CoCoA-5 - Bug #1191

ApproxSolve: log(0) on some examples

19 Jun 2018 16:15 - John Abbott

Status:	Closed	**Start date:**	19 Jun 2018
Priority:	High	**Due date:**	
Assignee:	John Abbott	**% Done:**	100%
Category:	bug	**Estimated time:**	0.77 hour
Target version:	CoCoA-5.2.4	**Spent time:**	0.80 hour

Description

The following input attempts to compute log(0).

```
use QQ[x,y,z];
L := [y^3 +x*z^2,  2*x^2*y -4*x*z^2 +3*x*y,  2*x^3 +x^2*y -2*z^3]; -- zero dim!
ApproxSolve(L);
```

History

#1 - 19 Jun 2018 16:17 - John Abbott

- Status changed from New to In Progress

- % Done changed from 0 to 10

Something odd must have happened: ApproxSolve is failing on almost trivial examples.
Here are some simpler failing examples:

```
ideal(-2*x*y^2 +2*x^2 +3*x*y,  -3*y^3 -2*x^2);
```

```
ideal(-x^2 +3*x*y -y,  -3*y^2 +x)
```

Maybe there is a problem when (0,0) is a solution?

#2 - 19 Jun 2018 16:25 - John Abbott

It even fails in a univariate case... -3*x^2+2*x.
Investigating...

#3 - 19 Jun 2018 16:32 - John Abbott

Here is a surprise:

```
RealRoots(x); --> gives error log(0)
```

Ulrich has the version from Jan 2018, and his works...
So I must have made a recent change... sigh!

#4 - 19 Jun 2018 16:46 - John Abbott

- Status changed from In Progress to Feedback

- Assignee set to John Abbott

- % Done changed from 10 to 90

The problem was caused by a new better impl of RootBound which can return zero (if arg is just x); the old RootBound could not do this.

Fixed.

#5 - 26 Jul 2018 13:59 - John Abbott

- Status changed from Feedback to Closed

- % Done changed from 90 to 100

- Estimated time set to 0.77 h

Closing