / (t3^3 - t2^2),
 (-t3) / (t2 - t3), (-1) / (t3^2 - 1), t3^4 / (t3^4 - t1), t3^4 / (t3^4 - t2^2),
 t3^2 / (t3^2 - t2), (-1) / (t3 - 1), -u + 1, -t2 * u + 1, -t3 * u + 1, -t2 * t3 * u + 1,
 -t3^2 * u + 1, -t3^3 * u + 1, -t3^4 * u + 1, -v + 1, (t2 - v) / t2, (t3 - v) / t3,
 (t2 * t3 - v) / (t2 * t3), (t3^2 - v) / t3^2, (t3^3 - v) / t3^3, (t3^4 - v) / t3^4},
{(-1) / (t2 - 1), t1 / (t1 - t2), (-1) / (t1 - 1), (-1) / (t3 - 1),
 (-t1) / (t3^6 - t1), (-t3) / (t2 - t3), (-1) / (t1 - 1), (-1) / (t3^5 - 1),
 t3^2 / (t3^2 - t2), (-t3) / (t1 - t3), (-1) / (t3^4 - 1), t3^3 / (t3^3 - t2),
 t3^2 / (t3^2 - t1), (-1) / (t3^3 - 1), t3^4 / (t3^4 - t2), t3^3 / (t3^3 - t1),
 (-1) / (t3^2 - 1), t3^5 / (t3^5 - t2), t3^5 / (t3^5 - t1^2), t3^4 / (t3^4 - t1),
 (-1) / (t3 - 1), -u + 1, -t1 * u + 1, -t3 * u + 1, -t3^2 * u + 1, -t3^3 * u + 1,
 -t3^4 * u + 1, -t3^5 * u + 1, -v + 1, (t1 - v) / t1, (t3 - v) / t3,
 (t3^2 - v) / t3^2, (t3^3 - v) / t3^3, (t3^4 - v) / t3^4, (t3^5 - v) / t3^5},
```

```
{(-1) / (t1 - 1), (-t2) / (t1 - t2), (-1) / (t2 - 1), (-1) / (t3 - 1),
 (-t2) / (t3^6 - t2), (-t3) / (t1 - t3), (-1) / (t2 - 1), (-1) / (t3^5 - 1),
 t3^2 / (t3^2 - t1), (-t3) / (t2 - t3), (-1) / (t3^4 - 1), t3^3 / (t3^3 - t1),
 t3^2 / (t3^2 - t2), (-1) / (t3^3 - 1), t3^4 / (t3^4 - t1), t3^3 / (t3^3 - t2),
 (-1) / (t3^2 - 1), t3^5 / (t3^5 - t1), t3^5 / (t3^5 - t2^2), t3^4 / (t3^4 - t2),
 (-1) / (t3 - 1), -u + 1, -t2 * u + 1, -t3 * u + 1, -t3^2 * u + 1, -t3^3 * u + 1,
 -t3^4 * u + 1, -t3^5 * u + 1, -v + 1, (t2 - v) / t2, (t3 - v) / t3,
 (t3^2 - v) / t3^2, (t3^3 - v) / t3^3, (t3^4 - v) / t3^4, (t3^5 - v) / t3^5},
{(-1) / (t1 - 1), (-1) / (t2 - 1), (-1) / (t3^7 - 1), (-t3) / (t1 - t3),
 (-t3) / (t2 - t3), (-1) / (t3^6 - 1), t3^2 / (t3^2 - t1), t3^2 / (t3^2 - t2),
 (-1) / (t3^5 - 1), t3^3 / (t3^3 - t1), t3^3 / (t3^3 - t2), (-1) / (t3^4 - 1),
 t3^4 / (t3^4 - t1), t3^4 / (t3^4 - t2), (-1) / (t3^3 - 1), t3^5 / (t3^5 - t1),
 t3^5 / (t3^5 - t2), (-1) / (t3^2 - 1), t3^6 / (t3^6 - t1), t3^6 / (t3^6 - t2),
 (-1) / (t3 - 1), -u + 1, -t3 * u + 1, -t3^2 * u + 1, -t3^3 * u + 1, -t3^4 * u + 1,
 -t3^5 * u + 1, -t3^6 * u + 1, -v + 1, (t3 - v) / t3, (t3^2 - v) / t3^2,
 (t3^3 - v) / t3^3, (t3^4 - v) / t3^4, (t3^5 - v) / t3^5, (t3^6 - v) / t3^6}}
```

In[280]:=
```
Length[GT7smoothPointsContributions[t1, t2, t3, u, v]]
```

Out[280]= 58

In[281]:=
```
GT7smooth[t1_, t2_, t3_, u_, v_] :=
 Sum[Det[DiagonalMatrix[GT7smoothPointsContributions[t1, t2, t3, u, v][[i]]]],
  {i, 1, 58}]
```

In[287]:=
```
f[t1_, t2_, t3_, u_, v_] := GT7smooth[t1, t2, t3, u, v] +
  GT151[t1, t2, t3, u, v] + GT151[t2, t3, t1, u, v] + GT151[t3, t1, t2, u, v] +
  GT142[t1, t2, t3, u, v] + GT142[t2, t3, t1, u, v] + GT142[t3, t1, t2, u, v] +
  GT142[t1, t3, t2, u, v] + GT142[t3, t2, t1, u, v] + GT142[t2, t1, t3, u, v] +
  GT1411[t1, t2, t3, u, v] + GT1411[t2, t3, t1, u, v] + GT1411[t3, t1, t2, u, v] +
  GT1411[t1, t3, t2, u, v] + GT1411[t3, t2, t1, u, v] + GT1411[t2, t1, t3, u, v] +
  GT232[t1, t2, t3, u, v] + GT232[t2, t3, t1, u, v] + GT232[t3, t1, t2, u, v] +
  GT2311[t1, t2, t3, u, v] + GT2311[t2, t3, t1, u, v] + GT2311[t3, t1, t2, u, v] +
  GT2311[t1, t3, t2, u, v] + GT2311[t3, t2, t1, u, v] + GT2311[t2, t1, t3, u, v] +
  GT11311[t1, t2, t3, u, v] + GT1321[t1, t2, t3, u, v] + GT1321[t2, t3, t1, u, v] +
  GT1321[t3, t1, t2, u, v] - SeriesCoefficient[Exp[Sum[Q^n * (1 - u^n) *
      (1 - v^n) / (n * (1 - t1^n) * (1 - t2^n) * (1 - t3^n)), {n, 1, 7}]], {Q, 0, 7}]
```

In[292]:=
```
f[2, 191, 203, 7, 11] // Timing
```

Out[292]= {0.207174, 0}

In[299]:=

In[300]:=
```
Together[
  GT7smooth[t1, t2, t3, u, v] + GT151[t1, t2, t3, u, v] + GT151[t2, t3, t1, u, v] +
   GT151[t3, t1, t2, u, v] + GT142[t1, t2, t3, u, v] + GT142[t2, t3, t1, u, v] +
   GT142[t3, t1, t2, u, v] + GT142[t1, t3, t2, u, v] + GT142[t3, t2, t1, u, v] +
   GT142[t2, t1, t3, u, v] + GT1411[t1, t2, t3, u, v] + GT1411[t2, t3, t1, u, v] +
   GT1411[t3, t1, t2, u, v] + GT1411[t1, t3, t2, u, v] + GT1411[t3, t2, t1, u, v] +
   GT1411[t2, t1, t3, u, v] + GT232[t1, t2, t3, u, v] + GT232[t2, t3, t1, u, v] +
   GT232[t3, t1, t2, u, v] + GT2311[t1, t2, t3, u, v] + GT2311[t2, t3, t1, u, v] +
   GT2311[t3, t1, t2, u, v] + GT2311[t1, t3, t2, u, v] + GT2311[t3, t2, t1, u, v] +
   GT2311[t2, t1, t3, u, v] + GT11311[t1, t2, t3, u, v] + GT1321[t1, t2, t3, u, v] +
   GT1321[t2, t3, t1, u, v] + GT1321[t3, t1, t2, u, v] - SeriesCoefficient[
    Exp[Sum[Q^n * (1 - u^n) * (1 - v^n) / (n * (1 - t1^n) * (1 - t2^n) * (1 - t3^n)),
      {n, 1, 7}]], {Q, 0, 7}]] // Timing
```

Out[300]= {28 890.8, 0}