CoCoA-5 - Support #1071

LinKerBasis is user-unfriendly

18 May 2017 21:29 - John Abbott

Status:	In Progress	**Start date:**	18 May 2017
Priority:	Normal	**Due date:**	
Assignee:		**% Done:**	10%
Category:	enhancing/improving	**Estimated time:**	0.00 hour
Target version:	CoCoA-5.4.2	**Spent time:**	1.20 hour

Description

The CoCoA-5 function LinKerBasis produces unhelpful error messages, and too many of them!

Part of the problem may be the manual page which needs to be clearer.

History

#1 - 18 May 2017 21:31 - John Abbott

This is an unfriendly error message:

```
>>> L := [1,2,3];
>>> LinKerBasis(L);
--> ERROR: Expecting type RING, but found type TYPE
--> WHERE: at line 620 (column 15) of mat.cpkg5
-->   X := indets(Ps[1]);
-->               ^^^^^
```

But the following, which is very similar, works:

```
>>> L := one(P)*[1,2,3];
>>> LinKerBasis(L);
[[1,  0,  0],  [0,  1,  0],  [0,  0,  1]]
```

#2 - 18 May 2017 21:40 - John Abbott

- Status changed from New to In Progress

- % Done changed from 0 to 10

What is LinKerBasis supposed to do when given a list?

```
use QQ[x,y,z];
L := [x+y+z,y-z]; --> example from manual
LinKerBasis(L);
--> [[-2, 1, 1]]

// Slight variation
L := [x+y+z, y-z+1];
LinKerBasis(L);
--> same answer as before?!?
```

If the input is not linear...

```
L := [x*y+z, y-z];
LinKerBasis(L);
--> [[1, 0, 0]]
```

#3 - 18 May 2017 21:46 - John Abbott

The version that takes a list gives an unhelpful error when one component is zero:

```
use QQ[x,y,z];
L := [0, x+y+z];
LinKerBasis(L);
--> ERROR: more than one ring for argument list
```

It works (*i.e.* no error) if the zero from the ring is used:

```
L := [zero(CurrentRing), x+y+z];
LinKerBasis(L);
--> [[-1,  1,  0],  [-1,  0,  1]]
```

#4 - 18 May 2017 21:49 - John Abbott

I am not sure what is happening here:

```
use P ::= QQ[x,y,z];
FrF := NewFractionField(P);
use FrF[dummy];
L := [zero(CurrentRing),z,-y]; // cannot use 0!
LinKerBasis(L);
--> [[1]] ?!?
```

#5 - 18 May 2017 21:50 - John Abbott

Should the manual page for LinKerBasis also refer to the page for syz?

#6 - 22 May 2017 10:45 - Anna Maria Bigatti

LinKerBasis is the "sloppy" version of LinKer (which only takes a MAT, returns a MAT).

We added LIST of linear homogeneous polynomials, but there is no input check!
Ooops, my fault: I guess I wrote that code in a rush for private use.

#7 - 04 Mar 2020 22:30 - John Abbott

- Target version changed from CoCoA-5.?.? to CoCoA-5.4.0

The fn **LinKerBasis** is in the manual, but the arg checking is still sloppy. We should fix this!

#8 - 03 Feb 2022 19:54 - John Abbott

- Target version changed from CoCoA-5.4.0 to CoCoA-5.4.2