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(Alt) In[ ]:=
  << KnotTheory`

  Loading KnotTheory` version of October 29, 2024, 10:29:52.1301.
  Read more at http://katlas.org/wiki/KnotTheory.

(Alt) In[ ]:=
  PD[Knot[3, 1]]

  KnotTheory: Loading precomputed data in PD4Knots`.

(Alt) Out[ ]:=
  PD[X[1, 4, 2, 5], X[3, 6, 4, 1], X[5, 2, 6, 3]]

(Alt) In[ ]:=
  pd = PD[X[h[1], 4, v[5], 5], X[h[2], 6, 4, h[1]], X[5, v[5], 6, h[2]]]

(Alt) Out[ ]:=
  PD[X[h[1], 4, v[5], 5], X[h[2], 6, 4, h[1]], X[5, v[5], 6, h[2]]]

(Alt) In[ ]:=
  Times @@ (pd /. X[i_, j_, k_, l_] => p[i, k] p[j, l])

(Alt) Out[ ]:=
  p[4, 5] p[4, h[2]] p[5, 6] p[6, h[1]] p[h[1], v[5]] p[h[2], v[5]]

(Alt) In[ ]:=
  edges = DeleteDuplicates[List @@ ((Times @@ (pd /. X[i_, j_, k_, l_] => p[i, k] p[j, l])) /. {
    p[a_, m1___, b_] p[b_, m2___, c_] => p[a, m1, b, m2, c],
    p[a_, m1___, b_] p[c_, m2___, b_] => p[a, m1, b, Sequence @@ Reverse[{m2}], c]
  })]

(Alt) Out[ ]:=
  {4, 5, 6, h[1], h[2], v[5]}

(Alt) In[ ]:=
  pd /. Thread[edges -> Range[Length[edges]]]

(Alt) Out[ ]:=
  PD[X[4, 1, 6, 2], X[5, 3, 1, 4], X[2, 6, 3, 5]]

(Alt) In[ ]:=
  SetAttributes[p, Orderless]

(Alt) In[ ]:=
  CF[pd_PD] := Module[{p, edges},
    edges =
      DeleteDuplicates[List @@ ((Times @@ (pd /. X[i_, j_, k_, l_] => p[i, k] p[j, l])) /. {
        p[a_, m1___, b_] p[b_, m2___, c_] => p[a, m1, b, m2, c],
        p[a_, m1___, b_] p[c_, m2___, b_] => p[a, m1, b, Sequence @@ Reverse[{m2}], c]
      })];
    pd /. Thread[edges -> Range[Length[edges]]]
  ]

(Alt) In[ ]:=
  CF[pd = PD[X[h[1], 4, v[5], 5], X[h[2], 6, 4, h[1]], X[5, v[5], 6, h[2]]]]

(Alt) Out[ ]:=
  PD[X[6, 3, 1, 4], X[2, 5, 3, 6], X[4, 1, 5, 2]]

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(Alt) In[]:=

Jones[**PD**[**X**[6, 3, 1, 4], **X**[2, 5, 3, 6], **X**[4, 1, 5, 2]]][**q**]

(Alt) Out[]=

$$-\frac{1}{q^4} + \frac{1}{q^3} + \frac{1}{q}$$