

```
In[*]:= SetDirectory["C:\\drorbn\\AcademicPensieve\\2023-01"]
```

```
Out[*]=
C:\drorbn\AcademicPensieve\2023-01
```

```
In[*]:= t* ^= t^-1
```

```
In[*]:= a*
```

```
Out[*]=
Conjugate[a]
```

```
In[*]:= a* /. a -> 1 + t^3
```

```
Out[*]=
1 +  $\frac{1}{t^3}$ 
```

```
In[*]:= <c_, d_> := Simplify@Module[{f},
  Expand[c (d /. {t -> t*, e_j_ -> f_j})] /. e_i_ f_j -> {
    (t - t*) i == j
    a i < j
    -a* i > j
  };
```

```
In[*]:= Clear[a]; a = t - 1;
c1 = e1 - t e3 + (t - 1) e4;
c2 = e2 - e4;
( <c1, c1> <c1, c2>
  <c2, c1> <c2, c2> ) // MatrixForm
```

```
Out[*]//MatrixForm=

$$\begin{pmatrix} -\frac{1}{t} + t & 0 \\ 0 & -\frac{1}{t} + t \end{pmatrix}$$

```

```
In[*]:= c1 = e2 - t e4 + (t - 1) e1;
c2 = e3 - e1;
( <c1, c1> <c1, c2>
  <c2, c1> <c2, c2> ) // MatrixForm
```

```
Out[*]//MatrixForm=

$$\begin{pmatrix} -\frac{1}{t} + t & 0 \\ 0 & -\frac{1}{t} + t \end{pmatrix}$$

```

```
In[*]:= c1 = e1 - e3;
c2 = e2 + (t-1 - 1) e3 - t-1 e4;
(⟨c1, c1⟩ ⟨c1, c2⟩
⟨c2, c1⟩ ⟨c2, c2⟩) // MatrixForm
```

Out[*]//MatrixForm=

$$\begin{pmatrix} -\frac{1}{t} + t & 0 \\ 0 & -\frac{1}{t} + t \end{pmatrix}$$

```
In[*]:= c1 = e1 - e2;
c2 = e3 - e4;
(⟨c1, c1⟩ ⟨c1, c2⟩
⟨c2, c1⟩ ⟨c2, c2⟩) // MatrixForm
```

Out[*]//MatrixForm=

$$\begin{pmatrix} -\frac{1}{t} + t & 0 \\ 0 & -\frac{1}{t} + t \end{pmatrix}$$

```
In[*]:= c1 = e1 - e4;
c2 = e2 - e3;
(⟨c1, c1⟩ ⟨c1, c2⟩
⟨c2, c1⟩ ⟨c2, c2⟩) // MatrixForm
```

Out[*]//MatrixForm=

$$\begin{pmatrix} -\frac{1}{t} + t & 0 \\ 0 & -\frac{1}{t} + t \end{pmatrix}$$