

giacpy-formaldets

```

from giacpy import *
// Giac share
root-directory:/home/fred/dev/sage/git-trac-command/local/share
/
// Using keyword file
/home/fred/dev/sage/git-trac-command/local/share/giac/doc/fr/ke
s
// Giac share
root-directory:/home/fred/dev/sage/git-trac-command/local/share
/
Help file
/home/fred/dev/sage/git-trac-command/local/share/giac/doc/fr/ai
s not found
Added 0 synonyms

```

Giac code can be sent to giac in the magic mode:

```

%libgiac
f:=(u,v)->{
  if(u<v){
    return a[u,v]
  }
  else{
    if(u==v){
      return 0
    }
    else{
      return -a[v,u]
    }
  }
};

h:=(u,v)->{
  x[u]^v
};

```

```

// Warning: a, declared as global variable(s)
// End defining f
// Warning: x, declared as global variable(s)
// End defining h

```

```

(u,v)->{
  if (u<v) return(a[u,v]); else if ((u==v)) return(0); else
  return(-(a[v,u])); ; ;
}, (u,v)->{
  (x[u])^v;
}

```

Vandermonde determinant (via minors) and factorisation of this determinant

```
V=libgiac.matrix(9,9,'h');
time Vdm=V.det_minor()
```

Time: CPU 1.36 s, Wall: 1.36 s

```
n=9;R=PolynomialRing(QQ,n,'x');
```

```
R.gens()
```

(x0, x1, x2, x3, x4, x5, x6, x7, x8)

```
x=[R.gens()];
```

```
time Vdm.factor()
```

```

(x[7]-(x[8]))*(x[6]-(x[8]))*(x[6]-(x[7]))*(x[5]-(x[8]))*(x[5]-(
))*
(x[5]-(x[6]))*(x[4]-(x[8]))*(x[4]-(x[7]))*(x[4]-(x[6]))*(x[4]
]))*(x[3]-(x[8]))*(x[3]-(x[7]))*(x[3]-(x[6]))*(x[3]-(x[5]))*(x[
4]))*(x[2]-(x[8]))*(x[2]-(x[7]))*(x[2]-(x[6]))*(x[2]-(x[5]))*(
(x[4]))*(x[2]-(x[3]))*(x[1]-(x[8]))*(x[1]-(x[7]))*(x[1]-(x[6]))
]-
(x[5]))*(x[1]-(x[4]))*(x[1]-(x[3]))*(x[1]-(x[2]))*(x[0]-(x[8]
[0]-(x[7]))*(x[0]-(x[6]))*(x[0]-(x[5]))*(x[0]-(x[4]))*(x[0]-(x[
(x[0]-(x[2]))*(x[0]-(x[1]))

```

Time: CPU 7.46 s, Wall: 7.13 s

Skew Symmetric Determinant via minors and factorisation.

```
A=libgiac.matrix(8,8,'f')
```

```
time B=A.det_minor()
```

Time: CPU 0.03 s, Wall: 0.03 s

```
time C=B.factor()
```

Gcdheu begin 28 13850000 Vector

$$\begin{aligned}
& 7] * a[1, 6] * a[0, 3] - a[6, 7] * a[2, 4] * a[1, 3] * a[0, 5] + a[6, 7] * a[2, 4] * a[1, \\
& 0, 3] + a[6, 7] * a[3, 5] * a[0, 2] * a[1, 4] - a[6, 7] * a[3, 5] * a[1, 2] * a[0, 4] + a[\\
& a[2, 5] * a[1, 3] * a[0, 4] - a[6, 7] * a[2, 5] * a[1, 4] * a[0, 3] - a[6, 7] * a[3, 4] * \\
&] * a[1, 5] + a[6, 7] * a[3, 4] * a[1, 2] * a[0, 5] + a[4, 6] * a[5, 7] * a[0, 2] * a[1, 3 \\
& , 6] * a[5, 7] * a[0, 3] * a[1, 2] + a[4, 6] * a[3, 5] * a[0, 2] * a[1, 7] - a[4, 6] * a[3 \\
& [1, 2] * a[0, 7] - a[4, 6] * a[3, 7] * a[0, 2] * a[1, 5] + a[4, 6] * a[3, 7] * a[1, 2] * a \\
& + a[4, 6] * a[2, 5] * a[1, 3] * a[0, 7] - a[4, 6] * a[2, 5] * a[1, 7] * a[0, 3] - a[4, 6] \\
& 7] * a[1, 3] * a[0, 5] + a[4, 6] * a[2, 7] * a[1, 5] * a[0, 3] + a[5, 7] * a[2, 4] * a[1, \\
& 0, 6] - a[5, 7] * a[2, 4] * a[1, 6] * a[0, 3] - a[5, 7] * a[3, 6] * a[0, 2] * a[1, 4] + a[\\
& a[3, 6] * a[1, 2] * a[0, 4] + a[5, 7] * a[3, 4] * a[0, 2] * a[1, 6] - a[5, 7] * a[3, 4] * \\
&] * a[0, 6] - a[5, 7] * a[2, 6] * a[1, 3] * a[0, 4] + a[5, 7] * a[2, 6] * a[1, 4] * a[0, 3 \\
& , 7] * a[5, 6] * a[0, 2] * a[1, 3] + a[4, 7] * a[5, 6] * a[0, 3] * a[1, 2] - a[4, 7] * a[3 \\
& [0, 2] * a[1, 6] + a[4, 7] * a[3, 5] * a[1, 2] * a[0, 6] + a[4, 7] * a[3, 6] * a[0, 2] * a \\
& - a[4, 7] * a[3, 6] * a[1, 2] * a[0, 5] - a[4, 7] * a[2, 5] * a[1, 3] * a[0, 6] + a[4, 7] \\
& 5] * a[1, 6] * a[0, 3] + a[4, 7] * a[2, 6] * a[1, 3] * a[0, 5] - a[4, 7] * a[2, 6] * a[1, \\
& 0, 3] - a[5, 6] * a[2, 4] * a[1, 3] * a[0, 7] + a[5, 6] * a[2, 4] * a[1, 7] * a[0, 3] + a[\\
& a[3, 7] * a[0, 2] * a[1, 4] - a[5, 6] * a[3, 7] * a[1, 2] * a[0, 4] - a[5, 6] * a[3, 4] * \\
&] * a[1, 7] + a[5, 6] * a[3, 4] * a[1, 2] * a[0, 7] + a[5, 6] * a[2, 7] * a[1, 3] * a[0, 4 \\
& , 6] * a[2, 7] * a[1, 4] * a[0, 3] - a[2, 4] * a[3, 5] * a[1, 6] * a[0, 7] + a[2, 4] * a[3 \\
& [1, 7] * a[0, 6] + a[2, 4] * a[3, 6] * a[1, 5] * a[0, 7] - a[2, 4] * a[3, 6] * a[1, 7] * a \\
& - a[2, 4] * a[3, 7] * a[1, 5] * a[0, 6] + a[2, 4] * a[3, 7] * a[1, 6] * a[0, 5] + a[3, 5] \\
& 6] * a[1, 4] * a[0, 7] - a[3, 5] * a[2, 6] * a[1, 7] * a[0, 4] - a[3, 5] * a[2, 7] * a[1, \\
& 0, 6] + a[3, 5] * a[2, 7] * a[1, 6] * a[0, 4] - a[3, 6] * a[2, 5] * a[1, 4] * a[0, 7] + a[\\
& a[2, 5] * a[1, 7] * a[0, 4] + a[3, 6] * a[2, 7] * a[1, 4] * a[0, 5] - a[3, 6] * a[2, 7] * \\
&] * a[0, 4] + a[3, 7] * a[2, 5] * a[1, 4] * a[0, 6] - a[3, 7] * a[2, 5] * a[1, 6] * a[0, 4 \\
& , 7] * a[2, 6] * a[1, 4] * a[0, 5] + a[3, 7] * a[2, 6] * a[1, 5] * a[0, 4] + a[2, 5] * a[3 \\
& [1, 6] * a[0, 7] - a[2, 5] * a[3, 4] * a[1, 7] * a[0, 6] - a[3, 4] * a[2, 6] * a[1, 5] * a \\
& + a[3, 4] * a[2, 6] * a[1, 7] * a[0, 5] + a[3, 4] * a[2, 7] * a[1, 5] * a[0, 6] - a[3, 4] \\
& 7] * a[1, 6] * a[0, 5])^2
\end{aligned}$$