

```

f[p_, q_] := (c[p - 1] - c[q - 1]) / (p - q)

f[1, 2] * f[1, 3] * f[1, 4] * f[2, 3] * f[2, 4] * f[3, 4]


$$\frac{1}{12} (-c[0] + c[1]) (-c[0] + c[2]) (-c[1] + c[2]) (-c[0] + c[3]) (-c[1] + c[3]) (-c[2] + c[3])$$


FortranForm[%]

((-c(0) + c(1))*(-c(0) + c(2))*(-c(1) + c(2))*(-c(0) + c(3))*(-c(1) + c(3))*(-c(2) + c(3)))

G = SparseArray[{
  {1, 4, 1} → I, {1, 3, 2} → I, {1, 2, 3} → -I, {1, 1, 4} → -I,
  {2, 4, 1} → -1, {2, 3, 2} → 1, {2, 2, 3} → 1, {2, 1, 4} → -1, {3, 3, 1} → I,
  {3, 4, 2} → -I, {3, 1, 3} → -I, {3, 2, 4} → I, {4, 4, 2} → 1,
  {4, 3, 1} → 1, {4, 2, 4} → 1, {4, 1, 3} → 1}]; G[[1]] // MatrixForm
G5 = G[[1]].G[[2]].G[[3]].G[[4]]; G5 // MatrixForm


$$\begin{pmatrix} 0 & 0 & 0 & -i \\ 0 & 0 & -i & 0 \\ 0 & i & 0 & 0 \\ i & 0 & 0 & 0 \end{pmatrix}$$



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


Sigma5[a_, b_] := I / 2 * (G[[a]].G[[b]] - G[[b]].G[[a]]).G5

Sigma5[3, 4] // MatrixForm


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


Sigma[a_, b_] := I / 2 * (G[[a]].G[[b]] - G[[b]].G[[a]])

Sigma2[a_, b_] := -1 / 2 Sum[Sigma5[c, d] * Signature[{a, b, c, d}], {c, 1, 4}, {d, 1, 4}]

Sigma[4, 3] - Sigma2[4, 3]

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

-1

L = {32, 16, 16, 16}; G = {1, -1, -1, -1};

mu[a_] := Sum[(a[[i]] * 2 * Pi / L[[i]]) ^ 2, {i, 4}]

N[mu[{7 + 1 / 2, 3, 4, 4}], 20]

8.4913295677341063898

r

```

0.17512765 / 0.31131822

0.562536

1 + 16 + 3 + 16 + 3 + 3 + 16 * 4 + 2

108

N[2 / (1 / 0.10414239 + 1 / 0.10402374), 10]

0.104083

1 + 16 + 3 + 16 + 3 + 3 + 16 * 4 + 2 + 5

113