EXAMPLE FILE FOR M2INTEX

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1. Introduction

some basic examples:

```
i1 : R=QQ[x,y]; factor(x^3-y^3)
```

o2 = $(x-y)\,(x^2+x\,y+y^2)$

```
o2 : Expression of class Product
i3 : res coker vars R
```

o3 = $R^1 \xleftarrow{\begin{pmatrix} x & y \end{pmatrix}} R^2 \xleftarrow{\begin{pmatrix} -y \\ x \end{pmatrix}} R^1 \xleftarrow{0} 0$

$\quad\;\; 0 \qquad\quad 1 \qquad\quad 2 \quad 3$

```
o3 : ChainComplex
```

more:

```
i4 : 318/46
```

o4 = $\frac{159}{23}$

```
o4 : QQ
i5 : exp 3.73767
```

o5 = 42

```
o5 : RR (of precision 53)
```

strings:

```
i6 : "hehe"
```

o6 = hehe

and nets: TODO fix `tex Net`

```
i7 : "haha"||"hihi"
```

o7 =
```
haha
hihi
```

2. Help

```
i8 : help det
```

o8 =

determinant – determinant of a matrix

Synopsis

- Usage:
  `det M`
- Inputs:
  - `M`, a square `matrix`
- `Optional inputs`:

  - `Strategy => ...`, default value null, choose between Bareiss and Cofactor algorithms
- Outputs:
  - a `ring element`, which is the determinant of `M`

Description

See also

- `exteriorPower` – exterior power
- `minors` – ideal generated by minors
- `permanents` – ideal generated by square permanents of a matrix
- `pfaffians` – ideal generated by Pfaffians

Ways to use `determinant` :

- `"determinant(Matrix)"`
- `"determinant(MutableMatrix)"`

For the programmer

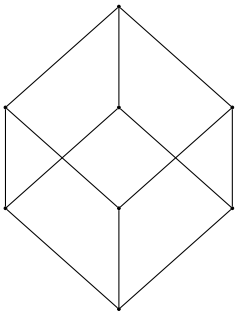
The object `determinant` is a `method function with options`.

```
o8 : DIV
```

3. PACKAGES

packages that have a `tex` output will work:

```
i9 : needsPackage "Posets";
i10 : booleanLattice 3
```



```
o10 =
o10 : Poset
```

4. MULTI-LINE EXAMPLE

```
i11 : f = i -> (
      i+1
      )
o11 = f
o11 : FunctionClosure
```