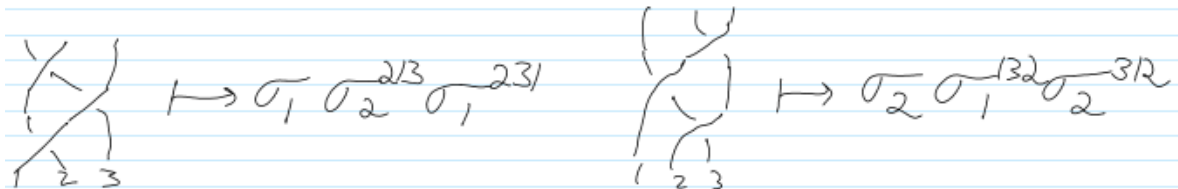


Pensieve header: Testing the expansion extension property for the 3-strand braid group.

```
SetDirectory["C:\\drorbn\\AcademicPensieve\\2015-02"];
<< ../Projects/WK04/FreeLie.m
FreeLie` implements / extends
{*, +, **, $SeriesShowDegree, <>, ∫, ≡, ad, Ad, adSeries, AllCyclicWords, AllLyndonWords,
AllWords, Arbitrator, ASeries, AW, b, BCH, BooleanSequence, BracketForm, BS, CC, Crop,
CW, CWS, CWSeries, D, Deg, DegreeScale, DerivationSeries, div, DK, DKS, EulerE, Exp,
Inverse, j, J, JA, LieDerivation, LieMorphism, LieSeries, LS, LW, LyndonFactorization,
Morphism, New, RandomCWSeries, Randomizer, RandomLieSeries, RC, SeriesSolve,
Support, t, tb, TopBracketForm, tr, UndeterminedCoefficients, Γ, ℓ, Λ, σ, ħ, ←, ↗}.
```

```
n = 3;
Clear[s, cs];
Do[
  Do[cs[i][k, j] = 0, {j, 1, n-1}, {k, j+1, n}];
  cs[i][i+1, i] = 1/2;
  s[i] = DKS[n, cs[i]],
  {i, 1, n-1}
]
```

```
s[2]
DKS[ $\frac{t_{23}}{2}$ ,  $t_{13}t_{23}$  cs[2][3, 1, 2],
 $t_{13}t_{13}t_{23}$  cs[2][3, 1, 1, 2] +  $t_{13}t_{23}t_{23}$  cs[2][3, 1, 2, 2], ...]
```



```
SeriesSolve[{s[1], s[2]},
  s[1] ** (s[2] // σ[2, 1, 3]) ** (s[1] // σ[2, 3, 1]) ≡
  s[2] ** (s[1] // σ[1, 3, 2]) ** (s[2] // σ[3, 1, 2])
]
```

```
{s[1], s[2]}
```

Arbitrator called on {cs[1][3, 1, 2]}...

Arbitrator called on {cs[1][3, 1, 1, 2], cs[1][3, 1, 2, 2], cs[2][3, 1, 2, 2]}...

```
{DKS[ $\frac{t_{12}}{2}$ , 0, 0, ...], DKS[ $\frac{t_{23}}{2}$ ,  $\frac{1}{12}t_{13}t_{23}$ , 0, ...]}
```

```
First /@ {}
```

```
{}
```

**s[1]@{6}**

Arbitrator called on

{cs[1][3, 1, 1, 1, 2], cs[1][3, 1, 1, 2, 2], cs[1][3, 1, 2, 2, 2], cs[2][3, 1, 1, 1, 2]}...

Arbitrator called on {cs[1][3, 1, 1, 1, 1, 2], cs[1][3, 1, 1, 1, 2, 2],

cs[1][3, 1, 1, 2, 1, 2], cs[1][3, 1, 1, 2, 2, 2], cs[1][3, 1, 2, 1, 2, 2],

cs[1][3, 1, 2, 2, 2, 2], cs[2][3, 1, 1, 1, 2, 2], cs[2][3, 1, 1, 2, 1, 2]}...

No solutions!

\$Aborted