gfun[listtoratpoly] - find a rational generating function

gfun[seriestoratpoly] - find a rational approximant

Calling Sequence

listtoratpolym(**l**, **x**, <[**typelist**]>)

seriestoratpoly(**s**, <[**typelist**]>)

Parameters

`l` - a list

`s` - a series

`x` - the unknown variable

`[typelist]` - (optional) a list of generating function types

Description

- The procedures **listtoratpoly** and **seriestoratpoly** compute a rational function in **x** for the generating function of the expressions in **l** or **s**, this generating function being of one of the types specified by **typelist** for example, ordinary (ogf) or exponential (egf). For a full list of available choices see gftypes).
- These functions are frontends to convert[ratpoly] which performs the actual computation.
- If **typelist** contains more than one element, these types are tried in order. If **typelist** is not provided, a default **optionsgf**=**['ogf','egf']** is used.
- The output is a list whose second element is the type for which a solution was found, and whose first element is the rational function.
- One should give as many terms as possible in the list **l** or the series **s**.

Examples

If the input is the first few elements of the Fibonacci sequence, the the output is the generating series for the Fibonacci numbers.

```
> with(gfun):
  l:=[1,1,2,3,5,8,13];
```

$$l := [1, 1, 2, 3, 5, 8, 13] \tag{2.1}$$

```
> listtoratpoly(l,x);
```

$$\left[-\frac{1}{-1+x+x^2}, ogf\right] \tag{2.2}$$

```
> seriestoratpoly(series(1+x+2*x^2*2!+3*x^3*3!+5*x^4*4!+8*x^5*5!
  +13*x^6*6!,x,8),['egf']);
```

$$\left[-\frac{1}{-1+x+x^2}, egf\right] \tag{2.3}$$

See Also

gfun, gfun[parameters], convert[ratpoly]