

gfun[algeqseries] - Puiseux expansions of algebraic functions

Calling Sequence

algeqseries(pol, x, y, order, pos_slopes)

Parameters

- pol – polynomial equation in two variables **x** and **y**
- x, y – variable names
- order – positive integer order of the expansions
- pos_slopes – (optional) only branches tending to 0 are computed

Description

- The equation **pol(x,y)=0** defines a multivalued function **y(x)**, **algeqseries** computes an expansion of all the branches at the origin.
- When a fifth argument is given, only those branches tending to 0 are computed. Note that this function is not designed to compute expansions to a large order. In this case, the differential equation should be used (see [algeqtodiffeq](#)).

Examples

```
> with(gfun):  
P:=y-x^2-x^3*y^2+x^6*y^5;
```

$$P := y - x^2 - x^3 y^2 + x^6 y^5 \quad (2.1)$$

```
> algeqseries(P, x, y, 4);
```

$$\left[x^2 + O(x^6), \frac{\text{RootOf}(1 + _Z^4)}{x^{3/2}} - \frac{1}{4} \text{RootOf}(1 + _Z^4)^2 + O(\sqrt{x}) \right] \quad (2.2)$$

```
> algeqseries(P, x, y, 10, true);
```

$$[x^2 + x^7 + O(x^{12})] \quad (2.3)$$

See Also

[gfun](#), [gfun\[parameters\]](#), [solve/series](#), [RootOf](#)