```
> restart :
  with(linalg) :
  with(plots) :

  print("Mesh vertices");
  R := 4;
  print(R, "  points");
  print("3D-Coordinates of the ", R, " points in the rows");
  P := matrix(4, 3, [-2, 0, sqrt(2),   2, 0, sqrt(2),   0, -2, -sqrt(2),   0, 2, -sqrt(2)]);

  print("Mesh triangles");
 N := 4;
  print("Point Indices of  the ", N, " triangles,");
  print("i_star(n,i) = index of point i in triangle n");
  print("Lexicographic order");
 i_star := matrix(N, 3, [1, 2, 3,   1, 2, 4,   1, 3, 4,   2, 3, 4]);

  #Calculation for nuber of edges"
  M := 0 :
  j_star0 := matrix(R·(R − 1)·2^(-1), 2) :
  for i1 from 1 to R − 1 do:
  for i2 from i1 + 1 to R do:
  s := 0 :
  for n from 1 to N do:
  if i1 = i_star[n, 1] and i2 = i_star[n, 2] then s := 1 fi:
  if i1 = i_star[n, 1] and i2 = i_star[n, 3] then s := 1 fi:
  if i1 = i_star[n, 2] and i2 = i_star[n, 3] then s := 1 fi:
  od:#n
  if s = 1 then M := M + 1 : j_star0[M, 1] := i1 : j_star0[M, 2] := i2 : fi:
  od:od:#i1,i2

  print("M= ", M, "mesh edges");
  print("j_star(m,ell)= index of point ell in edge m");
  print("Lexicographic order");
  j_star := matrix(M, 2) :
  for m from 1 to M do: for ell from 1 to 2 do: j_star[m, ell] := j_star0[m, ell] : od:od:
  print(evalm(j_star));

   n_star := matrix(M, 2) :
  for m from 1 to M do:
  i1 := j_star[m, 1] :  i2 := j_star[m, 2] :
  s := 0 :
  for n from 1 to N do:
  if i1 = i_star[n, 1] and i2 = i_star[n, 2] then s := s + 1 : n_star[m, s] := n : fi:
  if i1 = i_star[n, 1] and i2 = i_star[n, 3] then s := s + 1 : n_star[m, s] := n :  fi:
   if i1 = i_star[n, 2] and i2 = i_star[n, 3] then s := s + 1 : n_star[m, s] := n : fi:
  od:#n
  if s = 1 then n_star[m, 2] := n_star[m, 1] : fi:
  od:#m
  print("n_star(m,ell)=index ell of neighboring triangle of edge m");
 print(evalm(n_star));
```

```
k_star := matrix(M, 2) :
for m from 1 to M do:
i1 := j_star[m, 1] : i2 := j_star[m, 2] : n1 := n_star[m, 1] : n2 := n_star[m, 2] :
k_star[m, 1] := i_star[n1, 1] + i_star[n1, 2] + i_star[n1, 3] - i1 - i2 :
k_star[m, 2] := i_star[n2, 1] + i_star[n2, 2] + i_star[n2, 3] - i1 - i2 :
od:#m
print("k_star(m,1), k_star(m,2)  indices of opposite vertices to edge m in neighboring
    triangles");
print(evalm(k_star));

m_star := matrix(N, 3) :
for n from 1 to N do:
i1 := i_star[n, 1] : i2 := i_star[n, 2] : i3 := i_star[n, 3] :
for m from 1 to M do:
j1 := j_star[m, 1] :  j2 := j_star[m, 2] :
if j1 = i1 and j2 = i2 then m_star[n, 3] := m : fi:
if j1 = i1 and j2 = i3 then m_star[n, 2] := m : fi:
if j1 = i2 and j2 = i3 then m_star[n, 1] := m : fi:
od:#m
od:#n
print("m_star(n,ell) = index of opposite edge of vertex ell of triangle n");
print(evalm(m_star));


print("Degrees of vertices, cycles of neighbors");

degp := vector(R) : startm := vector(R) : innerp := vector(R) :


for i from 1 to R do:
innerp[i] := 1 : degp[i] := 0 :
for m from 1 to M do:
if j_star[m, 1] = i or j_star[m, 2] = i then
if degp[i] = 0 then startm[i] := m : fi:
if innerp[i] = 1 and n_star[m, 1] = n_star[m, 2] then innerp[i] := 0 : startm[i] := m : fi:
degp[i] := degp[i] + 1 :
fi:#j_star
od:#m
od:#i
print("Degrees of vertices", evalm(degp));
print("Inner vertices", evalm(innerp));
print("Starting edges in cycles", evalm(startm));

for i from 1 to R do:
dp[i] := degp[i] + innerp[i] : cycm[i] := vector(dp[i]) : cycp[i] := vector(dp[i]) :
m := startm[i] : n := n_star[m, 1] :  ip := j_star[m, 1] + j_star[m, 2] - i :
cycm[i][1] := m :
cycp[i][1] := ip :
for ell from 2 to dp[i] do:
n := n_star[m, 1] + n_star[m, 2] - n :
for k from 1 to 3 do:
if i_star[n, k] = ip then kk := k : fi:
```

```
od:#k
m := m_star[n, kk] :
ip := j_star[m, 1] + j_star[m, 2] - i :
cycm[i][ell] := m :
cycp[i][ell] := ip :
od:#ell

print("Cycle of edges from point", i, "    ", evalm(cycm[i]), "  Cycle of points",
    evalm(cycp[i])) :
od:#i


print("Guessing normal vectors");

nn := matrix(R, 3) :
nn2 := vector(R) :
u := vector(3) : v := vector(3) :

for i from 1 to R do:
nn[i, 1] := 0 : nn[i, 2] := 0 : nn[i, 3] := 0 :
nn2[i] := 0 :
for ell from 2 to dp[i] do:
for k  from 1 to 3 do:
iii := cycp[i][ell] : ii := cycp[i][ell - 1] :
u[k] := P[iii, k] - P[i, k] :   v[k] := P[ii, k] - P[i, k] :
od:#k
nn[i, 1] := nn[i, 1] + u[2]·v[3] - u[3]·v[2] :
nn[i, 2] := nn[i, 2] + u[3]·v[1] - u[1]·v[3] :
nn[i, 3] := nn[i, 3] + u[1]·v[2] - u[2]·v[1] :
od:#ell
nn2[i] := nn2[i] + nn[i, 1]^2 + nn[i, 2]^2 + nn[i, 3]^2 :
od:#i

print("Normal vectors", evalm(nn));
print("Norm squares", evalm(nn2));

print("Guessed Surface derivatives");
print("g_ij from point i toward j");
g := array(1 ..R, 1 ..R) :
for i from 1 to R do: for j from 1 to R do:
g[i, j] := vector(3, [0, 0, 0]) :
od:od:#ij
for i from 1 to R do:
for ell from 1 to degp[i] do:
j := cycp[i][ell] :
sij := nn[i, 1]·(P[j, 1] - P[i, 1]) + nn[i, 2]·(P[j, 2] - P[i, 2]) + nn[i, 3]·(P[j, 3] - P[i,
    3]) :
sji := nn[j, 1]·(P[i, 1] - P[j, 1]) + nn[j, 2]·(P[i, 2] - P[j, 2]) + nn[j, 3]·(P[i, 3] - P[j,
    3]) :
for k from 1 to 3 do:
g[i, j][k] := (P[j, k] - P[i, k]) - sij/nn2[i] ·nn[i, k] :
```

```
 od:#k
print("g", i, j, "    ", evalm(g[i, j]), "    normalv", [nn[i, 1], nn[i, 2], nn[i, 3]]) :
 od:#ell
 od:#i


 print(
     "________________________________________________________________________________\
     ___________");
 print(
     "________________________________________________________________________________\
     ___________");

 print("Checking if the g vectors are suitable in a polynomial construction");

 print("g_,ell-g_ik) x g_ij not= 0 when   [p_i,p_j]  is a double edge between the mesh triangles
     [p_i,p_j,p_k],[pi,p_j,p_ell]");

 suitable := 1 :
 for m from 1 to M do:
 i := j_star[m, 1] : j := j_star[m, 2] :
 n1 := n_star[m, 1] : n2 := n_star[m, 2] :
 if n1 ≠ n2 then
 a1 := g[i, j][1] : a2 := g[i, j][2] : a3 := g[i, j][3] :
 k1 := k_star[m, 1] : k2 := k_star[m, 2] :
 b1 := g[i, k1][1] − g[i, k2][1] : b2 := g[i, k1][2] − g[i, k2][2] : b3 := g[i, k1][3] − g[i,
     k2][3] :
 c1 := a2·b3 − b2·a3 :  c2 := a3·b1 − b3·a1 :  c3 := a1·b2 − b1·a2 :
 c := c1^2 + c2^2 + c3^2 :  if c = 0  then suitable := 0 : fi:
 if c = 0 then  print("g[", i, j, "]  ,  g[", i, k1, "]  ,  g[", i, k2, "]   FALSE") fi:
 a1 := g[j, i][1] : a2 := g[j, i][2] : a3 := g[j, i][3] :
 k1 := k_star[m, 1] : k2 := k_star[m, 2] :
 b1 := g[j, k1][1] − g[j, k2][1] : b2 := g[j, k1][2] − g[j, k2][2] : b3 := g[j, k1][3] − g[j,
     k2][3] :
 c1 := a2·b3 − b2·a3 :  c2 := a3·b1 − b3·a1 :  c3 := a1·b2 − b1·a2 :
 c := c1^2 + c2^2 + c3^2 :  if c = 0  then suitable := 0 : fi:
if c = 0 then  print("g[", j, i, "]  ,  g[", j, k1, "]  ,  g[", j, k2, "]   FALSE") fi:
 fi:
 od:#m

 if suitable = 1 then print("SUITABLE") : fi:
 if suitable = 0 then print("NOT SUITABLE  - g data should be modified") : fi:



 print(
     "________________________________________________________________________________\
     ___________");
 print(
     "________________________________________________________________________________\
     ___________");
```

```
print("Basic RSD interpolation");


t := vector(3) : lambda := vector(R) :

print("Shape functions", "Pi_0=(", Phi, Theta, chi_0, chi_1,")");
Phi := t0^3·(10 − 15·t0 + 6·t0^2);
Theta := t0^3·(4 − 3·t0);
chi_0 := 30·t1^2·t2^2·t3;
chi_1 := 12·t1^2·t2^2·t3;

f := array( 1 .. N) : f_lambda := array(1 ..N) :
 for n from 1 to N do:
f[n] := vector(3, [0, 0, 0]) :  f_lambda[n] := vector(3, [0, 0, 0]) :
 od:#n
 p := array(1 ..R) :
 for i from 1 to R do:
p[i] := vector(3, [P[i, 1], P[i, 2], P[i, 3]]) :
 od:#i

 for n from 1 to N do:

 for i from 1 to 3 do:
 ip := i_star[n, i] :
 f[n] := evalm(f[n] + subs(t0 = t[i], Phi)·p[ip]) :
 for j from 1 to 3 do:
 jp := i_star[n, j] :
 f[n] := evalm(f[n] + subs(t0 = t[i], Theta)·t[j]·g[ip, jp]) :
 od:od:#ij
 for i from 1 to 3 do: for j from 1 to 3 do:  for k from 1 to 3 do:
 if i ≠ j and j ≠ k and k ≠ i then
  ip := i_star[n, i] : jp := i_star[n, j] :  kp := i_star[n, k] :
  f[n] := evalm( f[n] + subs(t1 = t[i], t2 = t[j], t3 = t[k], chi_0)·p[ip] + subs(t1 = t[i], t2
      = t[j], t3 = t[k], chi_1)·g[ip, jp]) :
 fi:
 od:od:od: #ijk

od:#n

 for n from 1 to N do:
 print("f^T,P,G_Pi0 over triangle ", n) :
  i1 := i_star[n, 1] :   i2 := i_star[n, 2] :   i3 := i_star[n, 3] :
for k  from 1 to 3 do:
 f_lambda[n][k] := subs(t[1] = lambda[i1], t[2] = lambda[i2], t[3] = lambda[i3], f[n][k]) :
 od:

 print(evalm(f[n][1])) :  #print(evalm(f_lambda[n][1])) :
print(evalm(f[n][2])) :   #print(evalm(f_lambda[n][2])) :
print(evalm(f[n][3])) :   #print(evalm(f_lambda[n][3])) :

 od:#n
```

```
print("f^T,P,G_Pi0   displayed");

f_su := matrix(N, 3) :
for n from 1 to N do:
for k from 1 to 3 do:
f_su[n, k] := subs(t[1] = sigma, t[2] = (1 - sigma)·tau, t[3] = (1 - sigma)·(1 - tau),
    f[n][k]) :

od:od: #kn

C1 := array(1 ..3) : C2 := array(1 ..3) : C3 := array(1 ..3) : C4 := array(1 ..3) :
for k from 1 to 3 do:
C1[k] := f_su[1, k] : C2[k] := f_su[2, k] : C3[k] := f_su[3, k] : C4[k] := f_su[4, k] :
od:

plot3d({C1, C2, C3, C4}, sigma = 0 ..1, tau = 0 ..1);

a := 0; b := 100^(-1); c := 49·100^(-1); d := 1 - 49·100^(-1);
plot3d({C3, C4}, sigma = a ..b, tau = c ..d);


print(
    "________________________________________________________________________________\
    __________");
    print(
    "________________________________________________________________________________\
    __________");



print("Edge corrections");

print("Row m: double edge m between points  i1,12 and opposite vertices j1,j2 in triangles n1,
    n2");
print("ordering:  i1<i2 ,  j1<j2  and n1<n2");

MM := 0 :
for m from 1 to M do:
if n_star[m, 1] ≠ n_star[m, 2] then MM := MM + 1 : fi:
od:#m
print("Number of double edges ", MM);

IJN := matrix(MM, 6) :
mm := 0 :
for m from 1 to M do:
n1 := n_star[m, 1] : n2 := n_star[m, 2] :
if n1 ≠ n2  then
mm := mm + 1 :
i1 := j_star[m, 1] : i2 := j_star[m, 2] :
j1 := k_star[m, 1] : j2 := k_star[m, 2] :
IJN[mm, 1] := i1 : IJN[mm, 2] := i2 :
```

```
 IJN[mm, 3] := j1 :  IJN[mm, 4] := j2 :
IJN[mm, 5] := n1 :  IJN[mm, 6] := n2 :
fi:
od:#m

 print("IJM  ", evalm(IJN) );

 V := matrix(MM, 3) : VV := matrix(MM, 3) :  dV := matrix(MM, 3) :
Y := matrix(MM, 3) : W := matrix(MM, 3) :
 Bdet := vector(MM) :

 for m from 1 to MM do:
 i1 := IJN[m, 1] :  i2 := IJN[m, 2] :  j1 := IJN[m, 3] :  j2 := IJN[m, 4] :  n1 := IJN[m, 5] :  n2
       := IJN[m, 6] :
 print("___________________________________________________________") :
print("On (directed Edge ", m, "   points ", i1, " --> ", i2) :

for k from 1 to 3 do:
 F := f_lambda[n1][k] :

 print(k, F) :

 FL := subs(lambda[i1] = tau - 2^(-1)·sigma, lambda[i2] = 1 - tau - 2^(-1)·sigma, lambda[j1]
       = sigma, F) :
 V[m, k] := factor(subs(sigma = 0, diff(FL, sigma))) :
 F := f_lambda[n2][k] :
 FL := subs(lambda[i1] = tau - 2^(-1)·sigma, lambda[i2] = 1 - tau - 2^(-1)·sigma, lambda[j2]
       = sigma, F) :
 VV[m, k] := factor(subs(sigma = 0, diff(FL, sigma))) :
 dV[m, k] := factor(VV[m, k] - V[m, k]) :
 FL := subs(lambda[i1] = tau, lambda[i2] = 1 - tau, lambda[j2] = 0, F) :
 Y[m, k] := factor( diff(FL, tau)) :
 od:
 dv1 := dV[m, 1] : dv2 := dV[m, 2] : dv3 := dV[m, 3] :
 y1 := Y[m, 1] : y2 := Y[m, 2] : y3 := Y[m, 3] :
 W[m, 1] := factor(dv2·y3 - dv3·y2) : W[m, 2] := factor(dv3·y1 - dv1·y3) :  W[m, 3]
       := factor(dv1·y2 - dv2·y1) :
 v1 := V[m, 1] : v2 := V[m, 2] : v3 := V[m, 3] :
 w1 := W[m, 1] : w2 := W[m, 2] : w3 := W[m, 3] :
 bb := v1·w1 + v2·w2 + v3·w3 :
 Bdet[m] := factor(bb) :

 print("v", [V[m, 1], V[m, 2], V[m, 3]]) :
 print("vv", [VV[m, 1], VV[m, 2], VV[m, 3]]) :
 print("dv", [dV[m, 1], dV[m, 2], dV[m, 3]]) :
 print("y", [Y[m, 1], Y[m, 2], Y[m, 3]]) :
print("w", [W[m, 1], W[m, 2], W[m, 3]]) :
 print("b=det[v,dv,y]", Bdet[m]) :
 od:
```

```
print(
   "______________________________________________________________________________\
   __________");
   print(
   "______________________________________________________________________________\
   __________");


print("Cofactors of GCD(w_1,w_2,w_3)");


K := 3 :

 Q := vector(MM) :
 qw := matrix(MM, 3) :

a0 := matrix(1, K) :  a := matrix(1, K) :


for mmm from 1 to MM do:

i1 := IJN[mmm, 1] :    i2 := IJN[mmm, 2] :

print("W[", mmm, ",on points ", i1 , "-->", i2, "]");

a0[1, 1] := W[mmm, 1] :
a0[1, 2] := W[mmm, 2] :
a0[1, 3] := W[mmm, 3] :
print("Polynomials");
print(a0[1, 1]) : print(a0[1, 2]) : print(a0[1, 3]) :

for k from 1 to K do:
a[1, k] := a0[1, k] :
od:

dd := vector(K) :  S := 0 :
for k  from 1 to K do:
if expand(a[1, k]) = 0 then dd[k] := -1 : fi:
if expand(a[1, k] ) ≠ 0 then  dd[k] := degree(a[1, k]) : S := S + dd[k] : fi:
od:#k
#print("Degrees  ", evalm(dd));
 #print("Sum of positive degrees  ", S);


mc := vector(K) :
for k from 1 to K do:
if dd[k] < 0 then mc[k] := 0 : fi:
if dd[k] = 0 then mc[k] := a[1, k] : fi:
if dd[k] > 0 then
b := a[1, k] : for j from 1 to dd[k] do: b := diff(b, tau)/j : od: mc[k] := b :
fi:
```

```
od:#k
#print("maincoeff s  ", evalm(mc));

X := matrix(K, K) :
for i from 1 to K do: for j from 1 to K do: X[i, j] := 0 : od: X[i, i] := 1 : od:
#print("X initial  ", evalm(X) );

for s from 1 to S do:
#print("____________________________________________________________") :
#print("STEP  ", s) :
#` `
#print("polynomials", evalm(transpose(a))) :

for k  from 1 to K do:
if expand(a[1, k]) =0 then dd[k] := -1 : fi:
if expand(a[1, k] ) ≠ 0 then  dd[k] := degree(a[1, k]) : fi:
od:#k
for k from 1 to K do:
if dd[k] < 0 then mc[k] := 0 : fi:
if dd[k] = 0 then mc[k] := a[1, k] : fi:
if dd[k] ≥ 1 then
b := a[1, k] : for j from 1 to dd[k] do: b := diff(b, tau)/j :od: mc[k] := b :
fi:
od:#k
#print("degrees  ", evalm(dd) ) :
#print("main coefficients  ", evalm(mc) ) :

#print("Normalization") :

for k from 1 to K do:
if dd[k] ≥ 0 then a[1, k] := expand(mc[k]^(-1)·a[1, k]) :fi:
od:#k
A := matrix(K, K) :
for i from 1 to K do: for j from 1 to K do:
A[i, j] := 0 :
if i = j and dd[j] ≥ 0 then A[i, j] := mc[j]^(-1) : fi:
if i = j and dd[j] < 0 then A[i, i] := 1 : fi:
od:od:#ij
X := evalm(X &*A) :
#print("New polynomials  ", evalm(transpose(a))) :
# print("degrees  ", evalm(dd) ) :
#print("New X  with X=XA  ", evalm(X), "   A=", evalm(A) ) :
#` `
#print("Reordering") :
P := matrix(K, K) :
for i from 1 to K do:for j from 1 to K do: P[i, j] := 0 : od: P[i, i] := 1 :od:
for n from 1 to K do:
for i from 1 to K - 1 do:
j := i + 1 :
if (0 ≤ dd[i] and  dd[i] < dd[j]) or dd[j] =-1 then
```

```
 ddd := dd[j] : dd[j] := dd[i] : dd[i] := ddd :
 aaa := a[1, j] : a[1, j] := a[1, i] : a[1, i] := aaa :
for k from 1 to K do:
ppp := P[k, j] : P[k, j] := P[k, i] : P[k, i] := ppp :
od:#k
fi:
od:#i
od:#n
X := evalm(X&*P) :
#print("New polynomials ") :
#print(evalm(transpose(a))) :
#print("degrees  ", evalm(dd)) :
#print("New X=XP  ", evalm(X), "  with   P=  ", evalm(P)) :

#print("Degree decreasing") :
L := 0 :
for k from 1 to K do:
if dd[k] =-1 then L := k  fi:
od:#k
L := L + 1 :
#print("First nonzero pol with index   L=", L) :


#STOP condition
if L < K then

dddd := dd[L] - dd[L + 1] :
#print("pol_L = ", a[1, L], "   pol_L+1 = ", a[1, L + 1], "    tau^d =", tau^dddd) :

a[1, L] := expand(a[1, L] - tau^dddd·a[1, L + 1]) :
#print("a_L-tau^dddd a_L+1 = ", a[1, L]) :
B := matrix(K, K) :
for i from 1 to K do: for j from 1 to K do:
B[i, j] := 0 : od: B[i, i] := 1 :od:
B[L + 1, L] :=-tau^dddd :
X := evalm(X&*B) :
#print("New polynomials") :
#print(evalm(transpose(a))) :
#print("New X=XB  ", evalm(X), "  with   B=  ", evalm(B)) :

fi: #STOPcond

#STOP
if L = K then s := S :fi:

#print("CHEKING  a -a0 X=0") :
DDD := evalm(a - a0&*X) :
DD := evalm(DDD[1, 1]) :
for k from 1 to K do: DD := expand(DD) :od:
#print(evalm(DD)) :
```

```
od:#s

GCD := evalm(a[1, K]) :
print(" GCD over double edge  ", mmm , " = ", GCD);
Q[mmm] := GCD :


#print("Cofactors in column 3 of X");

for i from 1 to K do: qw[mmm, i] := expand(X[i, L]) : od:


print("qw", mmm, 1, "= ", qw[mmm, 1]) :
print("qw", mmm, 2, "= ", qw[mmm, 2]) :
print("qw", mmm, 3, "= ", qw[mmm, 3]) :


# print("CHECKING GCD-a0_1 q_1-...-a0_K q_K =0");

# DD:=GCD:
#for k from 1 to K do: DD := expand(DD - a0[1, k]·qw[mmm, k]) : od:
#print(DD);

od:#mm


print(
    "______________________________________________________________________________\
    __________");
    print(
    "______________________________________________________________________________\
    __________");

print("Z polynomials along double edges");


Zq := matrix(MM, 3) :  ZqL := matrix(MM, 3) :


for mm from 1 to MM do:
 i1 := IJN[mm, 1] : i2 := IJN[mm, 2] :
print("Double edge ", mm, "   ", i1, "-->", i2) :

 z1 := simplify( factor( Bdet[mm] / (Q[mm]·tau^2·(1 - tau)^2) ) ) :

print(z1) :

  for k from 1 to 3 do:
z2 := factor(qw[mm, k]) :

Zq[mm, k] := z1·z2 :
```

```
z0 := subs(tau = lambda[i1], z1) ·factor(subs(tau = 1 − lambda[i2], z2)) :
 z0 := z0 + factor(subs(tau = 1 −  lambda[i2], z1)) ·subs(tau = lambda[i1], z2) :
ZqL[mm, k] := 2^(−1)·z0 :
print("Zq[", mm, k, " resp. ZqL[", mm, k, "]") :
print(Zq[mm, k]) :
print(ZqL[mm, k]) :

od:#k
od:#mm

Fq := matrix(N, 3) :

for n from 1 to N do:
for k from 1 to 3 do: Fq[n, k] := f_lambda[n][k] : od:#k
od:#n

for mm from 1 to MM do:
i1 := IJN[mm, 1] :  i2 := IJN[mm, 2] :
j1 := IJN[mm, 3] :  j2 := IJN[mm, 4] :
n1 := IJN[mm, 5] :  n2 := IJN[mm, 6] :
 for k   from 1 to 3 do:
Fq[n1, k] := Fq[n1, k] - lambda[i1]^2·lambda[i2]^2·lambda[j1]· ZqL[mm, k] :
Fq[n2, k] := Fq[n2, k] - lambda[i1]^2·lambda[i2]^2·lambda[j2]· ZqL[mm, k] :
od:#k
od:#mm

for n from 1 to N do:
print("Triangle ", n, [i_star[n, 1], i_star[n, 2], i_star[n, 3]]) :
print("Spline over triangle ", n) :
for k from 1 to 3 do:
print(Fq[n, k]) :
od:#k
od:#n



print(
     "______________________________________________________________________________\
     __________");
     print(
     "______________________________________________________________________________\
     __________");

print("Final result displayed");

Fqts := matrix(N, 3) :
for n from 1 to N do:
i1 := i_star[n, 1] : i2 := i_star[n, 2] : i3 := i_star[n, 3] :
for k from 1 to 3 do:
Fqts[n, k] := subs(lambda[i1] = tau, lambda[i2] = (1 − tau) ·sigma, lambda[i3] = (1 − tau) · (1
```

```
    − sigma), Fq[n, k]) :
#print(Fqts[n, k]) :
od:#k
od:#n

Cq1 := [Fqts[1, 1], Fqts[1, 2], Fqts[1, 3]] : Cq2 := [Fqts[2, 1], Fqts[2, 2], Fqts[2, 3]] :
Cq3 := [Fqts[3, 1], Fqts[3, 2], Fqts[3, 3]] : Cq4 := [Fqts[4, 1], Fqts[4, 2], Fqts[4, 3]] :

plot3d({Cq1, Cq2, Cq3, Cq4}, tau = 0 ..1, sigma = 0 ..1);

plot3d({Cq1, Cq2}, tau = 0·10^(-2) ..100·10^(-2), sigma = 99·10^(-2) ..100·10^(-2));

plot3d({Cq1, Cq2}, tau = 0·10^(-2) ..100·10^(-2), sigma = 90·10^(-2) ..100·10^(-2));

plot3d({Cq1, Cq2}, tau = 0·10^(-2) ..100·10^(-2), sigma = 80·10^(-2) ..100·10^(-2));

plot3d({Cq1, Cq2}, tau = 0·10^(-2) ..100·10^(-2), sigma = 70·10^(-2) ..100·10^(-2));

plot3d({Cq1, Cq2}, tau = 0·10^(-2) ..100·10^(-2), sigma = 60·10^(-2) ..100·10^(-2));

plot3d({Cq1, Cq2}, tau = 0·10^(-2) ..100·10^(-2), sigma = 50·10^(-2) ..100·10^(-2));

plot3d({Cq1, Cq2}, tau = 0·10^(-2) ..100·10^(-2), sigma = 40·10^(-2) ..100·10^(-2));

plot3d({Cq1, Cq2}, tau = 0·10^(-2) ..100·10^(-2), sigma = 30·10^(-2) ..100·10^(-2));

plot3d({Cq1, Cq2}, tau = 0·10^(-2) ..100·10^(-2), sigma = 20·10^(-2) ..100·10^(-2));

plot3d({Cq1, Cq2}, tau = 0·10^(-2) ..100·10^(-2), sigma = 10·10^(-2) ..100·10^(-2));

plot3d({Cq1, Cq2}, tau = 0·10^(-2) ..100·10^(-2), sigma = 0·10^(-2) ..100·10^(-2));
```

"Mesh vertices"

$$R := 4$$

4, " points"

"3D-Coordinates of the ", 4, " points in the rows"

$$P := \begin{bmatrix} -2 & 0 & \sqrt{2} \\ 2 & 0 & \sqrt{2} \\ 0 & -2 & -\sqrt{2} \\ 0 & 2 & -\sqrt{2} \end{bmatrix}$$

"Mesh triangles"

$$N := 4$$

"Point Indices of the ", 4, " triangles,"

"i_star(n,i) = index of point i in triangle n"

"Lexicographic order"

$$i\_star := \begin{bmatrix} 1 & 2 & 3 \\ 1 & 2 & 4 \\ 1 & 3 & 4 \\ 2 & 3 & 4 \end{bmatrix}$$

"M= ", 6, "mesh edges"

"j_star(m,ell)= index of point ell in edge m"

"Lexicographic order"

$$\begin{bmatrix} 1 & 2 \\ 1 & 3 \\ 1 & 4 \\ 2 & 3 \\ 2 & 4 \\ 3 & 4 \end{bmatrix}$$

"n_star(m,ell)=index ell of neighboring triangle of edge m"

$$\begin{bmatrix} 1 & 2 \\ 1 & 3 \\ 2 & 3 \\ 1 & 4 \\ 2 & 4 \\ 3 & 4 \end{bmatrix}$$

"k_star(m,1), k_star(m,2) indices of opposite vertices to edge m in neighboring triangles"

$$\begin{bmatrix} 3 & 4 \\ 2 & 4 \\ 2 & 3 \\ 1 & 4 \\ 1 & 3 \\ 1 & 2 \end{bmatrix}$$

"m_star(n,ell) = index of opposite edge of vertex ell of triangle n"

$$\begin{bmatrix} 4 & 2 & 1 \\ 5 & 3 & 1 \\ 6 & 3 & 2 \\ 6 & 5 & 4 \end{bmatrix}$$

"Degrees of vertices, cycles of neighbors"

"Degrees of vertices", $\begin{bmatrix} 3 & 3 & 3 & 3 \end{bmatrix}$

"Inner vertices", $\begin{bmatrix} 1 & 1 & 1 & 1 \end{bmatrix}$

"Starting edges in cycles", $\begin{bmatrix} 1 & 1 & 2 & 3 \end{bmatrix}$

"Cycle of edges from point", 1, "   ", $\begin{bmatrix} 1 & 3 & 2 & 1 \end{bmatrix}$, " Cycle of points", $\begin{bmatrix} 2 & 4 & 3 & 2 \end{bmatrix}$

"Cycle of edges from point", 2, "   ", $\begin{bmatrix} 1 & 5 & 4 & 1 \end{bmatrix}$, " Cycle of points", $\begin{bmatrix} 1 & 4 & 3 & 1 \end{bmatrix}$

"Cycle of edges from point", 3, "   ", $\begin{bmatrix} 2 & 6 & 4 & 2 \end{bmatrix}$, " Cycle of points", $\begin{bmatrix} 1 & 4 & 2 & 1 \end{bmatrix}$

"Cycle of edges from point", 4, "   ", $\begin{bmatrix} 3 & 6 & 5 & 3 \end{bmatrix}$, " Cycle of points", $\begin{bmatrix} 1 & 3 & 2 & 1 \end{bmatrix}$

"Guessing normal vectors"

"Normal vectors", $\begin{bmatrix} 8\sqrt{2} & 0 & -8 \\ 8\sqrt{2} & 0 & 8 \\ 0 & 8\sqrt{2} & 8 \\ 0 & 8\sqrt{2} & -8 \end{bmatrix}$

"Norm squares", $\begin{bmatrix} 192 & 192 & 192 & 192 \end{bmatrix}$

"Guessed Surface derivatives"

"g_ij from point i toward j"

"g", 1, 2, "   ", $\begin{bmatrix} \frac{4}{3} & 0 & \frac{4}{3}\sqrt{2} \end{bmatrix}$, "   normalv", $[8\sqrt{2}, 0, -8]$

"g", 1, 4, "   ", $\begin{bmatrix} -\frac{2}{3} & 2 & -\frac{2}{3}\sqrt{2} \end{bmatrix}$, "   normalv", $[8\sqrt{2}, 0, -8]$

$$"g", 1, 3, "\quad ", \left[\begin{array}{ccc} -\frac{2}{3} & -2 & -\frac{2}{3}\sqrt{2} \end{array}\right], "\quad normalv", [8\sqrt{2}, 0, -8]$$

$$"g", 2, 1, "\quad ", \left[\begin{array}{ccc} -\frac{4}{3} & 0 & \frac{4}{3}\sqrt{2} \end{array}\right], "\quad normalv", [8\sqrt{2}, 0, 8]$$

$$"g", 2, 4, "\quad ", \left[\begin{array}{ccc} \frac{2}{3} & 2 & -\frac{2}{3}\sqrt{2} \end{array}\right], "\quad normalv", [8\sqrt{2}, 0, 8]$$

$$"g", 2, 3, "\quad ", \left[\begin{array}{ccc} \frac{2}{3} & -2 & -\frac{2}{3}\sqrt{2} \end{array}\right], "\quad normalv", [8\sqrt{2}, 0, 8]$$

$$"g", 3, 1, "\quad ", \left[\begin{array}{ccc} -2 & -\frac{2}{3} & \frac{2}{3}\sqrt{2} \end{array}\right], "\quad normalv", [0, 8\sqrt{2}, 8]$$

$$"g", 3, 4, "\quad ", \left[\begin{array}{ccc} 0 & \frac{4}{3} & -\frac{4}{3}\sqrt{2} \end{array}\right], "\quad normalv", [0, 8\sqrt{2}, 8]$$

$$"g", 3, 2, "\quad ", \left[\begin{array}{ccc} 2 & -\frac{2}{3} & \frac{2}{3}\sqrt{2} \end{array}\right], "\quad normalv", [0, 8\sqrt{2}, 8]$$

$$"g", 4, 1, "\quad ", \left[\begin{array}{ccc} -2 & \frac{2}{3} & \frac{2}{3}\sqrt{2} \end{array}\right], "\quad normalv", [0, 8\sqrt{2}, -8]$$

$$"g", 4, 3, "\quad ", \left[\begin{array}{ccc} 0 & -\frac{4}{3} & -\frac{4}{3}\sqrt{2} \end{array}\right], "\quad normalv", [0, 8\sqrt{2}, -8]$$

$$"g", 4, 2, "\quad ", \left[\begin{array}{ccc} 2 & \frac{2}{3} & \frac{2}{3}\sqrt{2} \end{array}\right], "\quad normalv", [0, 8\sqrt{2}, -8]$$

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"Checking if the g vectors are suitable in a polynomial construction"

"g_,ell-g_ik) x g_ij not= 0 when [p_i,p_j] is a double edge between the mesh triangles [p_i,p_j, p_k],[pi,p_j,p_ell]"

"SUITABLE"

"____\
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"____\
________"

"Basic RSD interpolation"

"Shape functions", "Pi_0=(", Φ, Θ, *chi_0*, *chi_1*, ")"

$$\Phi := t0^3\left(6\,t0^2 - 15\,t0 + 10\right)$$

$$\Theta := t0^3\,(4 - 3\,t0)$$

$$chi\_0 := 30\,t1^2\,t2^2\,t3$$

$$chi\_1 := 12\, t1^2\, t2^2\, t3$$

"f^T,P,G_Pi0 over triangle ", 1

$$92\, t_2^2 t_3^2 t_1 - 92\, t_1^2 t_3^2 t_2 - 2\, t_1^3 \left(6\, t_1^2 - 15\, t_1 + 10\right) + \frac{4}{3}\, t_1^3 \left(4 - 3\, t_1\right) t_2 - \frac{2}{3}\, t_1^3 \left(4 - 3\, t_1\right) t_3 + 2\, t_2^3 \left(6\, t_2^2 - 15\, t_2 + 10\right) - \frac{4}{3}\, t_2^3 \left(4 - 3\, t_2\right) t_1 + \frac{2}{3}\, t_2^3 \left(4 - 3\, t_2\right) t_3 - 2\, t_3^3 \left(4 - 3\, t_3\right) t_1 + 2\, t_3^3 \left(4 - 3\, t_3\right) t_2$$

$$-92\, t_2^2 t_3^2 t_1 - 92\, t_1^2 t_3^2 t_2 - 2\, t_1^3 \left(4 - 3\, t_1\right) t_3 - 2\, t_2^3 \left(4 - 3\, t_2\right) t_3 - 2\, t_3^3 \left(6\, t_3^2 - 15\, t_3 + 10\right) - \frac{2}{3}\, t_3^3 \left(4 - 3\, t_3\right) t_1 - \frac{2}{3}\, t_3^3 \left(4 - 3\, t_3\right) t_2$$

$$92\, t_1^2 t_2^2 t_3 \sqrt{2} + t_1^3 \left(6\, t_1^2 - 15\, t_1 + 10\right) \sqrt{2} + \frac{4}{3}\, t_1^3 \left(4 - 3\, t_1\right) t_2 \sqrt{2} - \frac{2}{3}\, t_1^3 \left(4 - 3\, t_1\right) t_3 \sqrt{2} + t_2^3 \left(6\, t_2^2 - 15\, t_2 + 10\right) \sqrt{2} + \frac{4}{3}\, t_2^3 \left(4 - 3\, t_2\right) t_1 \sqrt{2} - \frac{2}{3}\, t_2^3 \left(4 - 3\, t_2\right) t_3 \sqrt{2} - t_3^3 \left(6\, t_3^2 - 15\, t_3 + 10\right) \sqrt{2} + \frac{2}{3}\, t_3^3 \left(4 - 3\, t_3\right) t_1 \sqrt{2} + \frac{2}{3}\, t_3^3 \left(4 - 3\, t_3\right) t_2 \sqrt{2}$$

"f^T,P,G_Pi0 over triangle ", 2

$$92\, t_2^2 t_3^2 t_1 - 92\, t_1^2 t_3^2 t_2 - 2\, t_1^3 \left(6\, t_1^2 - 15\, t_1 + 10\right) + \frac{4}{3}\, t_1^3 \left(4 - 3\, t_1\right) t_2 - \frac{2}{3}\, t_1^3 \left(4 - 3\, t_1\right) t_3 + 2\, t_2^3 \left(6\, t_2^2 - 15\, t_2 + 10\right) - \frac{4}{3}\, t_2^3 \left(4 - 3\, t_2\right) t_1 + \frac{2}{3}\, t_2^3 \left(4 - 3\, t_2\right) t_3 - 2\, t_3^3 \left(4 - 3\, t_3\right) t_1 + 2\, t_3^3 \left(4 - 3\, t_3\right) t_2$$

$$92\, t_2^2 t_3^2 t_1 + 92\, t_1^2 t_3^2 t_2 + 2\, t_1^3 \left(4 - 3\, t_1\right) t_3 + 2\, t_2^3 \left(4 - 3\, t_2\right) t_3 + 2\, t_3^3 \left(6\, t_3^2 - 15\, t_3 + 10\right) + \frac{2}{3}\, t_3^3 \left(4 - 3\, t_3\right) t_1 + \frac{2}{3}\, t_3^3 \left(4 - 3\, t_3\right) t_2$$

$$92\, t_1^2 t_2^2 t_3 \sqrt{2} + t_1^3 \left(6\, t_1^2 - 15\, t_1 + 10\right) \sqrt{2} + \frac{4}{3}\, t_1^3 \left(4 - 3\, t_1\right) t_2 \sqrt{2} - \frac{2}{3}\, t_1^3 \left(4 - 3\, t_1\right) t_3 \sqrt{2} + t_2^3 \left(6\, t_2^2 - 15\, t_2 + 10\right) \sqrt{2} + \frac{4}{3}\, t_2^3 \left(4 - 3\, t_2\right) t_1 \sqrt{2} - \frac{2}{3}\, t_2^3 \left(4 - 3\, t_2\right) t_3 \sqrt{2} - t_3^3 \left(6\, t_3^2 - 15\, t_3 + 10\right) \sqrt{2} + \frac{2}{3}\, t_3^3 \left(4 - 3\, t_3\right) t_1 \sqrt{2} + \frac{2}{3}\, t_3^3 \left(4 - 3\, t_3\right) t_2 \sqrt{2}$$

"f^T,P,G_Pi0 over triangle ", 3

$$-92\, t_1^2 t_3^2 t_2 - 92\, t_1^2 t_2^2 t_3 - 2\, t_1^3 \left(6\, t_1^2 - 15\, t_1 + 10\right) - \frac{2}{3}\, t_1^3 \left(4 - 3\, t_1\right) t_2 - \frac{2}{3}\, t_1^3 \left(4 - 3\, t_1\right) t_3 - 2\, t_2^3 \left(4 - 3\, t_2\right) t_1 - 2\, t_3^3 \left(4 - 3\, t_3\right) t_1$$

$$92\, t_1^2 t_3^2 t_2 - 92\, t_1^2 t_2^2 t_3 - 2\, t_1^3 \left(4 - 3\, t_1\right) t_2 + 2\, t_1^3 \left(4 - 3\, t_1\right) t_3 - 2\, t_2^3 \left(6\, t_2^2 - 15\, t_2 + 10\right) - \frac{2}{3}\, t_2^3 \left(4 - 3\, t_2\right) t_1 + \frac{4}{3}\, t_2^3 \left(4 - 3\, t_2\right) t_3 + 2\, t_3^3 \left(6\, t_3^2 - 15\, t_3 + 10\right) + \frac{2}{3}\, t_3^3 \left(4 - 3\, t_3\right) t_1 - \frac{4}{3}\, t_3^3 \left(4 - 3\, t_3\right) t_2$$

$$-92\, t_2^2\, t_3^2\, t_1 \sqrt{2} + t_1^3 \left(6\, t_1^2 - 15\, t_1 + 10\right) \sqrt{2} - \frac{2}{3}\, t_1^3 \left(4 - 3\, t_1\right) t_2 \sqrt{2} - \frac{2}{3}\, t_1^3 \left(4 - 3\, t_1\right) t_3 \sqrt{2} - t_2^3 \left(6\, t_2^2 - 15\, t_2 + 10\right) \sqrt{2} + \frac{2}{3}\, t_2^3 \left(4 - 3\, t_2\right) t_1 \sqrt{2} - \frac{4}{3}\, t_2^3 \left(4 - 3\, t_2\right) t_3 \sqrt{2} - t_3^3 \left(6\, t_3^2 - 15\, t_3 + 10\right) \sqrt{2} + \frac{2}{3}\, t_3^3 \left(4 - 3\, t_3\right) t_1 \sqrt{2} - \frac{4}{3}\, t_3^3 \left(4 - 3\, t_3\right) t_2 \sqrt{2}$$

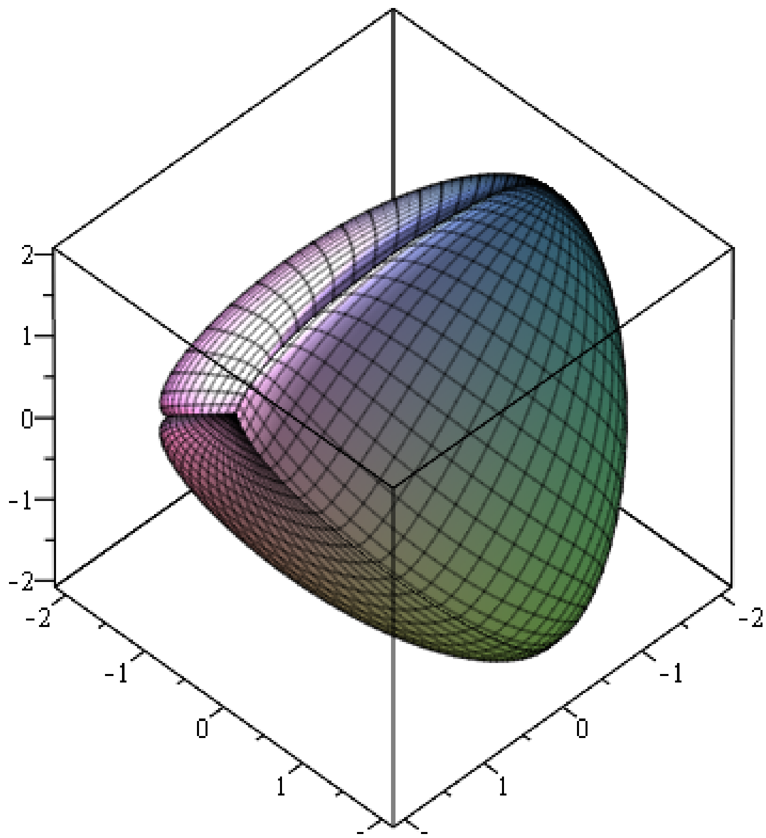
"f^T,P,G_Pi0 over triangle ", 4

$$92\, t_1^2\, t_3^2\, t_2 + 92\, t_1^2\, t_2^2\, t_3 + 2\, t_1^3 \left(6\, t_1^2 - 15\, t_1 + 10\right) + \frac{2}{3}\, t_1^3 \left(4 - 3\, t_1\right) t_2 + \frac{2}{3}\, t_1^3 \left(4 - 3\, t_1\right) t_3 + 2\, t_2^3 \left(4 - 3\, t_2\right) t_1 + 2\, t_3^3 \left(4 - 3\, t_3\right) t_1$$

$$92\, t_1^2\, t_3^2\, t_2 - 92\, t_1^2\, t_2^2\, t_3 - 2\, t_1^3 \left(4 - 3\, t_1\right) t_2 + 2\, t_1^3 \left(4 - 3\, t_1\right) t_3 - 2\, t_2^3 \left(6\, t_2^2 - 15\, t_2 + 10\right) - \frac{2}{3}\, t_2^3 \left(4 - 3\, t_2\right) t_1 + \frac{4}{3}\, t_2^3 \left(4 - 3\, t_2\right) t_3 + 2\, t_3^3 \left(6\, t_3^2 - 15\, t_3 + 10\right) + \frac{2}{3}\, t_3^3 \left(4 - 3\, t_3\right) t_1 - \frac{4}{3}\, t_3^3 \left(4 - 3\, t_3\right) t_2$$

$$-92\, t_2^2\, t_3^2\, t_1 \sqrt{2} + t_1^3 \left(6\, t_1^2 - 15\, t_1 + 10\right) \sqrt{2} - \frac{2}{3}\, t_1^3 \left(4 - 3\, t_1\right) t_2 \sqrt{2} - \frac{2}{3}\, t_1^3 \left(4 - 3\, t_1\right) t_3 \sqrt{2} - t_2^3 \left(6\, t_2^2 - 15\, t_2 + 10\right) \sqrt{2} + \frac{2}{3}\, t_2^3 \left(4 - 3\, t_2\right) t_1 \sqrt{2} - \frac{4}{3}\, t_2^3 \left(4 - 3\, t_2\right) t_3 \sqrt{2} - t_3^3 \left(6\, t_3^2 - 15\, t_3 + 10\right) \sqrt{2} + \frac{2}{3}\, t_3^3 \left(4 - 3\, t_3\right) t_1 \sqrt{2} - \frac{4}{3}\, t_3^3 \left(4 - 3\, t_3\right) t_2 \sqrt{2}$$

"f^T,P,G_Pi0   displayed"

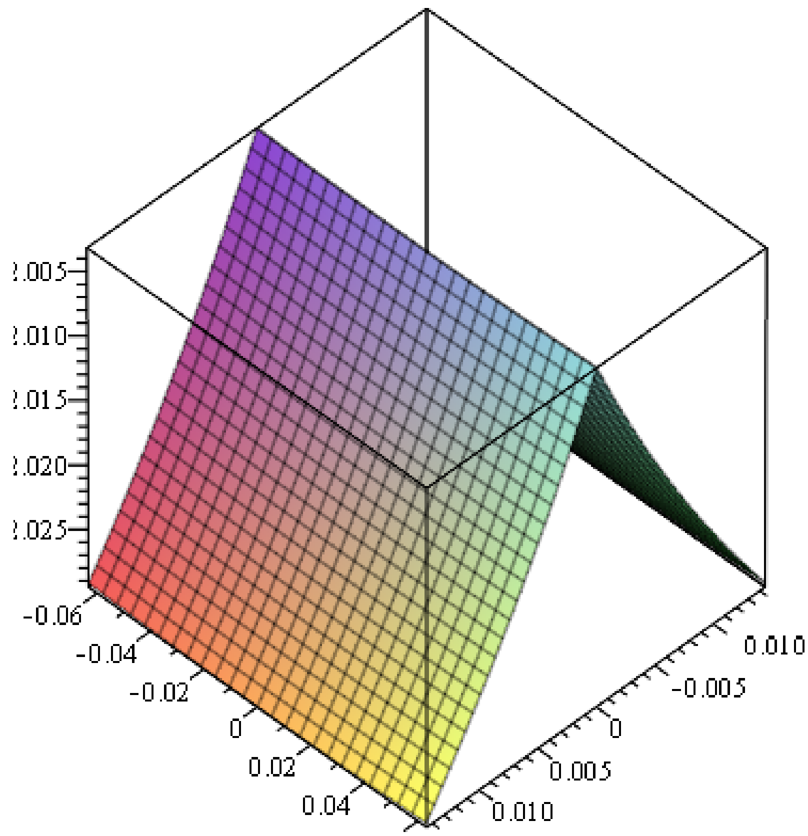


$$a := 0$$

$$b := \frac{1}{100}$$

$$c := \frac{49}{100}$$

$$d := \frac{51}{100}$$



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"Edge corrections"

"Row m: double edge m between points i1,12 and opposite vertices j1,j2 in triangles n1,n2"

"ordering: i1<i2 , j1<j2 and n1<n2"

"Number of double edges ", 6

"IJM ",
$$\begin{bmatrix} 1 & 2 & 3 & 4 & 1 & 2 \\ 1 & 3 & 2 & 4 & 1 & 3 \\ 1 & 4 & 2 & 3 & 2 & 3 \\ 2 & 3 & 1 & 4 & 1 & 4 \\ 2 & 4 & 1 & 3 & 2 & 4 \\ 3 & 4 & 1 & 2 & 3 & 4 \end{bmatrix}$$

"____"

"On (directed Edge ", 1, " points ", 1, " --> ", 2

$1, 92\,\lambda_2^2\lambda_3^2\lambda_1 - 92\,\lambda_1^2\lambda_3^2\lambda_2 - 2\,\lambda_1^3\left(6\,\lambda_1^2 - 15\,\lambda_1 + 10\right) + \frac{4}{3}\,\lambda_1^3\left(4 - 3\,\lambda_1\right)\lambda_2 - \frac{2}{3}\,\lambda_1^3\left(4 - 3\,\lambda_1\right)\lambda_3 + 2\,\lambda_2^3\left(6\,\lambda_2^2 - 15\,\lambda_2 + 10\right) - \frac{4}{3}\,\lambda_2^3\left(4 - 3\,\lambda_2\right)\lambda_1 + \frac{2}{3}\,\lambda_2^3\left(4 - 3\,\lambda_2\right)\lambda_3 - 2\,\lambda_3^3\left(4 - 3\,\lambda_3\right)\lambda_1 + 2\,\lambda_3^3\left(4 - 3\,\lambda_3\right)\lambda_2$

$2, -92\,\lambda_2^2\lambda_3^2\lambda_1 - 92\,\lambda_1^2\lambda_3^2\lambda_2 - 2\,\lambda_1^3\left(4 - 3\,\lambda_1\right)\lambda_3 - 2\,\lambda_2^3\left(4 - 3\,\lambda_2\right)\lambda_3 - 2\,\lambda_3^3\left(6\,\lambda_3^2 - 15\,\lambda_3 + 10\right) - \frac{2}{3}\,\lambda_3^3\left(4 - 3\,\lambda_3\right)\lambda_1 - \frac{2}{3}\,\lambda_3^3\left(4 - 3\,\lambda_3\right)\lambda_2$

$3, 92\,\lambda_1^2\lambda_2^2\lambda_3\sqrt{2} + \lambda_1^3\left(6\,\lambda_1^2 - 15\,\lambda_1 + 10\right)\sqrt{2} + \frac{4}{3}\,\lambda_1^3\left(4 - 3\,\lambda_1\right)\lambda_2\sqrt{2} - \frac{2}{3}\,\lambda_1^3\left(4 - 3\,\lambda_1\right)\lambda_3\sqrt{2} + \lambda_2^3\left(6\,\lambda_2^2 - 15\,\lambda_2 + 10\right)\sqrt{2} + \frac{4}{3}\,\lambda_2^3\left(4 - 3\,\lambda_2\right)\lambda_1\sqrt{2} - \frac{2}{3}\,\lambda_2^3\left(4 - 3\,\lambda_2\right)\lambda_3\sqrt{2} - \lambda_3^3\left(6\,\lambda_3^2 - 15\,\lambda_3 + 10\right)\sqrt{2} + \frac{2}{3}\,\lambda_3^3\left(4 - 3\,\lambda_3\right)\lambda_1\sqrt{2} + \frac{2}{3}\,\lambda_3^3\left(4 - 3\,\lambda_3\right)\lambda_2\sqrt{2}$

"v", $\left[\frac{4}{3}\,(2\,\tau - 1)\left(2\,\tau^2 - 2\,\tau - 1\right), 12\,\tau^4 - 24\,\tau^3 + 12\,\tau^2 - 2, \frac{2}{3}\,\sqrt{2}\,\left(3\,\tau - 2 + \sqrt{2}\right)\left(3\,\tau - 1 + \sqrt{2}\right)\left(-3\,\tau + 2 + \sqrt{2}\right)\left(-3\,\tau + 1 + \sqrt{2}\right)\right]$

"vv", $\left[\frac{4}{3}\,(2\,\tau - 1)\left(2\,\tau^2 - 2\,\tau - 1\right), -12\,\tau^4 + 24\,\tau^3 - 12\,\tau^2 + 2, \frac{2}{3}\,\sqrt{2}\,\left(3\,\tau - 2 + \sqrt{2}\right)\left(3\,\tau - 1 + \sqrt{2}\right)\left(-3\,\tau + 2 + \sqrt{2}\right)\left(-3\,\tau + 1 + \sqrt{2}\right)\right]$

"dv", $\left[0, -24\,\tau^4 + 48\,\tau^3 - 24\,\tau^2 + 4, 0\right]$

"y", $\left[-\frac{4}{3} - 80\,\tau^2 + 160\,\tau^3 - 80\,\tau^4, 0, \frac{4}{3}\,\sqrt{2}\,\left(2\,\tau^2 - 2\,\tau - 1\right)(2\,\tau - 1)\right]$

"w", $\left[-\frac{16}{3}\,\left(6\,\tau^4 - 12\,\tau^3 + 6\,\tau^2 - 1\right)\sqrt{2}\,\left(2\,\tau^2 - 2\,\tau - 1\right)(2\,\tau - 1), 0, -\frac{16}{3}\,\left(6\,\tau^4 - 12\,\tau^3 + 6\,\tau^2 - 1\right)\left(60\,\tau^4 - 120\,\tau^3 + 60\,\tau^2 + 1\right)\right]$

"b=det[v,dv,y]", $-\frac{32}{9}\,\sqrt{2}\,\left(6\,\tau^4 - 12\,\tau^3 + 6\,\tau^2 - 1\right)\left(4860\,\tau^4 - 9720\,\tau^3 + 4892\,\tau^2 - 32\,\tau - 63\right)\tau^2\,(\tau - 1)^2$

"____"

"On (directed Edge ", 2, "   points ", 1, " --> ", 3

$1, 92\,\lambda_2^2\lambda_3^2\lambda_1 - 92\,\lambda_1^2\lambda_3^2\lambda_2 - 2\,\lambda_1^3\left(6\,\lambda_1^2 - 15\,\lambda_1 + 10\right) + \frac{4}{3}\,\lambda_1^3\left(4 - 3\,\lambda_1\right)\lambda_2 - \frac{2}{3}\,\lambda_1^3\left(4 - 3\,\lambda_1\right)\lambda_3 + 2\,\lambda_2^3\left(6\,\lambda_2^2 - 15\,\lambda_2 + 10\right) - \frac{4}{3}\,\lambda_2^3\left(4 - 3\,\lambda_2\right)\lambda_1 + \frac{2}{3}\,\lambda_2^3\left(4 - 3\,\lambda_2\right)\lambda_3 - 2\,\lambda_3^3\left(4 - 3\,\lambda_3\right)\lambda_1 + 2\,\lambda_3^3\left(4 - 3\,\lambda_3\right)\lambda_2$

$2, -92\,\lambda_2^2\,\lambda_3^2\,\lambda_1 - 92\,\lambda_1^2\,\lambda_3^2\,\lambda_2 - 2\,\lambda_1^3\,(4-3\,\lambda_1)\,\lambda_3 - 2\,\lambda_2^3\,(4-3\,\lambda_2)\,\lambda_3 - 2\,\lambda_3^3\,\big(6\,\lambda_3^2 - 15\,\lambda_3 + 10\big) - \frac{2}{3}\,\lambda_3^3\,(4-3\,\lambda_3)\,\lambda_1 - \frac{2}{3}\,\lambda_3^3\,(4-3\,\lambda_3)\,\lambda_2$

$3, 92\,\lambda_1^2\,\lambda_2^2\,\lambda_3\,\sqrt{2} + \lambda_1^3\,\big(6\,\lambda_1^2 - 15\,\lambda_1 + 10\big)\,\sqrt{2} + \frac{4}{3}\,\lambda_1^3\,(4-3\,\lambda_1)\,\lambda_2\,\sqrt{2} - \frac{2}{3}\,\lambda_1^3\,(4-3\,\lambda_1)\,\lambda_3\,\sqrt{2} + \lambda_2^3\,\big(6\,\lambda_2^2 - 15\,\lambda_2 + 10\big)\,\sqrt{2} + \frac{4}{3}\,\lambda_2^3\,(4-3\,\lambda_2)\,\lambda_1\,\sqrt{2} - \frac{2}{3}\,\lambda_2^3\,(4-3\,\lambda_2)\,\lambda_3\,\sqrt{2} - \lambda_3^3\,\big(6\,\lambda_3^2 - 15\,\lambda_3 + 10\big)\,\sqrt{2} + \frac{2}{3}\,\lambda_3^3\,(4-3\,\lambda_3)\,\lambda_1\,\sqrt{2} + \frac{2}{3}\,\lambda_3^3\,(4-3\,\lambda_3)\,\lambda_2\,\sqrt{2}$

"v", $\left[3 - 64\,\tau^2 + \frac{368}{3}\,\tau^3 - 60\,\tau^4,\ -44\,\tau^2 + \frac{280}{3}\,\tau^3 - 48\,\tau^4 - \frac{1}{3},\ -\frac{1}{3}\,\sqrt{2}\,\big(18\,\tau^4 - 28\,\tau^3 + 6\,\tau^2 - 1\big)\right]$

"vv", $\left[1 - 52\,\tau^2 + \frac{296}{3}\,\tau^3 - 48\,\tau^4,\ \frac{5}{3} - 56\,\tau^2 + \frac{352}{3}\,\tau^3 - 60\,\tau^4,\ \frac{1}{3}\,\sqrt{2}\,\big(18\,\tau^4 - 44\,\tau^3 + 30\,\tau^2 - 5\big)\right]$

"dv", $\left[12\,\tau^4 - 24\,\tau^3 + 12\,\tau^2 - 2,\ -12\,\tau^4 + 24\,\tau^3 - 12\,\tau^2 + 2,\ 2\,\sqrt{2}\,\big(6\,\tau^4 - 12\,\tau^3 + 6\,\tau^2 - 1\big)\right]$

"y", $\left[-40\,\tau^4 + \frac{224}{3}\,\tau^3 - 32\,\tau^2 - 2,\ -\frac{2}{3} + 48\,\tau^2 - \frac{256}{3}\,\tau^3 + 40\,\tau^4,\ \frac{2}{3}\,\sqrt{2}\,\big(60\,\tau^4 - 120\,\tau^3 + 60\,\tau^2 + 1\big)\right]$

"w", $\left[-\frac{16}{3}\,\sqrt{2}\,\big(6\,\tau^4 - 12\,\tau^3 + 6\,\tau^2 - 1\big)\,\big(30\,\tau^2 - 62\,\tau + 33\big)\,\tau^2,\ -\frac{16}{3}\,\sqrt{2}\,\big(6\,\tau^4 - 12\,\tau^3 + 6\,\tau^2 - 1\big)\,\big(30\,\tau^2 + 2\,\tau + 1\big)\,(\tau-1)^2,\ -\frac{16}{3}\,(2\,\tau - 1)\,\big(2\,\tau^2 - 2\,\tau - 1\big)\,\big(6\,\tau^4 - 12\,\tau^3 + 6\,\tau^2 - 1\big)\right]$

"b=det[v,dv,y]", $\frac{32}{9}\,\sqrt{2}\,\big(6\,\tau^4 - 12\,\tau^3 + 6\,\tau^2 - 1\big)\,\big(4860\,\tau^4 - 9720\,\tau^3 + 4892\,\tau^2 - 32\,\tau - 63\big)\,\tau^2\,(\tau-1)^2$

"____"

"On (directed Edge ", 3, "   points ", 1, " --> ", 4

$1, 92\,\lambda_2^2\,\lambda_4^2\,\lambda_1 - 92\,\lambda_1^2\,\lambda_4^2\,\lambda_2 - 2\,\lambda_1^3\,\big(6\,\lambda_1^2 - 15\,\lambda_1 + 10\big) + \frac{4}{3}\,\lambda_1^3\,(4-3\,\lambda_1)\,\lambda_2 - \frac{2}{3}\,\lambda_1^3\,(4-3\,\lambda_1)\,\lambda_4 + 2\,\lambda_2^3\,\big(6\,\lambda_2^2 - 15\,\lambda_2 + 10\big) - \frac{4}{3}\,\lambda_2^3\,(4-3\,\lambda_2)\,\lambda_1 + \frac{2}{3}\,\lambda_2^3\,(4-3\,\lambda_2)\,\lambda_4 - 2\,\lambda_4^3\,(4-3\,\lambda_4)\,\lambda_1 + 2\,\lambda_4^3\,(4-3\,\lambda_4)\,\lambda_2$

$2, 92\,\lambda_2^2\,\lambda_4^2\,\lambda_1 + 92\,\lambda_1^2\,\lambda_4^2\,\lambda_2 + 2\,\lambda_1^3\,(4-3\,\lambda_1)\,\lambda_4 + 2\,\lambda_2^3\,(4-3\,\lambda_2)\,\lambda_4 + 2\,\lambda_4^3\,\big(6\,\lambda_4^2 - 15\,\lambda_4$

$+ 10\big) + \frac{2}{3}\,\lambda_4^3\,(4 - 3\,\lambda_4)\,\lambda_1 + \frac{2}{3}\,\lambda_4^3\,(4 - 3\,\lambda_4)\,\lambda_2$

$3,\ 92\,\lambda_1^2\,\lambda_2^2\,\lambda_4\,\sqrt{2} + \lambda_1^3\,(6\,\lambda_1^2 - 15\,\lambda_1 + 10)\,\sqrt{2} + \frac{4}{3}\,\lambda_1^3\,(4 - 3\,\lambda_1)\,\lambda_2\,\sqrt{2} - \frac{2}{3}\,\lambda_1^3\,(4 - 3\,\lambda_1)\,\lambda_4\,\sqrt{2} + \lambda_2^3\,(6\,\lambda_2^2 - 15\,\lambda_2 + 10)\,\sqrt{2} + \frac{4}{3}\,\lambda_2^3\,(4 - 3\,\lambda_2)\,\lambda_1\,\sqrt{2} - \frac{2}{3}\,\lambda_2^3\,(4 - 3\,\lambda_2)\,\lambda_4\,\sqrt{2} - \lambda_4^3\,(6\,\lambda_4^2 - 15\,\lambda_4 + 10)\,\sqrt{2} + \frac{2}{3}\,\lambda_4^3\,(4 - 3\,\lambda_4)\,\lambda_1\,\sqrt{2} + \frac{2}{3}\,\lambda_4^3\,(4 - 3\,\lambda_4)\,\lambda_2\,\sqrt{2}$

$\text{"v"},\ \left[3 - 64\,\tau^2 + \frac{368}{3}\,\tau^3 - 60\,\tau^4,\ 44\,\tau^2 - \frac{280}{3}\,\tau^3 + 48\,\tau^4 + \frac{1}{3},\ -\frac{1}{3}\,\sqrt{2}\,(18\,\tau^4 - 28\,\tau^3 + 6\,\tau^2 - 1)\right]$

$\text{"vv"},\ \left[1 - 52\,\tau^2 + \frac{296}{3}\,\tau^3 - 48\,\tau^4,\ 56\,\tau^2 - \frac{352}{3}\,\tau^3 + 60\,\tau^4 - \frac{5}{3},\ \frac{1}{3}\,\sqrt{2}\,(18\,\tau^4 - 44\,\tau^3 + 30\,\tau^2 - 5)\right]$

$\text{"dv"},\ [12\,\tau^4 - 24\,\tau^3 + 12\,\tau^2 - 2,\ 12\,\tau^4 - 24\,\tau^3 + 12\,\tau^2 - 2,\ 2\,\sqrt{2}\,(6\,\tau^4 - 12\,\tau^3 + 6\,\tau^2 - 1)]$

$\text{"y"},\ \left[-40\,\tau^4 + \frac{224}{3}\,\tau^3 - 32\,\tau^2 - 2,\ \frac{2}{3} - 48\,\tau^2 + \frac{256}{3}\,\tau^3 - 40\,\tau^4,\ \frac{2}{3}\,\sqrt{2}\,(60\,\tau^4 - 120\,\tau^3 + 60\,\tau^2 + 1)\right]$

$\text{"w"},\ \left[\frac{16}{3}\,\sqrt{2}\,(6\,\tau^4 - 12\,\tau^3 + 6\,\tau^2 - 1)\,(30\,\tau^2 - 62\,\tau + 33)\,\tau^2,\ -\frac{16}{3}\,\sqrt{2}\,(6\,\tau^4 - 12\,\tau^3 + 6\,\tau^2 - 1)\,(30\,\tau^2 + 2\,\tau + 1)\,(\tau - 1)^2,\ \frac{16}{3}\,(2\,\tau - 1)\,(2\,\tau^2 - 2\,\tau - 1)\,(6\,\tau^4 - 12\,\tau^3 + 6\,\tau^2 - 1)\right]$

$\text{"b=det[v,dv,y]"},\ -\frac{32}{9}\,\sqrt{2}\,(6\,\tau^4 - 12\,\tau^3 + 6\,\tau^2 - 1)\,(4860\,\tau^4 - 9720\,\tau^3 + 4892\,\tau^2 - 32\,\tau - 63)\,\tau^2\,(\tau - 1)^2$

"____"

"On (directed Edge ", 4, "   points ", 2, " --> ", 3

$1,\ 92\,\lambda_2^2\,\lambda_3^2\,\lambda_1 - 92\,\lambda_1^2\,\lambda_3^2\,\lambda_2 - 2\,\lambda_1^3\,(6\,\lambda_1^2 - 15\,\lambda_1 + 10) + \frac{4}{3}\,\lambda_1^3\,(4 - 3\,\lambda_1)\,\lambda_2 - \frac{2}{3}\,\lambda_1^3\,(4 - 3\,\lambda_1)\,\lambda_3 + 2\,\lambda_2^3\,(6\,\lambda_2^2 - 15\,\lambda_2 + 10) - \frac{4}{3}\,\lambda_2^3\,(4 - 3\,\lambda_2)\,\lambda_1 + \frac{2}{3}\,\lambda_2^3\,(4 - 3\,\lambda_2)\,\lambda_3 - 2\,\lambda_3^3\,(4 - 3\,\lambda_3)\,\lambda_1 + 2\,\lambda_3^3\,(4 - 3\,\lambda_3)\,\lambda_2$

$2,\ -92\,\lambda_2^2\,\lambda_3^2\,\lambda_1 - 92\,\lambda_1^2\,\lambda_3^2\,\lambda_2 - 2\,\lambda_1^3\,(4 - 3\,\lambda_1)\,\lambda_3 - 2\,\lambda_2^3\,(4 - 3\,\lambda_2)\,\lambda_3 - 2\,\lambda_3^3\,(6\,\lambda_3^2 - 15\,\lambda_3 + 10) - \frac{2}{3}\,\lambda_3^3\,(4 - 3\,\lambda_3)\,\lambda_1 - \frac{2}{3}\,\lambda_3^3\,(4 - 3\,\lambda_3)\,\lambda_2$

$$3, 92 \lambda_1^2 \lambda_2^2 \lambda_3 \sqrt{2} + \lambda_1^3 \left(6 \lambda_1^2 - 15 \lambda_1 + 10\right) \sqrt{2} + \frac{4}{3} \lambda_1^3 \left(4 - 3 \lambda_1\right) \lambda_2 \sqrt{2} - \frac{2}{3} \lambda_1^3 (4 - 3 \lambda_1) \lambda_3 \sqrt{2} + \lambda_2^3 \left(6 \lambda_2^2 - 15 \lambda_2 + 10\right) \sqrt{2} + \frac{4}{3} \lambda_2^3 \left(4 - 3 \lambda_2\right) \lambda_1 \sqrt{2} - \frac{2}{3} \lambda_2^3 (4 - 3 \lambda_2) \lambda_3 \sqrt{2} - \lambda_3^3 \left(6 \lambda_3^2 - 15 \lambda_3 + 10\right) \sqrt{2} + \frac{2}{3} \lambda_3^3 \left(4 - 3 \lambda_3\right) \lambda_1 \sqrt{2} + \frac{2}{3} \lambda_3^3 (4 - 3 \lambda_3) \lambda_2 \sqrt{2}$$

$$\text{"v"}, \left[-3 + 64 \tau^2 - \frac{368}{3} \tau^3 + 60 \tau^4, -44 \tau^2 + \frac{280}{3} \tau^3 - 48 \tau^4 - \frac{1}{3}, -\frac{1}{3} \sqrt{2} \left(18 \tau^4 - 28 \tau^3 + 6 \tau^2 - 1\right)\right]$$

$$\text{"vv"}, \left[-1 + 52 \tau^2 - \frac{296}{3} \tau^3 + 48 \tau^4, \frac{5}{3} - 56 \tau^2 + \frac{352}{3} \tau^3 - 60 \tau^4, \frac{1}{3} \sqrt{2} \left(18 \tau^4 - 44 \tau^3 + 30 \tau^2 - 5\right)\right]$$

$$\text{"dv"}, \left[-12 \tau^4 + 24 \tau^3 - 12 \tau^2 + 2, -12 \tau^4 + 24 \tau^3 - 12 \tau^2 + 2, 2 \sqrt{2} \left(6 \tau^4 - 12 \tau^3 + 6 \tau^2 - 1\right)\right]$$

$$\text{"y"}, \left[40 \tau^4 - \frac{224}{3} \tau^3 + 32 \tau^2 + 2, -\frac{2}{3} + 48 \tau^2 - \frac{256}{3} \tau^3 + 40 \tau^4, \frac{2}{3} \sqrt{2} \left(60 \tau^4 - 120 \tau^3 + 60 \tau^2 + 1\right)\right]$$

$$\text{"w"}, \left[-\frac{16}{3} \sqrt{2} \left(6 \tau^4 - 12 \tau^3 + 6 \tau^2 - 1\right) \left(30 \tau^2 - 62 \tau + 33\right) \tau^2, \frac{16}{3} \sqrt{2} \left(6 \tau^4 - 12 \tau^3 + 6 \tau^2 - 1\right) \left(30 \tau^2 + 2 \tau + 1\right) (\tau - 1)^2, \frac{16}{3} (2 \tau - 1) \left(2 \tau^2 - 2 \tau - 1\right) \left(6 \tau^4 - 12 \tau^3 + 6 \tau^2 - 1\right)\right]$$

$$\text{"b=det[v,dv,y]"}, -\frac{32}{9} \sqrt{2} \left(6 \tau^4 - 12 \tau^3 + 6 \tau^2 - 1\right) \left(4860 \tau^4 - 9720 \tau^3 + 4892 \tau^2 - 32 \tau - 63\right) \tau^2 (\tau - 1)^2$$

"____"

"On (directed Edge ", 5, "   points ", 2, " --> ", 4

$$1, 92 \lambda_2^2 \lambda_4^2 \lambda_1 - 92 \lambda_1^2 \lambda_4^2 \lambda_2 - 2 \lambda_1^3 \left(6 \lambda_1^2 - 15 \lambda_1 + 10\right) + \frac{4}{3} \lambda_1^3 \left(4 - 3 \lambda_1\right) \lambda_2 - \frac{2}{3} \lambda_1^3 (4 - 3 \lambda_1) \lambda_4 + 2 \lambda_2^3 \left(6 \lambda_2^2 - 15 \lambda_2 + 10\right) - \frac{4}{3} \lambda_2^3 \left(4 - 3 \lambda_2\right) \lambda_1 + \frac{2}{3} \lambda_2^3 \left(4 - 3 \lambda_2\right) \lambda_4 - 2 \lambda_4^3 \left(4 - 3 \lambda_4\right) \lambda_1 + 2 \lambda_4^3 \left(4 - 3 \lambda_4\right) \lambda_2$$

$$2, 92 \lambda_2^2 \lambda_4^2 \lambda_1 + 92 \lambda_1^2 \lambda_4^2 \lambda_2 + 2 \lambda_1^3 \left(4 - 3 \lambda_1\right) \lambda_4 + 2 \lambda_2^3 \left(4 - 3 \lambda_2\right) \lambda_4 + 2 \lambda_4^3 \left(6 \lambda_4^2 - 15 \lambda_4 + 10\right) + \frac{2}{3} \lambda_4^3 \left(4 - 3 \lambda_4\right) \lambda_1 + \frac{2}{3} \lambda_4^3 \left(4 - 3 \lambda_4\right) \lambda_2$$

$3,\ 92\,\lambda_1^2\,\lambda_2^2\,\lambda_4\sqrt{2}+\lambda_1^3\left(6\,\lambda_1^2-15\,\lambda_1+10\right)\sqrt{2}+\frac{4}{3}\,\lambda_1^3\left(4-3\,\lambda_1\right)\lambda_2\sqrt{2}-\frac{2}{3}\,\lambda_1^3\left(4-3\,\lambda_1\right)\lambda_4\sqrt{2}+\lambda_2^3\left(6\,\lambda_2^2-15\,\lambda_2+10\right)\sqrt{2}+\frac{4}{3}\,\lambda_2^3\left(4-3\,\lambda_2\right)\lambda_1\sqrt{2}-\frac{2}{3}\,\lambda_2^3\left(4-3\,\lambda_2\right)\lambda_4\sqrt{2}-\lambda_4^3\left(6\,\lambda_4^2-15\,\lambda_4+10\right)\sqrt{2}+\frac{2}{3}\,\lambda_4^3\left(4-3\,\lambda_4\right)\lambda_1\sqrt{2}+\frac{2}{3}\,\lambda_4^3\left(4-3\,\lambda_4\right)\lambda_2\sqrt{2}$

"v", $\left[-3+64\,\tau^2-\frac{368}{3}\,\tau^3+60\,\tau^4,\ 44\,\tau^2-\frac{280}{3}\,\tau^3+48\,\tau^4+\frac{1}{3},\ -\frac{1}{3}\sqrt{2}\left(18\,\tau^4-28\,\tau^3+6\,\tau^2-1\right)\right]$

"vv", $\left[-1+52\,\tau^2-\frac{296}{3}\,\tau^3+48\,\tau^4,\ 56\,\tau^2-\frac{352}{3}\,\tau^3+60\,\tau^4-\frac{5}{3},\ \frac{1}{3}\sqrt{2}\left(18\,\tau^4-44\,\tau^3+30\,\tau^2-5\right)\right]$

"dv", $\left[-12\,\tau^4+24\,\tau^3-12\,\tau^2+2,\ 12\,\tau^4-24\,\tau^3+12\,\tau^2-2,\ 2\sqrt{2}\left(6\,\tau^4-12\,\tau^3+6\,\tau^2-1\right)\right]$

"y", $\left[40\,\tau^4-\frac{224}{3}\,\tau^3+32\,\tau^2+2,\ \frac{2}{3}-48\,\tau^2+\frac{256}{3}\,\tau^3-40\,\tau^4,\ \frac{2}{3}\sqrt{2}\left(60\,\tau^4-120\,\tau^3+60\,\tau^2+1\right)\right]$

"w", $\left[\frac{16}{3}\sqrt{2}\left(6\,\tau^4-12\,\tau^3+6\,\tau^2-1\right)\left(30\,\tau^2-62\,\tau+33\right)\tau^2,\ \frac{16}{3}\sqrt{2}\left(6\,\tau^4-12\,\tau^3+6\,\tau^2-1\right)\left(30\,\tau^2+2\,\tau+1\right)\left(\tau-1\right)^2,\ -\frac{16}{3}\left(2\,\tau-1\right)\left(2\,\tau^2-2\,\tau-1\right)\left(6\,\tau^4-12\,\tau^3+6\,\tau^2-1\right)\right]$

"b=det[v,dv,y]", $\frac{32}{9}\sqrt{2}\left(6\,\tau^4-12\,\tau^3+6\,\tau^2-1\right)\left(4860\,\tau^4-9720\,\tau^3+4892\,\tau^2-32\,\tau-63\right)\tau^2\left(\tau-1\right)^2$

"____"

"On (directed Edge ", 6, "   points ", 3, " --> ", 4

$1,\ -92\,\lambda_1^2\,\lambda_4^2\,\lambda_3-92\,\lambda_1^2\,\lambda_3^2\,\lambda_4-2\,\lambda_1^3\left(6\,\lambda_1^2-15\,\lambda_1+10\right)-\frac{2}{3}\,\lambda_1^3\left(4-3\,\lambda_1\right)\lambda_3-\frac{2}{3}\,\lambda_1^3\left(4-3\,\lambda_1\right)\lambda_4-2\,\lambda_3^3\left(4-3\,\lambda_3\right)\lambda_1-2\,\lambda_4^3\left(4-3\,\lambda_4\right)\lambda_1$

$2,\ 92\,\lambda_1^2\,\lambda_4^2\,\lambda_3-92\,\lambda_1^2\,\lambda_3^2\,\lambda_4-2\,\lambda_1^3\left(4-3\,\lambda_1\right)\lambda_3+2\,\lambda_1^3\left(4-3\,\lambda_1\right)\lambda_4-2\,\lambda_3^3\left(6\,\lambda_3^2-15\,\lambda_3+10\right)-\frac{2}{3}\,\lambda_3^3\left(4-3\,\lambda_3\right)\lambda_1+\frac{4}{3}\,\lambda_3^3\left(4-3\,\lambda_3\right)\lambda_4+2\,\lambda_4^3\left(6\,\lambda_4^2-15\,\lambda_4+10\right)+\frac{2}{3}\,\lambda_4^3\left(4-3\,\lambda_4\right)\lambda_1-\frac{4}{3}\,\lambda_4^3\left(4-3\,\lambda_4\right)\lambda_3$

$3,\ -92\,\lambda_3^2\,\lambda_4^2\,\lambda_1\sqrt{2}+\lambda_1^3\left(6\,\lambda_1^2-15\,\lambda_1+10\right)\sqrt{2}-\frac{2}{3}\,\lambda_1^3\left(4-3\,\lambda_1\right)\lambda_3\sqrt{2}-\frac{2}{3}\,\lambda_1^3\left(4\right.$

$$-3\lambda_1)\lambda_4\sqrt{2}-\lambda_3^3\left(6\lambda_3^2-15\lambda_3+10\right)\sqrt{2}+\frac{2}{3}\lambda_3^3\left(4-3\lambda_3\right)\lambda_1\sqrt{2}-\frac{4}{3}\lambda_3^3(4$$

$$-3\lambda_3)\lambda_4\sqrt{2}-\lambda_4^3\left(6\lambda_4^2-15\lambda_4+10\right)\sqrt{2}+\frac{2}{3}\lambda_4^3\left(4-3\lambda_4\right)\lambda_1\sqrt{2}-\frac{4}{3}\lambda_4^3(4$$

$$-3\lambda_4)\lambda_3\sqrt{2}$$

"v", $\left[12\tau^4-24\tau^3+12\tau^2-2, \frac{4}{3}\left(2\tau-1\right)\left(2\tau^2-2\tau-1\right), -\frac{2}{3}\sqrt{2}\left(3\tau-2+\sqrt{2}\right)\left(3\tau-1+\sqrt{2}\right)\left(-3\tau+2+\sqrt{2}\right)\left(-3\tau+1+\sqrt{2}\right)\right]$

"vv", $\left[-12\tau^4+24\tau^3-12\tau^2+2, \frac{4}{3}\left(2\tau-1\right)\left(2\tau^2-2\tau-1\right), -\frac{2}{3}\sqrt{2}\left(3\tau-2+\sqrt{2}\right)\left(3\tau-1+\sqrt{2}\right)\left(-3\tau+2+\sqrt{2}\right)\left(-3\tau+1+\sqrt{2}\right)\right]$

"dv", $\left[-24\tau^4+48\tau^3-24\tau^2+4, 0, 0\right]$

"y", $\left[0, -\frac{4}{3}-80\tau^2+160\tau^3-80\tau^4, -\frac{4}{3}\sqrt{2}\left(2\tau^2-2\tau-1\right)\left(2\tau-1\right)\right]$

"w", $\left[0, -\frac{16}{3}\left(6\tau^4-12\tau^3+6\tau^2-1\right)\sqrt{2}\left(2\tau^2-2\tau-1\right)\left(2\tau-1\right), \frac{16}{3}\left(6\tau^4-12\tau^3+6\tau^2-1\right)\left(60\tau^4-120\tau^3+60\tau^2+1\right)\right]$

"b=det[v,dv,y]", $-\frac{32}{9}\sqrt{2}\left(6\tau^4-12\tau^3+6\tau^2-1\right)\left(4860\tau^4-9720\tau^3+4892\tau^2-32\tau-63\right)\tau^2\left(\tau-1\right)^2$

"____\\
__________"

"____\\
__________"

"Cofactors of GCD(w_1,w_2,w_3)"

"W[", 1, ",on points ", 1, "-->", 2, "]"

"Polynomials"

$$-\frac{16}{3}\left(6\tau^4-12\tau^3+6\tau^2-1\right)\sqrt{2}\left(2\tau^2-2\tau-1\right)\left(2\tau-1\right)$$

$$0$$

$$-\frac{16}{3}\left(6\tau^4-12\tau^3+6\tau^2-1\right)\left(60\tau^4-120\tau^3+60\tau^2+1\right)$$

" GCD over double edge ", 1, " = ", $\tau^4-2\tau^3+\tau^2-\frac{1}{6}$

"qw", 1, 1, "= ", $\frac{15}{4864}\tau\sqrt{2}-\frac{255}{19456}\sqrt{2}-\frac{225}{4864}\sqrt{2}\tau^3+\frac{675}{9728}\tau^2\sqrt{2}$

"qw", 1, 2, "= ", 0

"qw", 1, 3, "= ", $-\frac{49}{9728}-\frac{15}{2432}\tau+\frac{15}{2432}\tau^2$

"W[", 2, ",on points ", 1, "-->", 3, "]"

"Polynomials"

$$-\frac{16}{3}\sqrt{2}\left(6\tau^4-12\tau^3+6\tau^2-1\right)\left(30\tau^2-62\tau+33\right)\tau^2$$

$$-\frac{16}{3}\sqrt{2}\left(6\tau^4-12\tau^3+6\tau^2-1\right)\left(30\tau^2+2\tau+1\right)\left(\tau-1\right)^2$$

$$-\frac{16}{3}\left(2\tau-1\right)\left(2\tau^2-2\tau-1\right)\left(6\tau^4-12\tau^3+6\tau^2-1\right)$$

" GCD over double edge ", 2, " = ", $\tau^4-2\tau^3+\tau^2-\frac{1}{6}$

"qw", 2, 1, "= ", $-\frac{345}{19456}\tau\sqrt{2}+\frac{637}{38912}\sqrt{2}+\frac{225}{4864}\sqrt{2}\tau^3-\frac{645}{9728}\tau^2\sqrt{2}$

"qw", 2, 2, "= ", $-\frac{833}{38912}\sqrt{2}+\frac{225}{19456}\tau\sqrt{2}+\frac{705}{9728}\tau^2\sqrt{2}-\frac{225}{4864}\sqrt{2}\tau^3$

"qw", 2, 3, "= ", $\frac{225}{19456}-\frac{225}{9728}\tau$

"W[", 3, ",on points ", 1, "-->", 4, "]"

"Polynomials"

$$\frac{16}{3}\sqrt{2}\left(6\tau^4-12\tau^3+6\tau^2-1\right)\left(30\tau^2-62\tau+33\right)\tau^2$$

$$-\frac{16}{3}\sqrt{2}\left(6\tau^4-12\tau^3+6\tau^2-1\right)\left(30\tau^2+2\tau+1\right)\left(\tau-1\right)^2$$

$$\frac{16}{3}\left(2\tau-1\right)\left(2\tau^2-2\tau-1\right)\left(6\tau^4-12\tau^3+6\tau^2-1\right)$$

" GCD over double edge ", 3, " = ", $\tau^4-2\tau^3+\tau^2-\frac{1}{6}$

"qw", 3, 1, "= ", $\frac{345}{19456}\tau\sqrt{2}-\frac{637}{38912}\sqrt{2}-\frac{225}{4864}\sqrt{2}\tau^3+\frac{645}{9728}\tau^2\sqrt{2}$

"qw", 3, 2, "= ", $-\frac{833}{38912}\sqrt{2}+\frac{225}{19456}\tau\sqrt{2}+\frac{705}{9728}\tau^2\sqrt{2}-\frac{225}{4864}\sqrt{2}\tau^3$

"qw", 3, 3, "= ", $-\frac{225}{19456}+\frac{225}{9728}\tau$

"W[", 4, ",on points ", 2, "-->", 3, "]"

"Polynomials"

$$-\frac{16}{3}\sqrt{2}\left(6\tau^4-12\tau^3+6\tau^2-1\right)\left(30\tau^2-62\tau+33\right)\tau^2$$

$$\frac{16}{3}\sqrt{2}\left(6\tau^4-12\tau^3+6\tau^2-1\right)\left(30\tau^2+2\tau+1\right)\left(\tau-1\right)^2$$

$$\frac{16}{3}\left(2\tau-1\right)\left(2\tau^2-2\tau-1\right)\left(6\tau^4-12\tau^3+6\tau^2-1\right)$$

" GCD over double edge ", 4, " = ", $\tau^4-2\tau^3+\tau^2-\frac{1}{6}$

"qw", 4, 1, "= ", $-\frac{345}{19456}\tau\sqrt{2}+\frac{637}{38912}\sqrt{2}+\frac{225}{4864}\sqrt{2}\tau^3-\frac{645}{9728}\tau^2\sqrt{2}$

$$"qw", 4, 2, "= ", \frac{833}{38912}\sqrt{2} - \frac{225}{19456}\tau\sqrt{2} - \frac{705}{9728}\tau^2\sqrt{2} + \frac{225}{4864}\sqrt{2}\tau^3$$

$$"qw", 4, 3, "= ", -\frac{225}{19456} + \frac{225}{9728}\tau$$

"W[", 5, ",on points ", 2, "-->", 4, "]"

"Polynomials"

$$\frac{16}{3}\sqrt{2}\left(6\tau^4 - 12\tau^3 + 6\tau^2 - 1\right)\left(30\tau^2 - 62\tau + 33\right)\tau^2$$

$$\frac{16}{3}\sqrt{2}\left(6\tau^4 - 12\tau^3 + 6\tau^2 - 1\right)\left(30\tau^2 + 2\tau + 1\right)\left(\tau - 1\right)^2$$

$$-\frac{16}{3}\left(2\tau - 1\right)\left(2\tau^2 - 2\tau - 1\right)\left(6\tau^4 - 12\tau^3 + 6\tau^2 - 1\right)$$

$$\text{" GCD over double edge ", 5, " = ", } \tau^4 - 2\tau^3 + \tau^2 - \frac{1}{6}$$

$$"qw", 5, 1, "= ", \frac{345}{19456}\tau\sqrt{2} - \frac{637}{38912}\sqrt{2} - \frac{225}{4864}\sqrt{2}\tau^3 + \frac{645}{9728}\tau^2\sqrt{2}$$

$$"qw", 5, 2, "= ", \frac{833}{38912}\sqrt{2} - \frac{225}{19456}\tau\sqrt{2} - \frac{705}{9728}\tau^2\sqrt{2} + \frac{225}{4864}\sqrt{2}\tau^3$$

$$"qw", 5, 3, "= ", \frac{225}{19456} - \frac{225}{9728}\tau$$

"W[", 6, ",on points ", 3, "-->", 4, "]"

"Polynomials"

0

$$-\frac{16}{3}\left(6\tau^4 - 12\tau^3 + 6\tau^2 - 1\right)\sqrt{2}\left(2\tau^2 - 2\tau - 1\right)\left(2\tau - 1\right)$$

$$\frac{16}{3}\left(6\tau^4 - 12\tau^3 + 6\tau^2 - 1\right)\left(60\tau^4 - 120\tau^3 + 60\tau^2 + 1\right)$$

$$\text{" GCD over double edge ", 6, " = ", } \tau^4 - 2\tau^3 + \tau^2 - \frac{1}{6}$$

"qw", 6, 1, "= ", 0

$$"qw", 6, 2, "= ", \frac{15}{4864}\tau\sqrt{2} - \frac{255}{19456}\sqrt{2} - \frac{225}{4864}\sqrt{2}\tau^3 + \frac{675}{9728}\tau^2\sqrt{2}$$

$$"qw", 6, 3, "= ", \frac{49}{9728} + \frac{15}{2432}\tau - \frac{15}{2432}\tau^2$$

"____\\
________"

"____\\
________"

"Z polynomials along double edges"

"Double edge ", 1, "   ", 1, "-->", 2

$$-\frac{64}{3}\left(4860\tau^4 - 9720\tau^3 + 4892\tau^2 - 32\tau - 63\right)\sqrt{2}$$

"Zq[", 1, 1, " resp. ZqL[", 1, 1, "]"

$$\frac{5}{152}\left(4860\tau^4-9720\tau^3+4892\tau^2-32\tau-63\right)\left(30\tau^2-30\tau-17\right)(2\tau-1)$$

$$-\frac{5}{304}\left(4860\lambda_1^4-9720\lambda_1^3+4892\lambda_1^2-32\lambda_1-63\right)\left(30\lambda_2^2-30\lambda_2-17\right)\left(-1+2\lambda_2\right)$$

$$+\frac{5}{304}\left(4860\lambda_2^4-9720\lambda_2^3+4892\lambda_2^2-32\lambda_2-63\right)\left(30\lambda_1^2-30\lambda_1-17\right)\left(2\lambda_1-1\right)$$

"Zq[", 1, 2, " resp. ZqL[", 1, 2, "]"

0

0

"Zq[", 1, 3, " resp. ZqL[", 1, 3, "]"

$$-\frac{64}{3}\left(4860\tau^4-9720\tau^3+4892\tau^2-32\tau-63\right)\sqrt{2}\left(-\frac{49}{9728}-\frac{15}{2432}\tau+\frac{15}{2432}\tau^2\right)$$

$$-\frac{32}{3}\left(4860\lambda_1^4-9720\lambda_1^3+4892\lambda_1^2-32\lambda_1-63\right)\sqrt{2}\left(-\frac{49}{9728}-\frac{15}{2432}\lambda_2+\frac{15}{2432}\lambda_2^2\right)$$

$$-\frac{32}{3}\left(4860\lambda_2^4-9720\lambda_2^3+4892\lambda_2^2-32\lambda_2-63\right)\sqrt{2}\left(-\frac{49}{9728}-\frac{15}{2432}\lambda_1+\frac{15}{2432}\lambda_1^2\right)$$

"Double edge ", 2, "   ", 1, "-->", 3

$$\frac{64}{3}\left(4860\tau^4-9720\tau^3+4892\tau^2-32\tau-63\right)\sqrt{2}$$

"Zq[", 2, 1, " resp. ZqL[", 2, 1, "]"

$$\frac{1}{912}\left(4860\tau^4-9720\tau^3+4892\tau^2-32\tau-63\right)(30\tau-13)\left(60\tau^2-60\tau-49\right)$$

$$-\frac{1}{1824}\left(4860\lambda_1^4-9720\lambda_1^3+4892\lambda_1^2-32\lambda_1-63\right)\left(-17+30\lambda_3\right)\left(60\lambda_3^2-60\lambda_3-49\right)$$

$$+\frac{1}{1824}\left(4860\lambda_3^4-9720\lambda_3^3+4892\lambda_3^2-32\lambda_3-63\right)\left(30\lambda_1-13\right)\left(60\lambda_1^2-60\lambda_1-49\right)$$

"Zq[", 2, 2, " resp. ZqL[", 2, 2, "]"

$$-\frac{1}{912}\left(4860\tau^4-9720\tau^3+4892\tau^2-32\tau-63\right)(30\tau-17)\left(60\tau^2-60\tau-49\right)$$

$$\frac{1}{1824}\left(4860\lambda_1^4-9720\lambda_1^3+4892\lambda_1^2-32\lambda_1-63\right)\left(-13+30\lambda_3\right)\left(60\lambda_3^2-60\lambda_3-49\right)$$

$$-\frac{1}{1824}\left(4860\lambda_3^4-9720\lambda_3^3+4892\lambda_3^2-32\lambda_3-63\right)\left(30\lambda_1-17\right)\left(60\lambda_1^2-60\lambda_1-49\right)$$

"Zq[", 2, 3, " resp. ZqL[", 2, 3, "]"

$$\frac{64}{3}\left(4860\tau^4-9720\tau^3+4892\tau^2-32\tau-63\right)\sqrt{2}\left(\frac{225}{19456}-\frac{225}{9728}\tau\right)$$

$$\frac{32}{3}\left(4860\lambda_1^4-9720\lambda_1^3+4892\lambda_1^2-32\lambda_1-63\right)\sqrt{2}\left(-\frac{225}{19456}+\frac{225}{9728}\lambda_3\right)$$

$$+\frac{32}{3}\left(4860\lambda_3^4-9720\lambda_3^3+4892\lambda_3^2-32\lambda_3-63\right)\sqrt{2}\left(\frac{225}{19456}-\frac{225}{9728}\lambda_1\right)$$

"Double edge ", 3, "   ", 1, "-->", 4

$$-\frac{64}{3}\left(4860\tau^4-9720\tau^3+4892\tau^2-32\tau-63\right)\sqrt{2}$$

"Zq[", 3, 1, " resp. ZqL[", 3, 1, "]"

$$\frac{1}{912}\left(4860\tau^4-9720\tau^3+4892\tau^2-32\tau-63\right)\left(30\tau-13\right)\left(60\tau^2-60\tau-49\right)$$

$$-\frac{1}{1824}\left(4860\lambda_1^4-9720\lambda_1^3+4892\lambda_1^2-32\lambda_1-63\right)\left(-17+30\lambda_4\right)\left(60\lambda_4^2-60\lambda_4-49\right)$$

$$+\frac{1}{1824}\left(4860\lambda_4^4-9720\lambda_4^3+4892\lambda_4^2-32\lambda_4-63\right)\left(30\lambda_1-13\right)\left(60\lambda_1^2-60\lambda_1-49\right)$$

"Zq[", 3, 2, " resp. ZqL[", 3, 2, "]"

$$\frac{1}{912}\left(4860\tau^4-9720\tau^3+4892\tau^2-32\tau-63\right)\left(30\tau-17\right)\left(60\tau^2-60\tau-49\right)$$

$$-\frac{1}{1824}\left(4860\lambda_1^4-9720\lambda_1^3+4892\lambda_1^2-32\lambda_1-63\right)\left(-13+30\lambda_4\right)\left(60\lambda_4^2-60\lambda_4-49\right)$$

$$+\frac{1}{1824}\left(4860\lambda_4^4-9720\lambda_4^3+4892\lambda_4^2-32\lambda_4-63\right)\left(30\lambda_1-17\right)\left(60\lambda_1^2-60\lambda_1-49\right)$$

"Zq[", 3, 3, " resp. ZqL[", 3, 3, "]"

$$-\frac{64}{3}\left(4860\tau^4-9720\tau^3+4892\tau^2-32\tau-63\right)\sqrt{2}\left(-\frac{225}{19456}+\frac{225}{9728}\tau\right)$$

$$-\frac{32}{3}\left(4860\lambda_1^4-9720\lambda_1^3+4892\lambda_1^2-32\lambda_1-63\right)\sqrt{2}\left(\frac{225}{19456}-\frac{225}{9728}\lambda_4\right)$$

$$-\frac{32}{3}\left(4860\lambda_4^4-9720\lambda_4^3+4892\lambda_4^2-32\lambda_4-63\right)\sqrt{2}\left(-\frac{225}{19456}+\frac{225}{9728}\lambda_1\right)$$

"Double edge ", 4, "   ", 2, "-->", 3

$$-\frac{64}{3}\left(4860\tau^4-9720\tau^3+4892\tau^2-32\tau-63\right)\sqrt{2}$$

"Zq[", 4, 1, " resp. ZqL[", 4, 1, "]"

$$-\frac{1}{912}\left(4860\tau^4-9720\tau^3+4892\tau^2-32\tau-63\right)\left(30\tau-13\right)\left(60\tau^2-60\tau-49\right)$$

$$\frac{1}{1824}\left(4860\lambda_2^4-9720\lambda_2^3+4892\lambda_2^2-32\lambda_2-63\right)\left(-17+30\lambda_3\right)\left(60\lambda_3^2-60\lambda_3-49\right)$$

$$-\frac{1}{1824}\left(4860\lambda_3^4-9720\lambda_3^3+4892\lambda_3^2-32\lambda_3-63\right)\left(30\lambda_2-13\right)\left(60\lambda_2^2-60\lambda_2-49\right)$$

"Zq[", 4, 2, " resp. ZqL[", 4, 2, "]"

$$-\frac{1}{912}\left(4860\tau^4-9720\tau^3+4892\tau^2-32\tau-63\right)\left(30\tau-17\right)\left(60\tau^2-60\tau-49\right)$$

$$\frac{1}{1824}\left(4860\,\lambda_2^4-9720\,\lambda_2^3+4892\,\lambda_2^2-32\,\lambda_2-63\right)\left(-13+30\,\lambda_3\right)\left(60\,\lambda_3^2-60\,\lambda_3-49\right)$$
$$-\frac{1}{1824}\left(4860\,\lambda_3^4-9720\,\lambda_3^3+4892\,\lambda_3^2-32\,\lambda_3-63\right)\left(30\,\lambda_2-17\right)\left(60\,\lambda_2^2-60\,\lambda_2-49\right)$$

"Zq[", 4, 3, " resp. ZqL[", 4, 3, "]"

$$-\frac{64}{3}\left(4860\,\tau^4-9720\,\tau^3+4892\,\tau^2-32\,\tau-63\right)\sqrt{2}\left(-\frac{225}{19456}+\frac{225}{9728}\,\tau\right)$$

$$-\frac{32}{3}\left(4860\,\lambda_2^4-9720\,\lambda_2^3+4892\,\lambda_2^2-32\,\lambda_2-63\right)\sqrt{2}\left(\frac{225}{19456}-\frac{225}{9728}\,\lambda_3\right)$$
$$-\frac{32}{3}\left(4860\,\lambda_3^4-9720\,\lambda_3^3+4892\,\lambda_3^2-32\,\lambda_3-63\right)\sqrt{2}\left(-\frac{225}{19456}+\frac{225}{9728}\,\lambda_2\right)$$

"Double edge ", 5, "   ", 2, "-->", 4

$$\frac{64}{3}\left(4860\,\tau^4-9720\,\tau^3+4892\,\tau^2-32\,\tau-63\right)\sqrt{2}$$

"Zq[", 5, 1, " resp. ZqL[", 5, 1, "]"

$$-\frac{1}{912}\left(4860\,\tau^4-9720\,\tau^3+4892\,\tau^2-32\,\tau-63\right)\left(30\,\tau-13\right)\left(60\,\tau^2-60\,\tau-49\right)$$

$$\frac{1}{1824}\left(4860\,\lambda_2^4-9720\,\lambda_2^3+4892\,\lambda_2^2-32\,\lambda_2-63\right)\left(-17+30\,\lambda_4\right)\left(60\,\lambda_4^2-60\,\lambda_4-49\right)$$
$$-\frac{1}{1824}\left(4860\,\lambda_4^4-9720\,\lambda_4^3+4892\,\lambda_4^2-32\,\lambda_4-63\right)\left(30\,\lambda_2-13\right)\left(60\,\lambda_2^2-60\,\lambda_2-49\right)$$

"Zq[", 5, 2, " resp. ZqL[", 5, 2, "]"

$$\frac{1}{912}\left(4860\,\tau^4-9720\,\tau^3+4892\,\tau^2-32\,\tau-63\right)\left(30\,\tau-17\right)\left(60\,\tau^2-60\,\tau-49\right)$$

$$-\frac{1}{1824}\left(4860\,\lambda_2^4-9720\,\lambda_2^3+4892\,\lambda_2^2-32\,\lambda_2-63\right)\left(-13+30\,\lambda_4\right)\left(60\,\lambda_4^2-60\,\lambda_4-49\right)$$
$$+\frac{1}{1824}\left(4860\,\lambda_4^4-9720\,\lambda_4^3+4892\,\lambda_4^2-32\,\lambda_4-63\right)\left(30\,\lambda_2-17\right)\left(60\,\lambda_2^2-60\,\lambda_2-49\right)$$

"Zq[", 5, 3, " resp. ZqL[", 5, 3, "]"

$$\frac{64}{3}\left(4860\,\tau^4-9720\,\tau^3+4892\,\tau^2-32\,\tau-63\right)\sqrt{2}\left(\frac{225}{19456}-\frac{225}{9728}\,\tau\right)$$

$$\frac{32}{3}\left(4860\,\lambda_2^4-9720\,\lambda_2^3+4892\,\lambda_2^2-32\,\lambda_2-63\right)\sqrt{2}\left(-\frac{225}{19456}+\frac{225}{9728}\,\lambda_4\right)$$
$$+\frac{32}{3}\left(4860\,\lambda_4^4-9720\,\lambda_4^3+4892\,\lambda_4^2-32\,\lambda_4-63\right)\sqrt{2}\left(\frac{225}{19456}-\frac{225}{9728}\,\lambda_2\right)$$

"Double edge ", 6, "   ", 3, "-->", 4

$$-\frac{64}{3}\left(4860\,\tau^4-9720\,\tau^3+4892\,\tau^2-32\,\tau-63\right)\sqrt{2}$$

"Zq[", 6, 1, " resp. ZqL[", 6, 1, "]"

$$0$$

$$0$$

"Zq[", 6, 2, " resp. ZqL[", 6, 2, "]"

$$\frac{5}{152}\left(4860\,\tau^4-9720\,\tau^3+4892\,\tau^2-32\,\tau-63\right)\left(30\,\tau^2-30\,\tau-17\right)\left(2\,\tau-1\right)$$

$$-\frac{5}{304}\left(4860\,\lambda_3^4-9720\,\lambda_3^3+4892\,\lambda_3^2-32\,\lambda_3-63\right)\left(30\,\lambda_4^2-30\,\lambda_4-17\right)\left(2\,\lambda_4-1\right)$$
$$+\frac{5}{304}\left(4860\,\lambda_4^4-9720\,\lambda_4^3+4892\,\lambda_4^2-32\,\lambda_4-63\right)\left(30\,\lambda_3^2-30\,\lambda_3-17\right)\left(2\,\lambda_3-1\right)$$

"Zq[", 6, 3, " resp. ZqL[", 6, 3, "]"

$$-\frac{64}{3}\left(4860\,\tau^4-9720\,\tau^3+4892\,\tau^2-32\,\tau-63\right)\sqrt{2}\left(\frac{49}{9728}+\frac{15}{2432}\,\tau-\frac{15}{2432}\,\tau^2\right)$$

$$-\frac{32}{3}\left(4860\,\lambda_3^4-9720\,\lambda_3^3+4892\,\lambda_3^2-32\,\lambda_3-63\right)\sqrt{2}\left(\frac{49}{9728}+\frac{15}{2432}\,\lambda_4-\frac{15}{2432}\,\lambda_4^2\right)$$
$$-\frac{32}{3}\left(4860\,\lambda_4^4-9720\,\lambda_4^3+4892\,\lambda_4^2-32\,\lambda_4-63\right)\sqrt{2}\left(\frac{49}{9728}+\frac{15}{2432}\,\lambda_3-\frac{15}{2432}\,\lambda_3^2\right)$$

"Triangle ", 1, [1, 2, 3]

"Spline over triangle ", 1

$$-\Bigg(\frac{1}{1824}\left(4860\,\lambda_2^4-9720\,\lambda_2^3+4892\,\lambda_2^2-32\,\lambda_2-63\right)\left(-17+30\,\lambda_3\right)\left(60\,\lambda_3^2-60\,\lambda_3-49\right)$$
$$-\frac{1}{1824}\left(4860\,\lambda_3^4-9720\,\lambda_3^3+4892\,\lambda_3^2-32\,\lambda_3-63\right)\left(30\,\lambda_2-13\right)\left(60\,\lambda_2^2-60\,\lambda_2-49\right)\Bigg)\lambda_2^2\,\lambda_3^2\,\lambda_1-\Bigg(-\frac{1}{1824}\left(4860\,\lambda_1^4-9720\,\lambda_1^3+4892\,\lambda_1^2-32\,\lambda_1-63\right)\left(-17+30\,\lambda_3\right)\left(60\,\lambda_3^2-60\,\lambda_3-49\right)+\frac{1}{1824}\left(4860\,\lambda_3^4-9720\,\lambda_3^3+4892\,\lambda_3^2-32\,\lambda_3-63\right)\left(30\,\lambda_1-13\right)\left(60\,\lambda_1^2-60\,\lambda_1-49\right)\Bigg)\lambda_1^2\,\lambda_3^2\,\lambda_2-\Bigg(-\frac{5}{304}\left(4860\,\lambda_1^4-9720\,\lambda_1^3+4892\,\lambda_1^2-32\,\lambda_1-63\right)\left(30\,\lambda_2^2-30\,\lambda_2-17\right)\left(-1+2\,\lambda_2\right)+\frac{5}{304}\left(4860\,\lambda_2^4-9720\,\lambda_2^3+4892\,\lambda_2^2-32\,\lambda_2-63\right)\left(30\,\lambda_1^2-30\,\lambda_1-17\right)\left(2\,\lambda_1-1\right)\Bigg)\lambda_1^2\,\lambda_2^2\,\lambda_3+92\,\lambda_2^2\,\lambda_3^2\,\lambda_1-92\,\lambda_1^2\,\lambda_3^2\,\lambda_2-2\,\lambda_1^3\left(6\,\lambda_1^2-15\,\lambda_1+10\right)+\frac{4}{3}\,\lambda_1^3\left(4-3\,\lambda_1\right)\lambda_2-\frac{2}{3}\,\lambda_1^3\left(4-3\,\lambda_1\right)\lambda_3+2\,\lambda_2^3\left(6\,\lambda_2^2-15\,\lambda_2+10\right)-\frac{4}{3}\,\lambda_2^3\left(4-3\,\lambda_2\right)\lambda_1+\frac{2}{3}\,\lambda_2^3\left(4-3\,\lambda_2\right)\lambda_3-2\,\lambda_3^3\left(4-3\,\lambda_3\right)\lambda_1+2\,\lambda_3^3\left(4-3\,\lambda_3\right)\lambda_2$$

$$-\Bigg(\frac{1}{1824}\left(4860\,\lambda_2^4-9720\,\lambda_2^3+4892\,\lambda_2^2-32\,\lambda_2-63\right)\left(-13+30\,\lambda_3\right)\left(60\,\lambda_3^2-60\,\lambda_3-49\right)$$
$$-\frac{1}{1824}\left(4860\,\lambda_3^4-9720\,\lambda_3^3+4892\,\lambda_3^2-32\,\lambda_3-63\right)\left(30\,\lambda_2-17\right)\left(60\,\lambda_2^2-60\,\lambda_2$$

$$-49)\Big)\,\lambda_2^2\,\lambda_3^2\,\lambda_1-\Big(\frac{1}{1824}\left(4860\,\lambda_1^4-9720\,\lambda_1^3+4892\,\lambda_1^2-32\,\lambda_1-63\right)\left(-13\right.$$

$$\left.+30\,\lambda_3\right)\left(60\,\lambda_3^2-60\,\lambda_3-49\right)-\frac{1}{1824}\left(4860\,\lambda_3^4-9720\,\lambda_3^3+4892\,\lambda_3^2-32\,\lambda_3\right.$$

$$\left.-63\right)\left(30\,\lambda_1-17\right)\left(60\,\lambda_1^2-60\,\lambda_1-49\right)\Big)\,\lambda_1^2\,\lambda_3^2\,\lambda_2-92\,\lambda_2^2\,\lambda_3^2\,\lambda_1-92\,\lambda_1^2\,\lambda_3^2\,\lambda_2-2\,\lambda_1^3\,(4$$

$$-3\,\lambda_1)\,\lambda_3-2\,\lambda_2^3\left(4-3\,\lambda_2\right)\lambda_3-2\,\lambda_3^3\left(6\,\lambda_3^2-15\,\lambda_3+10\right)-\frac{2}{3}\,\lambda_3^3\left(4-3\,\lambda_3\right)\lambda_1-\frac{2}{3}$$

$$\lambda_3^3\left(4-3\,\lambda_3\right)\lambda_2$$

$$-\Big(-\frac{32}{3}\left(4860\,\lambda_2^4-9720\,\lambda_2^3+4892\,\lambda_2^2-32\,\lambda_2-63\right)\sqrt{2}\left(\frac{225}{19456}-\frac{225}{9728}\,\lambda_3\right)$$

$$-\frac{32}{3}\left(4860\,\lambda_3^4-9720\,\lambda_3^3+4892\,\lambda_3^2-32\,\lambda_3-63\right)\sqrt{2}\left(-\frac{225}{19456}+\frac{225}{9728}\,\lambda_2\right)\Big)\,\lambda_2^2$$

$$\lambda_3^2\,\lambda_1-\Big(\frac{32}{3}\left(4860\,\lambda_1^4-9720\,\lambda_1^3+4892\,\lambda_1^2-32\,\lambda_1-63\right)\sqrt{2}\left(-\frac{225}{19456}+\frac{225}{9728}\,\lambda_3\right)$$

$$+\frac{32}{3}\left(4860\,\lambda_3^4-9720\,\lambda_3^3+4892\,\lambda_3^2-32\,\lambda_3-63\right)\sqrt{2}\left(\frac{225}{19456}-\frac{225}{9728}\,\lambda_1\right)\Big)\,\lambda_1^2$$

$$\lambda_3^2\,\lambda_2-\Big(-\frac{32}{3}\left(4860\,\lambda_1^4-9720\,\lambda_1^3+4892\,\lambda_1^2-32\,\lambda_1-63\right)\sqrt{2}\left(-\frac{49}{9728}-\frac{15}{2432}\,\lambda_2\right.$$

$$\left.+\frac{15}{2432}\,\lambda_2^2\right)-\frac{32}{3}\left(4860\,\lambda_2^4-9720\,\lambda_2^3+4892\,\lambda_2^2-32\,\lambda_2-63\right)\sqrt{2}\left(-\frac{49}{9728}\right.$$

$$\left.-\frac{15}{2432}\,\lambda_1+\frac{15}{2432}\,\lambda_1^2\right)\Big)\,\lambda_1^2\,\lambda_2^2\,\lambda_3+92\,\lambda_1^2\,\lambda_2^2\,\lambda_3\,\sqrt{2}+\lambda_1^3\left(6\,\lambda_1^2-15\,\lambda_1+10\right)\sqrt{2}$$

$$+\frac{4}{3}\,\lambda_1^3\left(4-3\,\lambda_1\right)\lambda_2\,\sqrt{2}-\frac{2}{3}\,\lambda_1^3\left(4-3\,\lambda_1\right)\lambda_3\,\sqrt{2}+\lambda_2^3\left(6\,\lambda_2^2-15\,\lambda_2+10\right)\sqrt{2}$$

$$+\frac{4}{3}\,\lambda_2^3\left(4-3\,\lambda_2\right)\lambda_1\,\sqrt{2}-\frac{2}{3}\,\lambda_2^3\left(4-3\,\lambda_2\right)\lambda_3\,\sqrt{2}-\lambda_3^3\left(6\,\lambda_3^2-15\,\lambda_3+10\right)\sqrt{2}$$

$$+\frac{2}{3}\,\lambda_3^3\left(4-3\,\lambda_3\right)\lambda_1\,\sqrt{2}+\frac{2}{3}\,\lambda_3^3\left(4-3\,\lambda_3\right)\lambda_2\,\sqrt{2}$$

"Triangle ", 2, [1, 2, 4]

"Spline over triangle ", 2

$$-\Big(\frac{1}{1824}\left(4860\,\lambda_2^4-9720\,\lambda_2^3+4892\,\lambda_2^2-32\,\lambda_2-63\right)\left(-17+30\,\lambda_4\right)\left(60\,\lambda_4^2-60\,\lambda_4-49\right)$$

$$-\frac{1}{1824}\left(4860\,\lambda_4^4-9720\,\lambda_4^3+4892\,\lambda_4^2-32\,\lambda_4-63\right)\left(30\,\lambda_2-13\right)\left(60\,\lambda_2^2-60\,\lambda_2\right.$$

$$\left.-49\right)\Big)\,\lambda_2^2\,\lambda_4^2\,\lambda_1-\Big(-\frac{1}{1824}\left(4860\,\lambda_1^4-9720\,\lambda_1^3+4892\,\lambda_1^2-32\,\lambda_1-63\right)\left(-17\right.$$

$$\left.+30\,\lambda_4\right)\left(60\,\lambda_4^2-60\,\lambda_4-49\right)+\frac{1}{1824}\left(4860\,\lambda_4^4-9720\,\lambda_4^3+4892\,\lambda_4^2-32\,\lambda_4\right.$$

$$\left.-63\right)\left(30\,\lambda_1-13\right)\left(60\,\lambda_1^2-60\,\lambda_1-49\right)\Big)\,\lambda_1^2\,\lambda_4^2\,\lambda_2-\Big(-\frac{5}{304}\left(4860\,\lambda_1^4-9720\,\lambda_1^3\right.$$

$$\left.+4892\,\lambda_1^2-32\,\lambda_1-63\right)\left(30\,\lambda_2^2-30\,\lambda_2-17\right)\left(-1+2\,\lambda_2\right)+\frac{5}{304}\left(4860\,\lambda_2^4-9720\,\lambda_2^3\right.$$

$$+ 4892\,\lambda_2^2 - 32\,\lambda_2 - 63\Big)\Big(30\,\lambda_1^2 - 30\,\lambda_1 - 17\Big)\Big(2\,\lambda_1 - 1\Big)\Big)\lambda_1^2\,\lambda_2^2\,\lambda_4 + 92\,\lambda_2^2\,\lambda_4^2\,\lambda_1 - 92$$

$$\lambda_1^2\,\lambda_4^2\,\lambda_2 - 2\,\lambda_1^3\Big(6\,\lambda_1^2 - 15\,\lambda_1 + 10\Big) + \frac{4}{3}\,\lambda_1^3\,(4 - 3\,\lambda_1)\,\lambda_2 - \frac{2}{3}\,\lambda_1^3\,(4 - 3\,\lambda_1)\,\lambda_4 + 2$$

$$\lambda_2^3\Big(6\,\lambda_2^2 - 15\,\lambda_2 + 10\Big) - \frac{4}{3}\,\lambda_2^3\,(4 - 3\,\lambda_2)\,\lambda_1 + \frac{2}{3}\,\lambda_2^3\,(4 - 3\,\lambda_2)\,\lambda_4 - 2\,\lambda_4^3\,(4 - 3\,\lambda_4)\,\lambda_1$$

$$+ 2\,\lambda_4^3\,(4 - 3\,\lambda_4)\,\lambda_2$$

$$-\Big(-\frac{1}{1824}\Big(4860\,\lambda_2^4 - 9720\,\lambda_2^3 + 4892\,\lambda_2^2 - 32\,\lambda_2 - 63\Big)\,(-13 + 30\,\lambda_4)\Big(60\,\lambda_4^2 - 60\,\lambda_4$$

$$- 49\Big) + \frac{1}{1824}\Big(4860\,\lambda_4^4 - 9720\,\lambda_4^3 + 4892\,\lambda_4^2 - 32\,\lambda_4 - 63\Big)\,(30\,\lambda_2 - 17)\Big(60\,\lambda_2^2$$

$$- 60\,\lambda_2 - 49\Big)\Big)\lambda_2^2\,\lambda_4^2\,\lambda_1 - \Big(-\frac{1}{1824}\Big(4860\,\lambda_1^4 - 9720\,\lambda_1^3 + 4892\,\lambda_1^2 - 32\,\lambda_1 - 63\Big)\,(-13$$

$$+ 30\,\lambda_4)\Big(60\,\lambda_4^2 - 60\,\lambda_4 - 49\Big) + \frac{1}{1824}\Big(4860\,\lambda_4^4 - 9720\,\lambda_4^3 + 4892\,\lambda_4^2 - 32\,\lambda_4$$

$$- 63\Big)\,(30\,\lambda_1 - 17)\Big(60\,\lambda_1^2 - 60\,\lambda_1 - 49\Big)\Big)\lambda_1^2\,\lambda_4^2\,\lambda_2 + 92\,\lambda_2^2\,\lambda_4^2\,\lambda_1 + 92\,\lambda_1^2\,\lambda_4^2\,\lambda_2 + 2\,\lambda_1^3\,(4$$

$$- 3\,\lambda_1)\,\lambda_4 + 2\,\lambda_2^3\,(4 - 3\,\lambda_2)\,\lambda_4 + 2\,\lambda_4^3\Big(6\,\lambda_4^2 - 15\,\lambda_4 + 10\Big) + \frac{2}{3}\,\lambda_4^3\,(4 - 3\,\lambda_4)\,\lambda_1 + \frac{2}{3}$$

$$\lambda_4^3\,(4 - 3\,\lambda_4)\,\lambda_2$$

$$-\Big(\frac{32}{3}\Big(4860\,\lambda_2^4 - 9720\,\lambda_2^3 + 4892\,\lambda_2^2 - 32\,\lambda_2 - 63\Big)\sqrt{2}\,\Big(-\frac{225}{19456} + \frac{225}{9728}\,\lambda_4\Big)$$

$$+ \frac{32}{3}\Big(4860\,\lambda_4^4 - 9720\,\lambda_4^3 + 4892\,\lambda_4^2 - 32\,\lambda_4 - 63\Big)\sqrt{2}\,\Big(\frac{225}{19456} - \frac{225}{9728}\,\lambda_2\Big)\Big)\lambda_2^2$$

$$\lambda_4^2\,\lambda_1 - \Big(-\frac{32}{3}\Big(4860\,\lambda_1^4 - 9720\,\lambda_1^3 + 4892\,\lambda_1^2 - 32\,\lambda_1 - 63\Big)\sqrt{2}\,\Big(\frac{225}{19456} - \frac{225}{9728}\,\lambda_4\Big)$$

$$- \frac{32}{3}\Big(4860\,\lambda_4^4 - 9720\,\lambda_4^3 + 4892\,\lambda_4^2 - 32\,\lambda_4 - 63\Big)\sqrt{2}\,\Big(-\frac{225}{19456} + \frac{225}{9728}\,\lambda_1\Big)\Big)\lambda_1^2$$

$$\lambda_4^2\,\lambda_2 - \Big(-\frac{32}{3}\Big(4860\,\lambda_1^4 - 9720\,\lambda_1^3 + 4892\,\lambda_1^2 - 32\,\lambda_1 - 63\Big)\sqrt{2}\,\Big(-\frac{49}{9728} - \frac{15}{2432}\,\lambda_2$$

$$+ \frac{15}{2432}\,\lambda_2^2\Big) - \frac{32}{3}\Big(4860\,\lambda_2^4 - 9720\,\lambda_2^3 + 4892\,\lambda_2^2 - 32\,\lambda_2 - 63\Big)\sqrt{2}\,\Big(-\frac{49}{9728}$$

$$- \frac{15}{2432}\,\lambda_1 + \frac{15}{2432}\,\lambda_1^2\Big)\Big)\lambda_1^2\,\lambda_2^2\,\lambda_4 + 92\,\lambda_1^2\,\lambda_2^2\,\lambda_4\sqrt{2} + \lambda_1^3\Big(6\,\lambda_1^2 - 15\,\lambda_1 + 10\Big)\sqrt{2}$$

$$+ \frac{4}{3}\,\lambda_1^3\,(4 - 3\,\lambda_1)\,\lambda_2\sqrt{2} - \frac{2}{3}\,\lambda_1^3\,(4 - 3\,\lambda_1)\,\lambda_4\sqrt{2} + \lambda_2^3\Big(6\,\lambda_2^2 - 15\,\lambda_2 + 10\Big)\sqrt{2}$$

$$+ \frac{4}{3}\,\lambda_2^3\,(4 - 3\,\lambda_2)\,\lambda_1\sqrt{2} - \frac{2}{3}\,\lambda_2^3\,(4 - 3\,\lambda_2)\,\lambda_4\sqrt{2} - \lambda_4^3\Big(6\,\lambda_4^2 - 15\,\lambda_4 + 10\Big)\sqrt{2}$$

$$+ \frac{2}{3}\,\lambda_4^3\,(4 - 3\,\lambda_4)\,\lambda_1\sqrt{2} + \frac{2}{3}\,\lambda_4^3\,(4 - 3\,\lambda_4)\,\lambda_2\sqrt{2}$$

"Triangle ", 3, [1, 3, 4]

"Spline over triangle ", 3

$$- \left(- \frac{1}{1824} \left(4860 \lambda_1^4 - 9720 \lambda_1^3 + 4892 \lambda_1^2 - 32 \lambda_1 - 63\right) \left(-17 + 30 \lambda_4\right) \left(60 \lambda_4^2 - 60 \lambda_4 - 49\right) + \frac{1}{1824} \left(4860 \lambda_4^4 - 9720 \lambda_4^3 + 4892 \lambda_4^2 - 32 \lambda_4 - 63\right) \left(30 \lambda_1 - 13\right) \left(60 \lambda_1^2 - 60 \lambda_1 - 49\right) \right) \lambda_1^2 \lambda_4^2 \lambda_3 - \left(- \frac{1}{1824} \left(4860 \lambda_1^4 - 9720 \lambda_1^3 + 4892 \lambda_1^2 - 32 \lambda_1 - 63\right) \left(-17 + 30 \lambda_3\right) \left(60 \lambda_3^2 - 60 \lambda_3 - 49\right) + \frac{1}{1824} \left(4860 \lambda_3^4 - 9720 \lambda_3^3 + 4892 \lambda_3^2 - 32 \lambda_3 - 63\right) \left(30 \lambda_1 - 13\right) \left(60 \lambda_1^2 - 60 \lambda_1 - 49\right) \right) \lambda_1^2 \lambda_3^2 \lambda_4 - 92 \lambda_1^2 \lambda_4^2 \lambda_3 - 92 \lambda_1^2 \lambda_3^2 \lambda_4 - 2 \lambda_1^3 \left(6 \lambda_1^2 - 15 \lambda_1 + 10\right) - \frac{2}{3} \lambda_1^3 \left(4 - 3 \lambda_1\right) \lambda_3 - \frac{2}{3} \lambda_1^3 \left(4 - 3 \lambda_1\right) \lambda_4 - 2 \lambda_3^3 \left(4 - 3 \lambda_3\right) \lambda_1 - 2 \lambda_4^3 \left(4 - 3 \lambda_4\right) \lambda_1$$

$$- \left(- \frac{5}{304} \left(4860 \lambda_3^4 - 9720 \lambda_3^3 + 4892 \lambda_3^2 - 32 \lambda_3 - 63\right) \left(30 \lambda_4^2 - 30 \lambda_4 - 17\right) \left(2 \lambda_4 - 1\right) + \frac{5}{304} \left(4860 \lambda_4^4 - 9720 \lambda_4^3 + 4892 \lambda_4^2 - 32 \lambda_4 - 63\right) \left(30 \lambda_3^2 - 30 \lambda_3 - 17\right) \left(2 \lambda_3 - 1\right) \right) \lambda_3^2 \lambda_4^2 \lambda_1 - \left(- \frac{1}{1824} \left(4860 \lambda_1^4 - 9720 \lambda_1^3 + 4892 \lambda_1^2 - 32 \lambda_1 - 63\right) \left(-13 + 30 \lambda_4\right) \left(60 \lambda_4^2 - 60 \lambda_4 - 49\right) + \frac{1}{1824} \left(4860 \lambda_4^4 - 9720 \lambda_4^3 + 4892 \lambda_4^2 - 32 \lambda_4 - 63\right) \left(30 \lambda_1 - 17\right) \left(60 \lambda_1^2 - 60 \lambda_1 - 49\right) \right) \lambda_1^2 \lambda_4^2 \lambda_3 - \left(\frac{1}{1824} \left(4860 \lambda_1^4 - 9720 \lambda_1^3 + 4892 \lambda_1^2 - 32 \lambda_1 - 63\right) \left(-13 + 30 \lambda_3\right) \left(60 \lambda_3^2 - 60 \lambda_3 - 49\right) - \frac{1}{1824} \left(4860 \lambda_3^4 - 9720 \lambda_3^3 + 4892 \lambda_3^2 - 32 \lambda_3 - 63\right) \left(30 \lambda_1 - 17\right) \left(60 \lambda_1^2 - 60 \lambda_1 - 49\right) \right) \lambda_1^2 \lambda_3^2 \lambda_4 + 92 \lambda_1^2 \lambda_4^2 \lambda_3 - 92 \lambda_1^2 \lambda_3^2 \lambda_4 - 2 \lambda_1^3 \left(4 - 3 \lambda_1\right) \lambda_3 + 2 \lambda_1^3 \left(4 - 3 \lambda_1\right) \lambda_4 - 2 \lambda_3^3 \left(6 \lambda_3^2 - 15 \lambda_3 + 10\right) - \frac{2}{3} \lambda_3^3 \left(4 - 3 \lambda_3\right) \lambda_1 + \frac{4}{3} \lambda_3^3 \left(4 - 3 \lambda_3\right) \lambda_4 + 2 \lambda_4^3 \left(6 \lambda_4^2 - 15 \lambda_4 + 10\right) + \frac{2}{3} \lambda_4^3 \left(4 - 3 \lambda_4\right) \lambda_1 - \frac{4}{3} \lambda_4^3 \left(4 - 3 \lambda_4\right) \lambda_3$$

$$- \left(- \frac{32}{3} \left(4860 \lambda_3^4 - 9720 \lambda_3^3 + 4892 \lambda_3^2 - 32 \lambda_3 - 63\right) \sqrt{2} \left(\frac{49}{9728} + \frac{15}{2432} \lambda_4 - \frac{15}{2432} \lambda_4^2 \right) - \frac{32}{3} \left(4860 \lambda_4^4 - 9720 \lambda_4^3 + 4892 \lambda_4^2 - 32 \lambda_4 - 63\right) \sqrt{2} \left(\frac{49}{9728} + \frac{15}{2432} \lambda_3 - \frac{15}{2432} \lambda_3^2 \right) \right) \lambda_3^2 \lambda_4^2 \lambda_1 - \left(- \frac{32}{3} \left(4860 \lambda_1^4 - 9720 \lambda_1^3 + 4892 \lambda_1^2 - 32 \lambda_1 - 63\right) \sqrt{2} \left(\frac{225}{19456} - \frac{225}{9728} \lambda_4 \right) - \frac{32}{3} \left(4860 \lambda_4^4 - 9720 \lambda_4^3 + 4892 \lambda_4^2 - 32 \lambda_4 - 63\right) \sqrt{2} \left(- \frac{225}{19456} + \frac{225}{9728} \lambda_1 \right) \right) \lambda_1^2 \lambda_4^2 \lambda_3 - \left(\frac{32}{3} \left(4860 \lambda_1^4 - 9720 \lambda_1^3 + 4892 \lambda_1^2 - 32 \lambda_1 - 63\right) \sqrt{2} \left(- \frac{225}{19456} + \frac{225}{9728} \lambda_3 \right) + \frac{32}{3} \left(4860 \lambda_3^4 - 9720 \lambda_3^3 + 4892 \lambda_3^2 - 32 \lambda_3 \right.$$

$$-63\Big)\sqrt{2}\left(\frac{225}{19456}-\frac{225}{9728}\lambda_1\right)\Big)\lambda_1^2\lambda_3^2\lambda_4-92\lambda_3^2\lambda_4^2\lambda_1\sqrt{2}+\lambda_1^3\left(6\lambda_1^2-15\lambda_1\right.$$
$$\left.+10\right)\sqrt{2}-\frac{2}{3}\lambda_1^3\left(4-3\lambda_1\right)\lambda_3\sqrt{2}-\frac{2}{3}\lambda_1^3\left(4-3\lambda_1\right)\lambda_4\sqrt{2}-\lambda_3^3\left(6\lambda_3^2-15\lambda_3\right.$$
$$\left.+10\right)\sqrt{2}+\frac{2}{3}\lambda_3^3\left(4-3\lambda_3\right)\lambda_1\sqrt{2}-\frac{4}{3}\lambda_3^3\left(4-3\lambda_3\right)\lambda_4\sqrt{2}-\lambda_4^3\left(6\lambda_4^2-15\lambda_4\right.$$
$$\left.+10\right)\sqrt{2}+\frac{2}{3}\lambda_4^3\left(4-3\lambda_4\right)\lambda_1\sqrt{2}-\frac{4}{3}\lambda_4^3\left(4-3\lambda_4\right)\lambda_3\sqrt{2}$$

"Triangle ", 4, [2, 3, 4]

"Spline over triangle ", 4

$$-\Big(\frac{1}{1824}\left(4860\lambda_2^4-9720\lambda_2^3+4892\lambda_2^2-32\lambda_2-63\right)\left(-17+30\lambda_4\right)\left(60\lambda_4^2-60\lambda_4-49\right)$$
$$-\frac{1}{1824}\left(4860\lambda_4^4-9720\lambda_4^3+4892\lambda_4^2-32\lambda_4-63\right)\left(30\lambda_2-13\right)\left(60\lambda_2^2-60\lambda_2\right.$$
$$\left.-49\right)\Big)\lambda_2^2\lambda_4^2\lambda_3-\Big(\frac{1}{1824}\left(4860\lambda_2^4-9720\lambda_2^3+4892\lambda_2^2-32\lambda_2-63\right)\big(-17$$
$$+30\lambda_3\big)\left(60\lambda_3^2-60\lambda_3-49\right)-\frac{1}{1824}\left(4860\lambda_3^4-9720\lambda_3^3+4892\lambda_3^2-32\lambda_3\right.$$
$$\left.-63\right)\left(30\lambda_2-13\right)\left(60\lambda_2^2-60\lambda_2-49\right)\Big)\lambda_2^2\lambda_3^2\lambda_4+92\lambda_2^2\lambda_4^2\lambda_3+92\lambda_2^2\lambda_3^2\lambda_4+2$$
$$\lambda_2^3\left(6\lambda_2^2-15\lambda_2+10\right)+\frac{2}{3}\lambda_2^3\left(4-3\lambda_2\right)\lambda_3+\frac{2}{3}\lambda_2^3\left(4-3\lambda_2\right)\lambda_4+2\lambda_3^3\left(4-3\lambda_3\right)\lambda_2$$
$$+2\lambda_4^3\left(4-3\lambda_4\right)\lambda_2$$

$$-\Big(-\frac{5}{304}\left(4860\lambda_3^4-9720\lambda_3^3+4892\lambda_3^2-32\lambda_3-63\right)\left(30\lambda_4^2-30\lambda_4-17\right)\left(2\lambda_4-1\right)$$
$$+\frac{5}{304}\left(4860\lambda_4^4-9720\lambda_4^3+4892\lambda_4^2-32\lambda_4-63\right)\left(30\lambda_3^2-30\lambda_3-17\right)\left(2\lambda_3-1\right)\Big)$$
$$\lambda_3^2\lambda_4^2\lambda_2-\Big(-\frac{1}{1824}\left(4860\lambda_2^4-9720\lambda_2^3+4892\lambda_2^2-32\lambda_2-63\right)\left(-13+30\lambda_4\right)\big(60\lambda_4^2$$
$$-60\lambda_4-49\big)+\frac{1}{1824}\left(4860\lambda_4^4-9720\lambda_4^3+4892\lambda_4^2-32\lambda_4-63\right)\left(30\lambda_2-17\right)\big(60$$
$$\lambda_2^2-60\lambda_2-49\big)\Big)\lambda_2^2\lambda_4^2\lambda_3-\Big(\frac{1}{1824}\left(4860\lambda_2^4-9720\lambda_2^3+4892\lambda_2^2-32\lambda_2-63\right)\big(-13$$
$$+30\lambda_3\big)\left(60\lambda_3^2-60\lambda_3-49\right)-\frac{1}{1824}\left(4860\lambda_3^4-9720\lambda_3^3+4892\lambda_3^2-32\lambda_3\right.$$
$$\left.-63\right)\left(30\lambda_2-17\right)\left(60\lambda_2^2-60\lambda_2-49\right)\Big)\lambda_2^2\lambda_3^2\lambda_4+92\lambda_2^2\lambda_4^2\lambda_3-92\lambda_2^2\lambda_3^2\lambda_4-2\lambda_2^3\big(4$$
$$-3\lambda_2\big)\lambda_3+2\lambda_2^3\left(4-3\lambda_2\right)\lambda_4-2\lambda_3^3\left(6\lambda_3^2-15\lambda_3+10\right)-\frac{2}{3}\lambda_3^3\left(4-3\lambda_3\right)\lambda_2+\frac{4}{3}$$
$$\lambda_3^3\left(4-3\lambda_3\right)\lambda_4+2\lambda_4^3\left(6\lambda_4^2-15\lambda_4+10\right)+\frac{2}{3}\lambda_4^3\left(4-3\lambda_4\right)\lambda_2-\frac{4}{3}\lambda_4^3\left(4-3\lambda_4\right)\lambda_3$$

$$-\Big(-\frac{32}{3}\left(4860\lambda_3^4-9720\lambda_3^3+4892\lambda_3^2-32\lambda_3-63\right)\sqrt{2}\left(\frac{49}{9728}+\frac{15}{2432}\lambda_4-\frac{15}{2432}\lambda_4^2\right)$$

$$-\frac{32}{3}\left(4860\lambda_4^4-9720\lambda_4^3+4892\lambda_4^2-32\lambda_4-63\right)\sqrt{2}\left(\frac{49}{9728}+\frac{15}{2432}\lambda_3-\frac{15}{2432}\lambda_3^2\right)\right)\lambda_3^2\lambda_4^2\lambda_2-\left(\frac{32}{3}\left(4860\lambda_2^4-9720\lambda_2^3+4892\lambda_2^2-32\lambda_2-63\right)\sqrt{2}\left(-\frac{225}{19456}+\frac{225}{9728}\lambda_4\right)+\frac{32}{3}\left(4860\lambda_4^4-9720\lambda_4^3+4892\lambda_4^2-32\lambda_4-63\right)\sqrt{2}\left(\frac{225}{19456}-\frac{225}{9728}\lambda_2\right)\right)\lambda_2^2\lambda_4^2\lambda_3-\left(-\frac{32}{3}\left(4860\lambda_2^4-9720\lambda_2^3+4892\lambda_2^2-32\lambda_2-63\right)\sqrt{2}\left(\frac{225}{19456}-\frac{225}{9728}\lambda_3\right)-\frac{32}{3}\left(4860\lambda_3^4-9720\lambda_3^3+4892\lambda_3^2-32\lambda_3-63\right)\sqrt{2}\left(-\frac{225}{19456}+\frac{225}{9728}\lambda_2\right)\right)\lambda_2^2\lambda_3^2\lambda_4-92\lambda_3^2\lambda_4^2\lambda_2\sqrt{2}+\lambda_2^3\left(6\lambda_2^2-15\lambda_2+10\right)\sqrt{2}-\frac{2}{3}\lambda_2^3\left(4-3\lambda_2\right)\lambda_3\sqrt{2}-\frac{2}{3}\lambda_2^3\left(4-3\lambda_2\right)\lambda_4\sqrt{2}-\lambda_3^3\left(6\lambda_3^2-15\lambda_3+10\right)\sqrt{2}+\frac{2}{3}\lambda_3^3\left(4-3\lambda_3\right)\lambda_2\sqrt{2}-\frac{4}{3}\lambda_3^3\left(4-3\lambda_3\right)\lambda_4\sqrt{2}-\lambda_4^3\left(6\lambda_4^2-15\lambda_4+10\right)\sqrt{2}+\frac{2}{3}\lambda_4^3\left(4-3\lambda_4\right)\lambda_2\sqrt{2}-\frac{4}{3}\lambda_4^3\left(4-3\lambda_4\right)\lambda_3\sqrt{2}$$

"____\
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"____\
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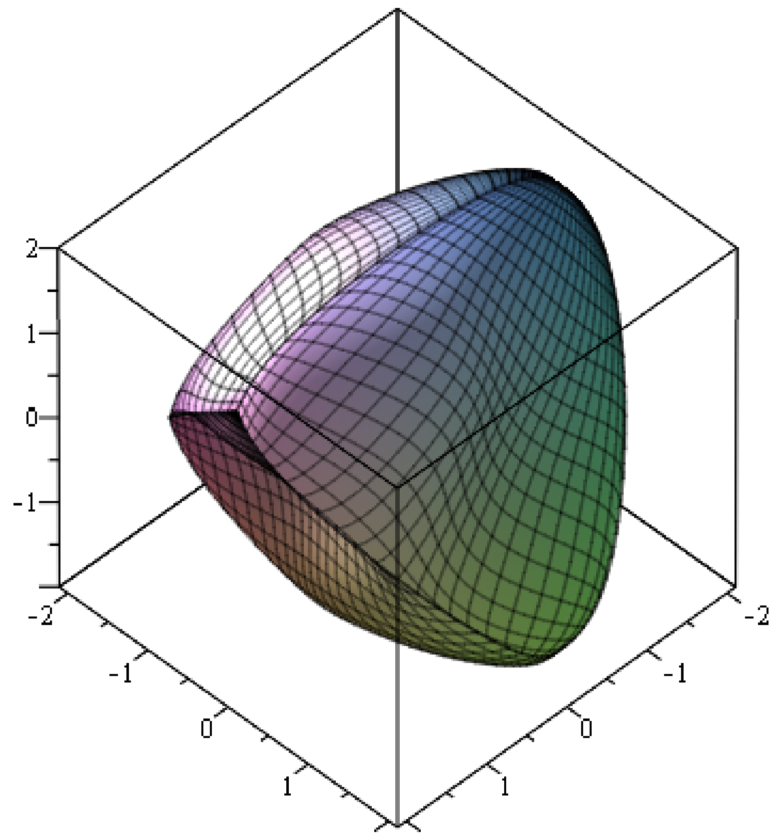
"Final result displayed"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0
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-2
-1
0
1
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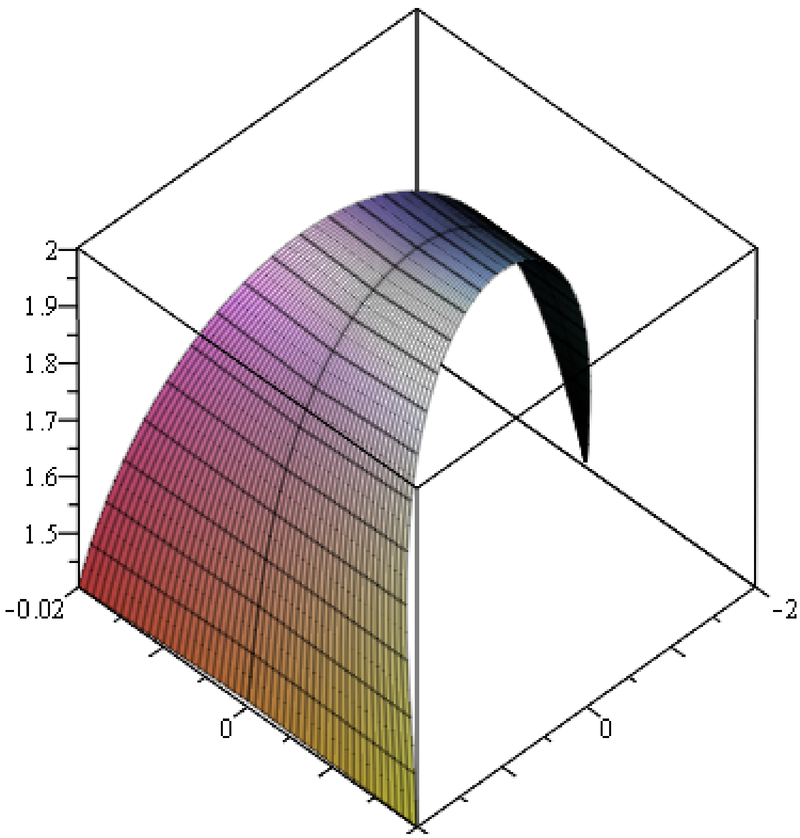
0
1



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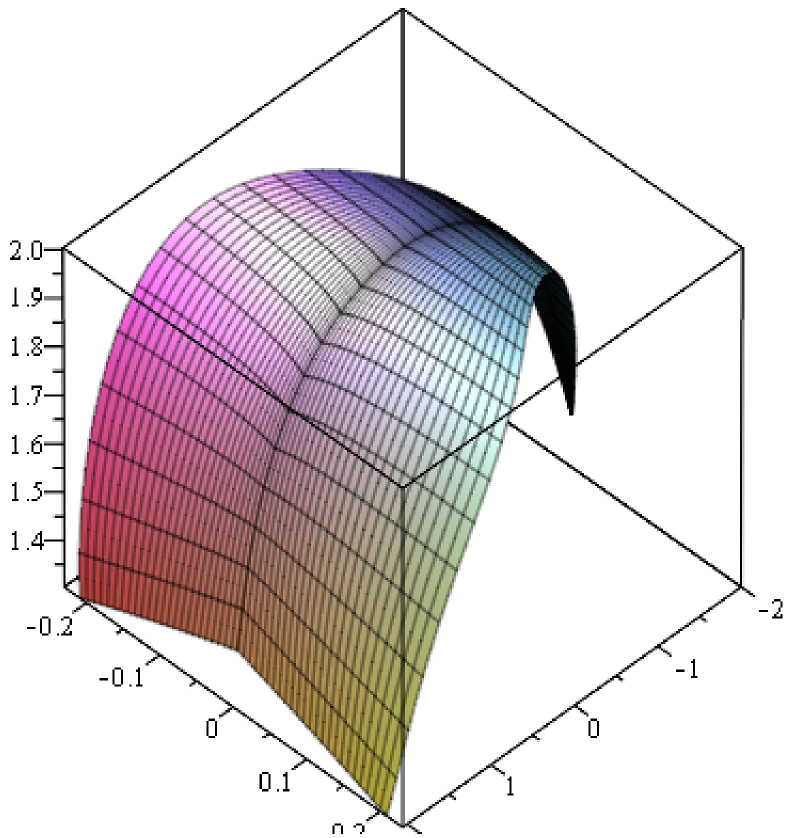
1.8
1.7
1.6
1.5
-0.02
0
0
-2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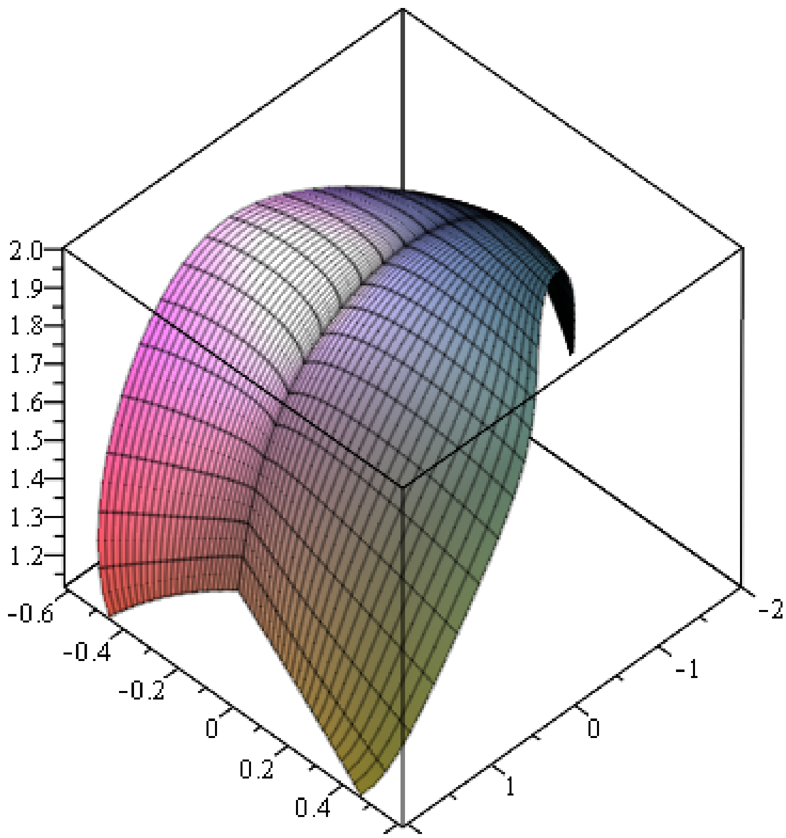
0
1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1.9
1.8
1.7
1.6
1.5
1.4
1.3
1.2
-0.6
-0.4
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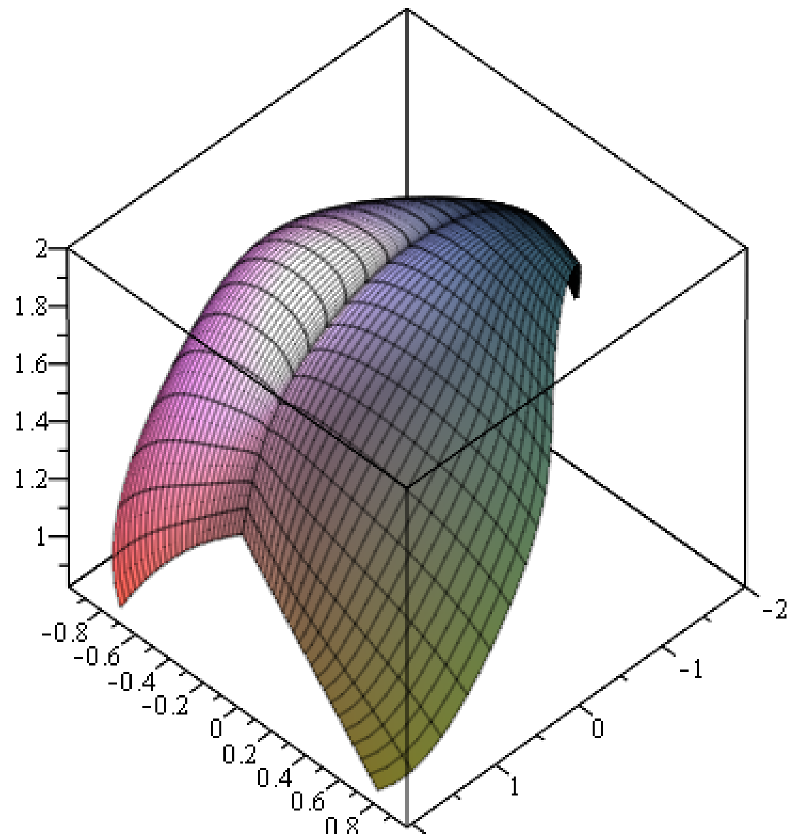
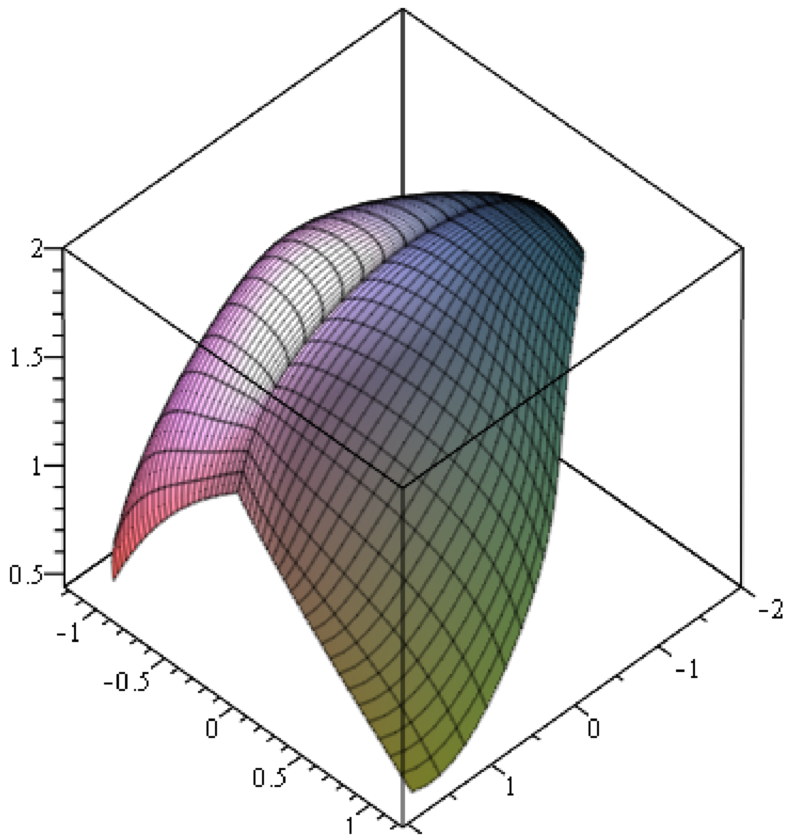
-2
-1
0
1



2
1.8
1.6
1.4
1.2
1
-0.8
-0.6
-0.4
-0.2
0
0.2
0.4
0.6
-2
-1
0
1



2
1.5
1
0.5
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-0.5
0
0.5
1
-2
-1
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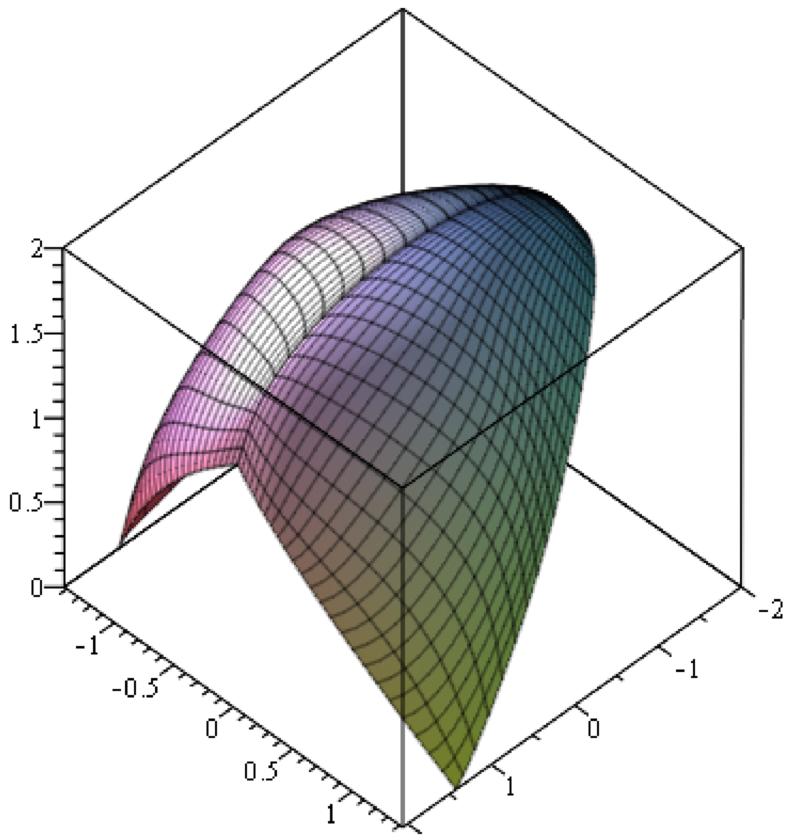

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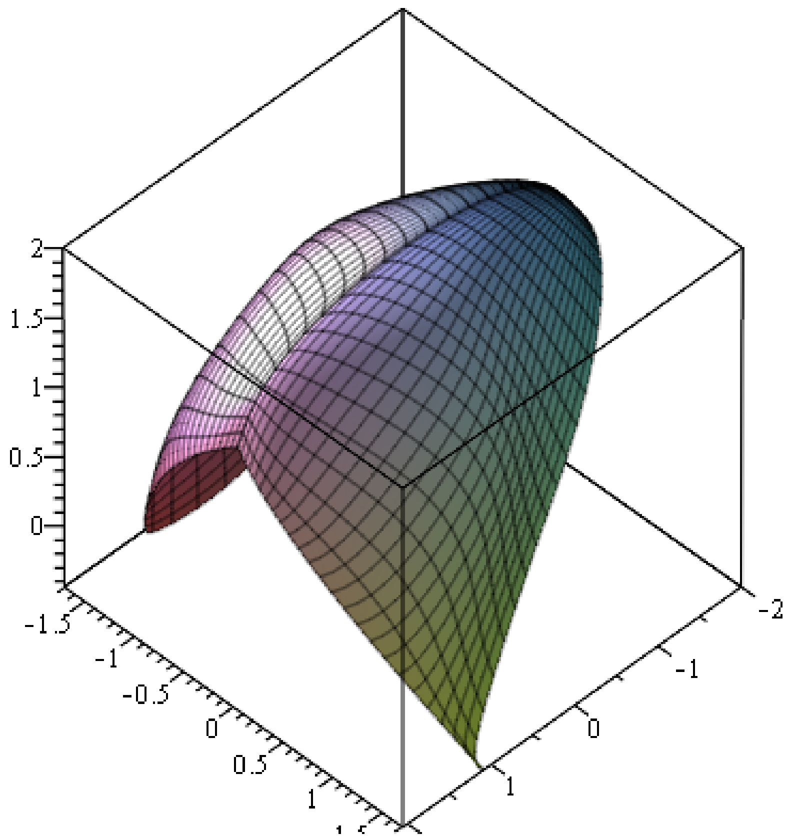
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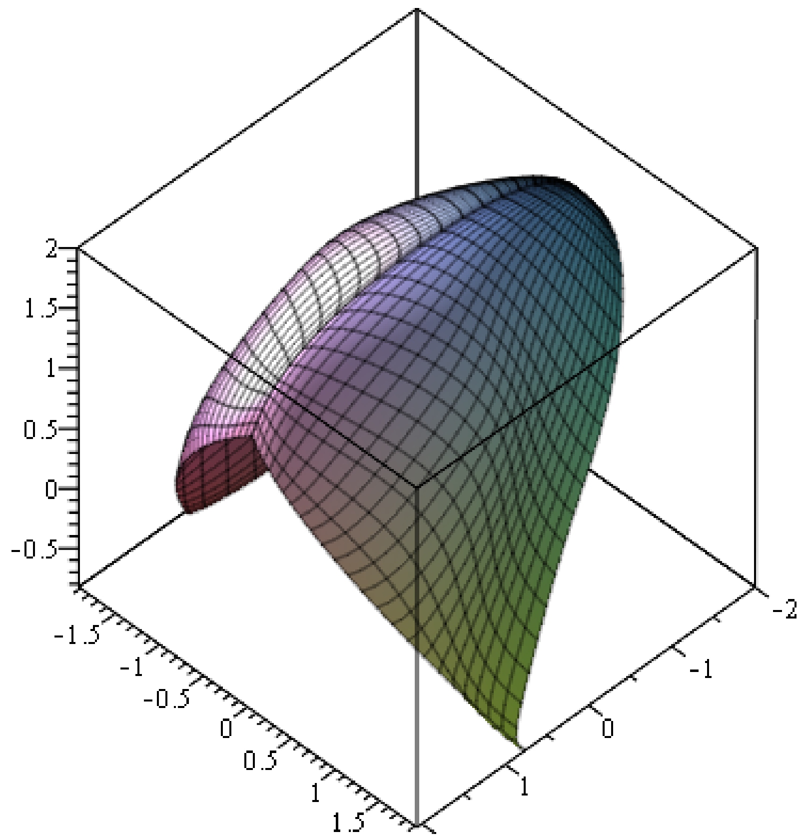

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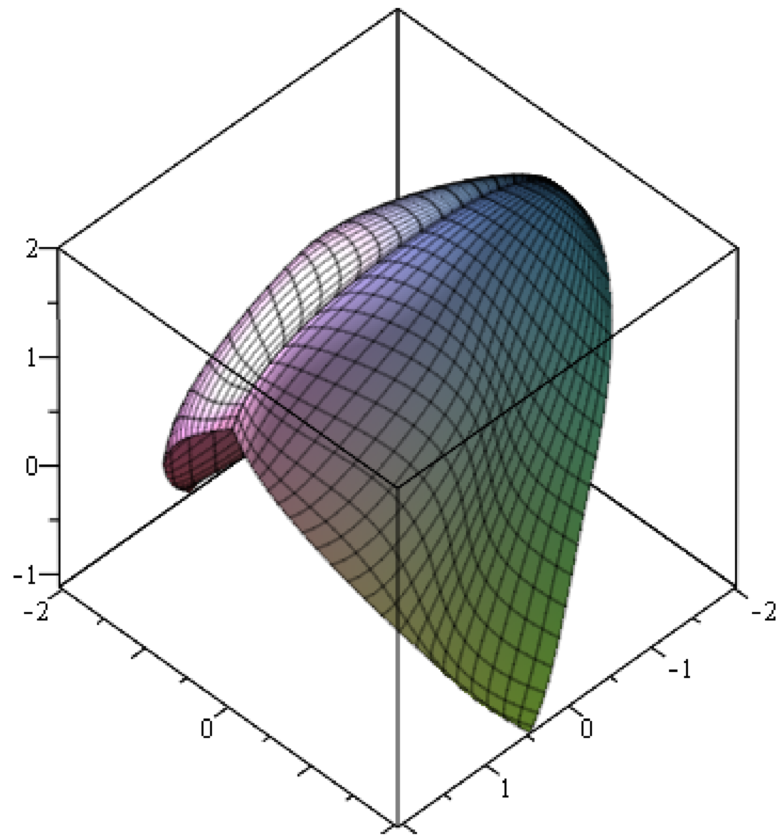
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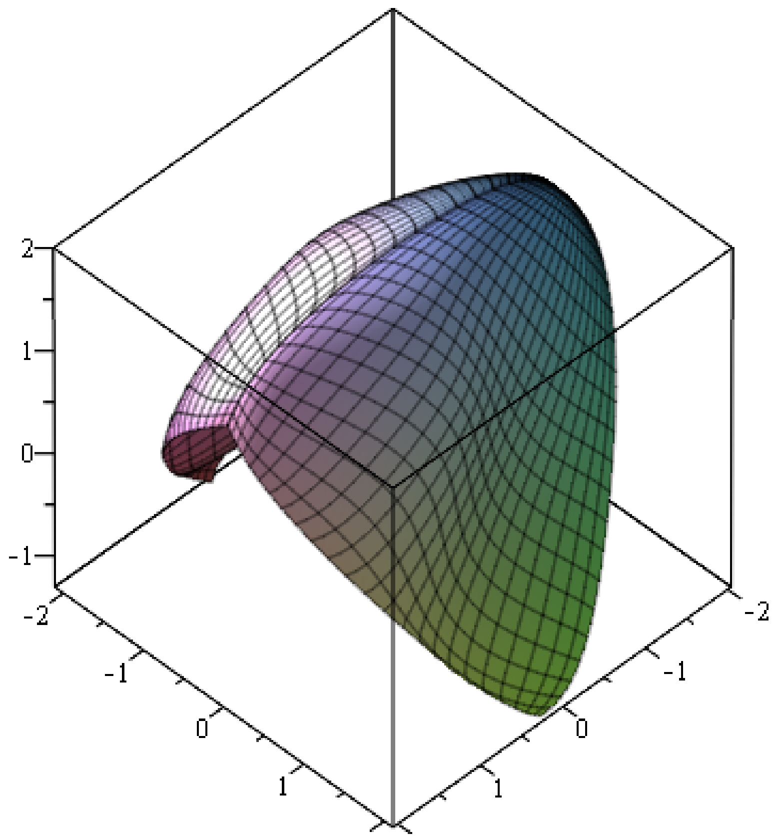
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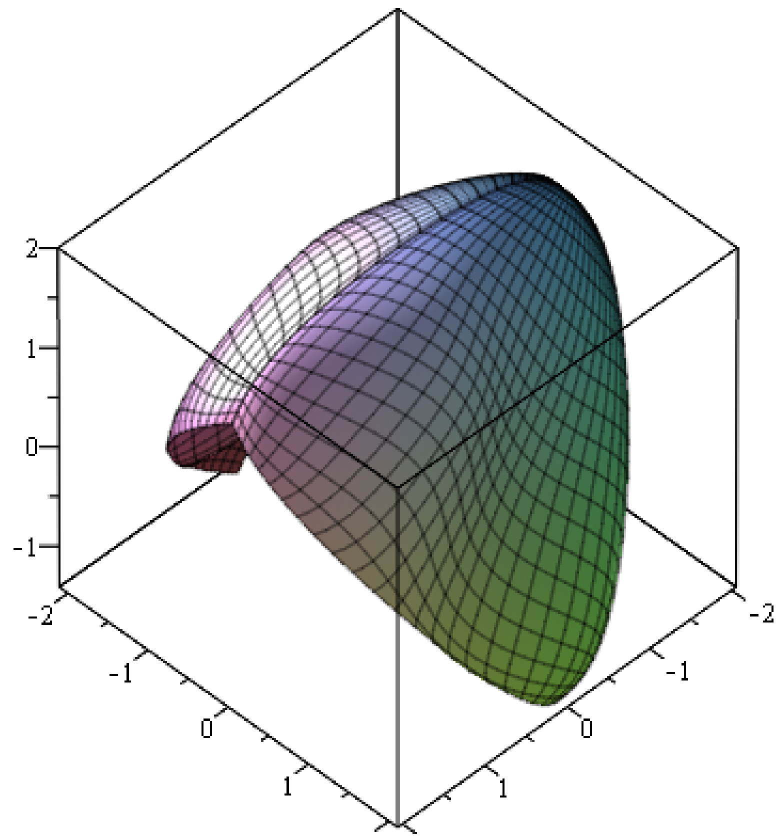

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