O19-105

```
> restart:
> p:=proc(n)
  local s,sys,sol;
  s:=sum(a[k]*t^(k-1),k=1..(n+1));
  sys:={seq(sum(subs(t=j,s)*j^i,j=0..n)-1/(i+1),i=0..n)};
  sol:=solve(sys,{seq(a[k],k=1..(n+1))});
  return(subs(sol,s));
  end;
```

$p := \mathbf{proc}(n)$

$\mathbf{local}\ s, sys, sol;$

$\quad s := \mathrm{sum}(a[k]*t\hat{\ }(k-1), k=1 .. n+1);$

$\quad sys := \{\,\mathrm{seq}(\mathrm{sum}(\mathrm{subs}(t=j, s)*j\hat{\ }i, j=0 .. n) - 1/(i+1), i=0 .. n)\,\};$

$\quad sol := \mathrm{solve}(sys, \{\,\mathrm{seq}(a[k], k=1 .. n+1)\,\});$

$\quad \mathbf{return}\ \mathrm{subs}(sol, s)$

$\mathbf{end\ proc}$

```
> l:=[seq(p(n),n=0..5)];ll:=[seq(p(n),n=2..5)]:
```

$$l := \left[\, 1, \frac{1}{2}, \frac{5}{12} + \frac{3}{4}\,t - \frac{1}{2}\,t^2, \frac{3}{8} + \frac{145}{72}\,t - \frac{49}{24}\,t^2 + \frac{4}{9}\,t^3, \frac{251}{720} + \frac{3599}{864}\,t - \frac{1183}{216}\,t^2 + \frac{1825}{864}\,t^3 - \frac{109}{432}\,t^4, \right.$$

$$\left. \frac{95}{288} + \frac{178031}{21600}\,t - \frac{45517}{3456}\,t^2 + \frac{60481}{8640}\,t^3 - \frac{26413}{17280}\,t^4 + \frac{53}{450}\,t^5 \right]$$

```
> plot(ll,t=-1..5,legend=[seq(convert(i,string),i=2..5)]);
```

t

10

-1   0   1   2   3   4   5

-10

-20

-30

	2
	3
	4
	5

>