

EXAMPLE FILE FOR M2INTEX

PAUL ZINN-JUSTIN

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 <- (x y) R^2 <- (-y) R^1 <- 0 0
      0          1          2          3
o3 : ChainComplex
i4 : OO_(Proj(R/(x^3-y^3)))^{1,2}
o4 = O^1_{Proj(R/(x^3-y^3))}(1) \oplus O^1_{Proj(R/(x^3-y^3))}(2)
o4 : coherent sheaf on Proj(R/(x^3-y^3)), free
more:
i5 : 318/46
o5 = 159/23
o5 : Q
i6 : exp 3.73767
o6 = 42
o6 : R (of precision 53)
strings:
i7 : "hehe"
o7 = hehe
and nets:
i8 : "haha123456789"||"hoho!@#$$%^&*(
o8 = haha123456789
      hoho!@#$$%^&*(
printing:
i9 : for i from 1 to 8 do print(i^i)
1
4
27
256
3125
46656
823543
16777216
```

2. HELP

```
i10 : help det
```

```
o10 =
```

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.

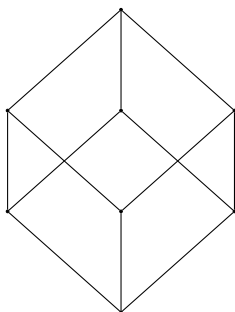
```
o10 : DIV
```

3. PACKAGES

packages that have a tex output will work:

```
i11 : needsPackage "Posets";
```

```
i12 : booleanLattice 3
```



```
o12 =
```

```
o12 : Poset
```

4. TRICKY EXAMPLES

```
i13 : -- some tricky examples
A bunch of complicated cases: a multi-line example
      f = i -> (
      -- that's dumb
      i+1
      )
o13 = f
o13 : FunctionClosure
and another weirder one:
i14 : I=ideal 0; f = i -> (
o14 : Ideal of  $\mathbb{Z}$ 
      i+1)
o15 = f
o15 : FunctionClosure
finally:
i16 : a=1;b=2;
i18 : c=3;
That last one has no output.
```