Magilatin generating functions and constituents

(general form, with affine data)

Notation:

L, S: magilatin, semimagic squares (all positive values).

ml: magilatin, except in g.f.'s.

l, s: normalized squares (symmetry types).

R: reduced squares (least element is 0).

r: reduced normalized squares (reduced symmetry types).

n: semimagic r.

gf: generating function in some form.

gfsum: generating function as a sum of simple terms.

c: Cubic (fixed strict upper bound; weak upper bound for reduced).

a: Affine (fixed magic sum).

p = period,

pno7 = truncated period (in affine),
p7 = period of the H term in the g.f.'s, with the denominator factor (1-x^d7).

d = degree (and dimension, in the general and no-H cases),
d7 = degree in the H term.

RtoLfactor = the rational function that multiplies Rgf to Lgf and rgf to lgf.

This is for **affine**: set up main constants.

```
> d:=4; d7:=1;
  p:=840; pno7:=120; p7:=21;
  RtoLfactor:=x^3/(1-x^3);
```

$$d := 4$$

$$d7 := 1$$

$$p := 840$$

$$pno7 := 120$$

$$p7 := 21$$

$$RtoLfactor := \frac{x^3}{1 - x^3}$$

We start by recomputing rs from the semimagic count. From the Latte results we get the closed Ehrhart g.f. of each flat, which depends on whether we're doing cubic or affine.

This is for **affine**: set up simplex data.

```
> simplexname[1]:="OABC": ehrgf[1]:= 1/((1-x)*(1-x^2)^3) : dimen[1]:=3:
  simplexname[2]:="OEE2": ehrgf[2]:= 1/((1-x)*(1-x^4)^2) : dimen[2]:=2:
  simplexname[3]:="OAE2": ehrgf[3]:= 1/((1-x)*(1-x^2)*(1-x^4)) :
  dimen[3]:=2:
```

```
simplexname[4]:="ADE2": ehrgf[4]:= 1/((1-x^2)*(1-x^3)*(1-x^4)) :
dimen[4]:=2:
simplexname[5]:="DE1E2": ehrgf[5]:= 1/((1-x^3)*(1-x^4)^2) : dimen[5]:=2:
simplexname[6]:="OCE": ehrgf[6]:= 1/((1-x)*(1-x^2)*(1-x^4)) :
dimen[6]:=2:
simplexname[7]:="BDE1": ehrgf[7]:= 1/((1-x^2)*(1-x^3)*(1-x^4)) :
dimen[7]:=2:
simplexname[8]:="ABD": ehrgf[8]:= 1/((1-x^2)^2*(1-x^3)) : dimen[8]:=2:
simplexname[9]:="FG1": ehrgf[9]:= 1/((1-x^5)*(1-x^8)) : dimen[9]:=1:
simplexname[10]:="EF": ehrgf[10]:= 1/((1-x^4)*(1-x^5)) : dimen[10]:=1:
simplexname[11]:="OG": ehrgf[11]:= 1/((1-x)*(1-x^6)) : dimen[11]:=1:
simplexname[12]:="FG": ehrgf[12]:= 1/((1-x^5)*(1-x^6)) : dimen[12]:=1:
simplexname[13]:="AF": ehrgf[13]:= 1/((1-x^2)*(1-x^5)) : dimen[13]:=1:
simplexname[14]:="DG": ehrgf[14]:= 1/((1-x^3)*(1-x^6)) : dimen[14]:=1:
simplexname[15]:="DG2": ehrgf[15]:= 1/((1-x^3)*(1-x^8)) : dimen[15]:=1:
simplexname[16]:="DE": ehrgf[16]:= 1/((1-x^3)*(1-x^4)) : dimen[16]:=1:
simplexname[17]:="H": ehrgf[17] := 1/(1-x^7) : dimen[17]:=0:
for n from 1 to 17 do print(simplexname[n], dimen[n], ehrgf[n]); od;
```

$$\text{"OABC"}, 3, \frac{1}{(1-x)\,(1-x^2)^3}$$

$$\text{"OEE2"}, 2, \frac{1}{(1-x)\,(1-x^4)^2}$$

$$\text{"OAE2"}, 2, \frac{1}{(1-x)\,(1-x^2)\,(1-x^4)}$$

$$\text{"ADE2"}, 2, \frac{1}{(1-x^2)\,(1-x^3)\,(1-x^4)}$$

$$\text{"DE1E2"}, 2, \frac{1}{(1-x^3)\,(1-x^4)^2}$$

$$\text{"OCE"}, 2, \frac{1}{(1-x)\,(1-x^2)\,(1-x^4)}$$

$$\text{"BDE1"}, 2, \frac{1}{(1-x^2)\,(1-x^3)\,(1-x^4)}$$

$$\text{"ABD"}, 2, \frac{1}{(1-x^2)^2\,(1-x^3)}$$

$$\text{"FG1"}, 1, \frac{1}{(1-x^5)\,(1-x^8)}$$

$$\text{"EF"}, 1, \frac{1}{(1-x^4)\,(1-x^5)}$$

$$\text{"OG"}, 1, \frac{1}{(1-x)\,(1-x^6)}$$

$$"FG", 1, \frac{1}{(1-x^5)(1-x^6)}$$

$$"AF", 1, \frac{1}{(1-x^2)(1-x^5)}$$

$$"DG", 1, \frac{1}{(1-x^3)(1-x^6)}$$

$$"DG2", 1, \frac{1}{(1-x^3)(1-x^8)}$$

$$"DE", 1, \frac{1}{(1-x^3)(1-x^4)}$$

$$"H", 0, \frac{1}{1-x^7}$$

The closed E.g.f. is converted to the open E.g.f.

```
> for n from 1 to 17 do
    mu[n]:=(-1)^(dimen[1]-dimen[n]):
  od:
  mu[14]:=2*mu[14]:
  for n from 1 to 17 do
    openehrgf[n]:=simplify(-(-1)^dimen[n]*subs(x=1/x,ehrgf[n])):
  od:
```

Set up basic g.f.'s.

```
> for n from 1 to 17 do
    rsgfterm[n]:=openehrgf[n]:
  od:
  rsgf:=sum(mu[nn]*rsgfterm[nn],nn=1..17);
  sgf:=RtoLfactor*rsgf;
  rsno7gf:=sum(mu[nn]*rsgfterm[nn],nn=1..16);
  sno7gf:=RtoLfactor*rsno7gf;
  r7gf:=rsgfterm[17];
  l7gf:=RtoLfactor*r7gf;
```

$$rsgf := \frac{x^7}{(x-1)(x^2-1)^3} + \frac{x^9}{(x-1)(x^4-1)^2} + \frac{2x^7}{(x-1)(x^2-1)(x^4-1)} + \frac{2x^9}{(x^2-1)(x^3-1)(x^4-1)}$$
$$+ \frac{x^{11}}{(x^3-1)(x^4-1)^2} + \frac{x^7}{(x^2-1)^2(x^3-1)} + \frac{x^{13}}{(x^5-1)(x^8-1)} + \frac{x^9}{(x^4-1)(x^5-1)} + \frac{x^7}{(x-1)(x^6-1)}$$
$$+ \frac{x^{11}}{(x^5-1)(x^6-1)} + \frac{x^7}{(x^2-1)(x^5-1)} + \frac{2x^9}{(x^3-1)(x^6-1)} + \frac{x^{11}}{(x^3-1)(x^8-1)} + \frac{x^7}{(x^3-1)(x^4-1)} + \frac{x^7}{x^7-1}$$

$$sgf := \frac{1}{1-x^3}\left(x^3 \left(\frac{x^7}{(x-1)(x^2-1)^3} + \frac{x^9}{(x-1)(x^4-1)^2} + \frac{2x^7}{(x-1)(x^2-1)(x^4-1)} + \frac{2x^9}{(x^2-1)(x^3-1)(x^4-1)} \right.\right.$$

$$+\frac{x^{11}}{(x^3-1)(x^4-1)^2}+\frac{x^7}{(x^2-1)^2(x^3-1)}+\frac{x^{13}}{(x^5-1)(x^8-1)}+\frac{x^9}{(x^4-1)(x^5-1)}+\frac{x^7}{(x-1)(x^6-1)}$$
$$+\frac{x^{11}}{(x^5-1)(x^6-1)}+\frac{x^7}{(x^2-1)(x^5-1)}+\frac{2x^9}{(x^3-1)(x^6-1)}+\frac{x^{11}}{(x^3-1)(x^8-1)}+\frac{x^7}{(x^3-1)(x^4-1)}+\frac{x^7}{x^7-1}\Bigg)\Bigg)$$

$$rsno7gf := \frac{x^7}{(x-1)(x^2-1)^3}+\frac{x^9}{(x-1)(x^4-1)^2}+\frac{2x^7}{(x-1)(x^2-1)(x^4-1)}+\frac{2x^9}{(x^2-1)(x^3-1)(x^4-1)}$$
$$+\frac{x^{11}}{(x^3-1)(x^4-1)^2}+\frac{x^7}{(x^2-1)^2(x^3-1)}+\frac{x^{13}}{(x^5-1)(x^8-1)}+\frac{x^9}{(x^4-1)(x^5-1)}+\frac{x^7}{(x-1)(x^6-1)}$$
$$+\frac{x^{11}}{(x^5-1)(x^6-1)}+\frac{x^7}{(x^2-1)(x^5-1)}+\frac{2x^9}{(x^3-1)(x^6-1)}+\frac{x^{11}}{(x^3-1)(x^8-1)}+\frac{x^7}{(x^3-1)(x^4-1)}$$

$$sno7gf := \frac{1}{1-x^3}\Bigg(x^3\bigg(\frac{x^7}{(x-1)(x^2-1)^3}+\frac{x^9}{(x-1)(x^4-1)^2}+\frac{2x^7}{(x-1)(x^2-1)(x^4-1)}+\frac{2x^9}{(x^2-1)(x^3-1)(x^4-1)}$$
$$+\frac{x^{11}}{(x^3-1)(x^4-1)^2}+\frac{x^7}{(x^2-1)^2(x^3-1)}+\frac{x^{13}}{(x^5-1)(x^8-1)}+\frac{x^9}{(x^4-1)(x^5-1)}+\frac{x^7}{(x-1)(x^6-1)}$$
$$+\frac{x^{11}}{(x^5-1)(x^6-1)}+\frac{x^7}{(x^2-1)(x^5-1)}+\frac{2x^9}{(x^3-1)(x^6-1)}+\frac{x^{11}}{(x^3-1)(x^8-1)}+\frac{x^7}{(x^3-1)(x^4-1)}\bigg)\Bigg)$$

$$r7gf := -\frac{x^7}{x^7-1}$$

$$l7gf := -\frac{x^{10}}{(1-x^3)(x^7-1)}$$

The additional faces and intersection polytopes involved in the magilatin computation. They depend on whether we're cubic or affine.

These are for **affine**.

```
> mlsimplexname[1]:="OAB": mlehrgf[1]:= 1 / ((1-x)*(1-x^2)^2) :
  mldimen[1]:=2:
  mlsimplexname[2]:="OE": mlehrgf[2]:= 1 / ((1-x)*(1-x^4)) :
  mldimen[2]:=1:
  mlsimplexname[3]:="OAC": mlehrgf[3]:= 1 / ((1-x)*(1-x^2)^2) :
  mldimen[3]:=2:
  mlsimplexname[4]:="AD": mlehrgf[4]:= 1 / ((1-x^3)*(1-x^2)) :
  mldimen[4]:=1:
  mlsimplexname[5]:="DE1": mlehrgf[5]:= 1 / ((1-x^3)*(1-x^4)) :
  mldimen[5]:=1:
  mlsimplexname[6]:="OBC": mlehrgf[6]:= 1 / ((1-x)*(1-x^2)^2) :
  mldimen[6]:=2:
  mlsimplexname[7]:="OE2": mlehrgf[7]:= 1 / ((1-x)*(1-x^4)) :
  mldimen[7]:=1:
```

```
mlsimplexname[8]:="BD": mlehrgf[8]:= 1 / ((1-x^2)*(1-x^3)) :
mldimen[8]:=1:
mlsimplexname[9]:="DE2": mlehrgf[9]:= 1 / ((1-x^3)*(1-x^4)) :
mldimen[9]:=1:
mlsimplexname[10]:="F": mlehrgf[10]:= 1/(1-x^5) : mldimen[10]:=0:
mlsimplexname[11]:="OB": mlehrgf[11]:= 1/((1-x)*(1-x^2)) :
mldimen[11]:=1:
for n from 1 to 11 do print(mlsimplexname[n], mldimen[n], mlehrgf[n]);
od;
```

$$\text{"OAB"}, 2, \frac{1}{(1-x)\,(1-x^2)^2}$$

$$\text{"OE"}, 1, \frac{1}{(1-x)\,(1-x^4)}$$

$$\text{"OAC"}, 2, \frac{1}{(1-x)\,(1-x^2)^2}$$

$$\text{"AD"}, 1, \frac{1}{(1-x^3)\,(1-x^2)}$$

$$\text{"DE1"}, 1, \frac{1}{(1-x^3)\,(1-x^4)}$$

$$\text{"OBC"}, 2, \frac{1}{(1-x)\,(1-x^2)^2}$$

$$\text{"OE2"}, 1, \frac{1}{(1-x)\,(1-x^4)}$$

$$\text{"BD"}, 1, \frac{1}{(1-x^3)\,(1-x^2)}$$

$$\text{"DE2"}, 1, \frac{1}{(1-x^3)\,(1-x^4)}$$

$$\text{"F"}, 0, \frac{1}{1-x^5}$$

$$\text{"OB"}, 1, \frac{1}{(1-x)\,(1-x^2)}$$

Now a general computation. First, open Ehrhart g.f.'s.

```
> for n from 1 to 11 do
    openmlehrgf[n]:=simplify(-(-1)^mldimen[n]*subs(x=1/x,mlehrgf[n]));
  od:
```

(-1)^3 n_OAB(1/x) equals mlehrgf[1]+mlehrgf[2], and hence n_OAB(x) is, by another method that gives a nicer appearance, summing mu(,)E^o(x):

```
> mlnnew[1] := openmlehrgf[1]-openmlehrgf[2];
```

$$mlnnew_1 := -\frac{x^5}{(x-1)(x^2-1)^2} - \frac{x^5}{(x-1)(x^4-1)}$$

(-1)^3 n_OAC(1/x) equals mlehrgf[3]+mlehrgf[4]+mlehrgf[5]. Hence n_OAC(x) equals

```
> mlnnew[2] := openmlehrgf[3]-openmlehrgf[4]-openmlehrgf[5];
```

$$mlnnew_2 := -\frac{x^5}{(x-1)(x^2-1)^2} - \frac{x^5}{(x^3-1)(x^2-1)} - \frac{x^7}{(x^3-1)(x^4-1)}$$

(-1)^3 n_OBC(1/x) equals mlehrgf[6]+mlehrgf[7]+mlehrgf[8]+mlehrgf[9]+mlehrgf[10]. So n_OBC(x) equals

```
> mlnnew[3] :=
  openmlehrgf[6]-openmlehrgf[7]-openmlehrgf[8]-openmlehrgf[9]+openmlehrgf[
  10];
```

$$mlnnew_3 := -\frac{x^5}{(x-1)(x^2-1)^2} - \frac{x^5}{(x-1)(x^4-1)} - \frac{x^5}{(x^3-1)(x^2-1)} - \frac{x^7}{(x^3-1)(x^4-1)} - \frac{x^5}{x^5-1}$$

Finally, OB gives mlehrgf[11], so that n_OB(x) is

```
> mlnnew[4] := openmlehrgf[11];
```

$$mlnnew_4 := \frac{x^3}{(x-1)(x^2-1)}$$

To compute R, we need rs=n from semimagic, which equals rgf:

```
> Rgfsum:=72*rsgf+36*(mlnnew[1]+mlnnew[2]+mlnnew[3])+12*mlnnew[4];
  Rgf:=simplify(Rgfsum):
  Rno7gfsum:=72*rsno7gf+36*(mlnnew[1]+mlnnew[2]+mlnnew[3])+12*mlnnew[4];
  Rno7gf:=simplify(Rno7gfsum):
  R7gf:=72*r7gf;
```

$$Rgfsum := \frac{144\,x^7}{(x-1)(x^2-1)(x^4-1)} + \frac{144\,x^9}{(x^2-1)(x^3-1)(x^4-1)} + \frac{72\,x^7}{(x-1)(x^2-1)^3} + \frac{72\,x^9}{(x-1)(x^4-1)^2} + \frac{72\,x^{11}}{(x^3-1)(x^4-1)^2} + \frac{72\,x^7}{(x^2-1)^2(x^3-1)} + \frac{72\,x^{13}}{(x^5-1)(x^8-1)} + \frac{72\,x^9}{(x^4-1)(x^5-1)} + \frac{72\,x^7}{(x-1)(x^6-1)} + \frac{72\,x^{11}}{(x^5-1)(x^6-1)} + \frac{72\,x^7}{(x^2-1)(x^5-1)} + \frac{144\,x^9}{(x^3-1)(x^6-1)} + \frac{72\,x^7}{x^7-1} + \frac{72\,x^{11}}{(x^3-1)(x^8-1)} - \frac{108\,x^5}{(x-1)(x^2-1)^2} - \frac{72\,x^5}{(x-1)(x^4-1)} - \frac{72\,x^5}{(x^3-1)(x^2-1)} - \frac{36\,x^5}{x^5-1} + \frac{12\,x^3}{(x-1)(x^2-1)}$$

$$Rno7gfsum := \frac{144\,x^7}{(x-1)(x^2-1)(x^4-1)} + \frac{144\,x^9}{(x^2-1)(x^3-1)(x^4-1)} + \frac{72\,x^7}{(x-1)(x^2-1)^3} + \frac{72\,x^9}{(x-1)(x^4-1)^2} + \frac{72\,x^{11}}{(x^3-1)(x^4-1)^2} + \frac{72\,x^7}{(x^2-1)^2(x^3-1)} + \frac{72\,x^{13}}{(x^5-1)(x^8-1)} + \frac{72\,x^9}{(x^4-1)(x^5-1)} + \frac{72\,x^7}{(x-1)(x^6-1)}$$

$$+\frac{72x^{11}}{(x^5-1)(x^6-1)}+\frac{72x^7}{(x^2-1)(x^5-1)}+\frac{144x^9}{(x^3-1)(x^6-1)}+\frac{72x^{11}}{(x^3-1)(x^8-1)}-\frac{108x^5}{(x-1)(x^2-1)^2}$$
$$-\frac{72x^5}{(x-1)(x^4-1)}-\frac{72x^5}{(x^3-1)(x^2-1)}-\frac{36x^5}{x^5-1}+\frac{12x^3}{(x-1)(x^2-1)}$$

$$R7gf := -\frac{72x^7}{x^7-1}$$

Hence L, the g.f. of the number of magilatin squares, equals

```
> Lgfsum:=RtoLfactor*Rgfsum;
  Lgf:=simplify(Lgfsum):
  Lno7gfsum:=RtoLfactor*Rno7gfsum;
  Lno7gf:=simplify(Lno7gfsum):
  L7gf:=72*l7gf;
```

$$Lgfsum := \frac{1}{1-x^3}\left(x^3\left(\frac{144x^7}{(x-1)(x^2-1)(x^4-1)}+\frac{144x^9}{(x^2-1)(x^3-1)(x^4-1)}+\frac{72x^7}{(x-1)(x^2-1)^3}+\frac{72x^9}{(x-1)(x^4-1)^2}\right.\right.$$
$$+\frac{72x^{11}}{(x^3-1)(x^4-1)^2}+\frac{72x^7}{(x^2-1)^2(x^3-1)}+\frac{72x^{13}}{(x^5-1)(x^8-1)}+\frac{72x^9}{(x^4-1)(x^5-1)}+\frac{72x^7}{(x-1)(x^6-1)}$$
$$+\frac{72x^{11}}{(x^5-1)(x^6-1)}+\frac{72x^7}{(x^2-1)(x^5-1)}+\frac{144x^9}{(x^3-1)(x^6-1)}+\frac{72x^7}{x^7-1}+\frac{72x^{11}}{(x^3-1)(x^8-1)}-\frac{108x^5}{(x-1)(x^2-1)^2}$$
$$\left.\left.-\frac{72x^5}{(x-1)(x^4-1)}-\frac{72x^5}{(x^3-1)(x^2-1)}-\frac{36x^5}{x^5-1}+\frac{12x^3}{(x-1)(x^2-1)}\right)\right)$$

$$Lno7gfsum := \frac{1}{1-x^3}\left(x^3\left(\frac{144x^7}{(x-1)(x^2-1)(x^4-1)}+\frac{144x^9}{(x^2-1)(x^3-1)(x^4-1)}+\frac{72x^7}{(x-1)(x^2-1)^3}\right.\right.$$
$$+\frac{72x^9}{(x-1)(x^4-1)^2}+\frac{72x^{11}}{(x^3-1)(x^4-1)^2}+\frac{72x^7}{(x^2-1)^2(x^3-1)}+\frac{72x^{13}}{(x^5-1)(x^8-1)}+\frac{72x^9}{(x^4-1)(x^5-1)}$$
$$+\frac{72x^7}{(x-1)(x^6-1)}+\frac{72x^{11}}{(x^5-1)(x^6-1)}+\frac{72x^7}{(x^2-1)(x^5-1)}+\frac{144x^9}{(x^3-1)(x^6-1)}+\frac{72x^{11}}{(x^3-1)(x^8-1)}$$
$$\left.\left.-\frac{108x^5}{(x-1)(x^2-1)^2}-\frac{72x^5}{(x-1)(x^4-1)}-\frac{72x^5}{(x^3-1)(x^2-1)}-\frac{36x^5}{x^5-1}+\frac{12x^3}{(x-1)(x^2-1)}\right)\right)$$

$$L7gf := -\frac{72x^{10}}{(1-x^3)(x^7-1)}$$

Now compute the number of reduced symmetry types:

```
> rgfsum:=rsgf+mlnnew[1]+mlnnew[2]+mlnnew[3]+mlnnew[4];
  rgf:=simplify(rgfsum):
```

```
rno7gfsum:=rsno7gf+mlnnew[1]+mlnnew[2]+mlnnew[3]+mlnnew[4];
rno7gf:=simplify(rno7gfsum):
```

$$rgfsum := \frac{2x^7}{(x-1)(x^2-1)(x^4-1)} + \frac{2x^9}{(x^2-1)(x^3-1)(x^4-1)} + \frac{x^7}{(x-1)(x^2-1)^3} + \frac{x^9}{(x-1)(x^4-1)^2} + \frac{x^{11}}{(x^3-1)(x^4-1)^2} + \frac{x^7}{(x^2-1)^2(x^3-1)} + \frac{x^{13}}{(x^5-1)(x^8-1)} + \frac{x^9}{(x^4-1)(x^5-1)} + \frac{x^7}{(x-1)(x^6-1)} + \frac{x^{11}}{(x^5-1)(x^6-1)} + \frac{x^7}{(x^2-1)(x^5-1)} + \frac{2x^9}{(x^3-1)(x^6-1)} + \frac{x^7}{x^7-1} + \frac{x^{11}}{(x^3-1)(x^8-1)} - \frac{x^7}{(x^3-1)(x^4-1)} - \frac{3x^5}{(x-1)(x^2-1)^2} - \frac{2x^5}{(x-1)(x^4-1)} - \frac{2x^5}{(x^3-1)(x^2-1)} - \frac{x^5}{x^5-1} + \frac{x^3}{(x-1)(x^2-1)}$$

$$rno7gfsum := \frac{2x^7}{(x-1)(x^2-1)(x^4-1)} + \frac{2x^9}{(x^2-1)(x^3-1)(x^4-1)} + \frac{x^7}{(x-1)(x^2-1)^3} + \frac{x^9}{(x-1)(x^4-1)^2} + \frac{x^{11}}{(x^3-1)(x^4-1)^2} + \frac{x^7}{(x^2-1)^2(x^3-1)} + \frac{x^{13}}{(x^5-1)(x^8-1)} + \frac{x^9}{(x^4-1)(x^5-1)} + \frac{x^7}{(x-1)(x^6-1)} + \frac{x^{11}}{(x^5-1)(x^6-1)} + \frac{x^7}{(x^2-1)(x^5-1)} + \frac{2x^9}{(x^3-1)(x^6-1)} + \frac{x^{11}}{(x^3-1)(x^8-1)} - \frac{x^7}{(x^3-1)(x^4-1)} - \frac{3x^5}{(x-1)(x^2-1)^2} - \frac{2x^5}{(x-1)(x^4-1)} - \frac{2x^5}{(x^3-1)(x^2-1)} - \frac{x^5}{x^5-1} + \frac{x^3}{(x-1)(x^2-1)}$$

The g.f. of the total number of symmetry types, l_ml ("lgf"):

```
> lgfsum:=RtoLfactor*rgfsum;
  lgf:=simplify(lgfsum):
  lno7gfsum:=RtoLfactor*rno7gfsum;
  lno7gf:=simplify(lno7gfsum):
```

$$lgfsum := \frac{1}{1-x^3}\left(x^3\left(\frac{2x^7}{(x-1)(x^2-1)(x^4-1)} + \frac{2x^9}{(x^2-1)(x^3-1)(x^4-1)} + \frac{x^7}{(x-1)(x^2-1)^3} + \frac{x^9}{(x-1)(x^4-1)^2} + \frac{x^{11}}{(x^3-1)(x^4-1)^2} + \frac{x^7}{(x^2-1)^2(x^3-1)} + \frac{x^{13}}{(x^5-1)(x^8-1)} + \frac{x^9}{(x^4-1)(x^5-1)} + \frac{x^7}{(x-1)(x^6-1)} + \frac{x^{11}}{(x^5-1)(x^6-1)} + \frac{x^7}{(x^2-1)(x^5-1)} + \frac{2x^9}{(x^3-1)(x^6-1)} + \frac{x^7}{x^7-1} + \frac{x^{11}}{(x^3-1)(x^8-1)} - \frac{x^7}{(x^3-1)(x^4-1)} - \frac{3x^5}{(x-1)(x^2-1)^2} - \frac{2x^5}{(x-1)(x^4-1)} - \frac{2x^5}{(x^3-1)(x^2-1)} - \frac{x^5}{x^5-1} + \frac{x^3}{(x-1)(x^2-1)}\right)\right)$$

$$lno7gfsum := \frac{1}{1-x^3}\left(x^3\left(\frac{2x^7}{(x-1)(x^2-1)(x^4-1)} + \frac{2x^9}{(x^2-1)(x^3-1)(x^4-1)} + \frac{x^7}{(x-1)(x^2-1)^3}\right.\right.$$

$$+\frac{x^9}{(x-1)(x^4-1)^2}+\frac{x^{11}}{(x^3-1)(x^4-1)^2}+\frac{x^7}{(x^2-1)^2(x^3-1)}+\frac{x^{13}}{(x^5-1)(x^8-1)}+\frac{x^9}{(x^4-1)(x^5-1)}$$
$$+\frac{x^7}{(x-1)(x^6-1)}+\frac{x^{11}}{(x^5-1)(x^6-1)}+\frac{x^7}{(x^2-1)(x^5-1)}+\frac{2x^9}{(x^3-1)(x^6-1)}+\frac{x^{11}}{(x^3-1)(x^8-1)}$$
$$\left.\left.-\frac{x^7}{(x^3-1)(x^4-1)}-\frac{3x^5}{(x-1)(x^2-1)^2}-\frac{2x^5}{(x-1)(x^4-1)}-\frac{2x^5}{(x^3-1)(x^2-1)}-\frac{x^5}{x^5-1}+\frac{x^3}{(x-1)(x^2-1)}\right)\right)$$

Generate the series expansions of the g.f.'s.

Expressing the rational function with standard denominator gives an orders-of-magnitude speedup in the series expansion.

enddegree: The number of terms of the sequences to show.

```
> enddegree:=100;
```

$$enddegree := 100$$

Standard denominator (1-x^p)^{d+1}.

```
> pdenom:=(1-x^p):
  standenom:=pdenom^(d+1);
  pno7denom:=(1-x^pno7):
  stanno7denom:=pno7denom^(d+1);
  p7denom:=(1-x^p7):
  stan7denom:=p7denom^(d7+1);
```

$$standenom := (1-x^{840})^5$$

$$stanno7denom := (1-x^{120})^5$$

$$stan7denom := (1-x^{21})^2$$

G.f. as rational function with standard denominator.

```
> Lgfstandnum:=simplify(numer(Lgf)*simplify(standenom/denom(Lgf))):
  Lgf:=Lgfstandnum/standenom:
```

```
> Lno7gfstandnum:=simplify(numer(Lno7gf)*simplify(stanno7denom/denom(Lno7g
  f))):
  Lno7gf:=Lno7gfstandnum/stanno7denom;
```

$$Lno7gf := \frac{1}{(1-x^{120})^5}(12x^6(73x^{22}+89x^{21}+142x^{20}+134x^{19}+174x^{18}+140x^{17}+159x^{16}+147x^{15}$$
$$+146x^{14}+137x^{13}+134x^{12}+122x^{11}+122x^{10}+110x^9+104x^8+81x^7+69x^6+38x^5$$
$$+24x^4+8x^3+4x^2+2x+1)(1-x+x^4+x^8-x^6-x^{11}+x^{24}-x^{21}+x^{28}+x^{12}-x^{41}+x^{20}-x^{31}$$
$$-x^{26}+x^{32}+x^{40}+x^{112}-x^{91}+x^{84}+x^{72}+x^{64}-x^{66}+x^{48}-x^{71}-x^{106}+x^{108}+x^{92}+x^{60}-x^{111}$$
$$+x^{104}-x^{101}+x^{100}+x^{88}-x^{86}-x^{81}+x^{80}+x^{68}-x^{61}+x^{52}-x^{51}-x^{46}+x^{44})(1+x^2+x^4+x^8$$
$$+x^6+x^{16}+x^{14}+x^{10}+x^{24}+x^{22}+x^{18}+x^{30}+x^{28}+x^{12}+x^{36}+x^{38}+x^{20}+x^{26}+x^{32}+x^{34}$$
$$+x^{40}+x^{112}+x^{98}+x^{84}+x^{70}+x^{56}+x^{42}+x^{72}+x^{64}+x^{90}+x^{66}+x^{96}+x^{48}+x^{106}+x^{54}+x^{50}$$

$$+ x^{102} + x^{108} + x^{114} + x^{92} + x^{60} + x^{118} + x^{116} + x^{110} + x^{104} + x^{100} + x^{94} + x^{88} + x^{86} + x^{82} + x^{80} + x^{78} + x^{76} + x^{74} + x^{68} + x^{62} + x^{58} + x^{52} + x^{46} + x^{44}) (1 + x^{3} + x^{6} + x^{9} + x^{24} + x^{21} + x^{18} + x^{15} + x^{30} + x^{27} + x^{12} + x^{33} + x^{36} + x^{39} + x^{84} + x^{63} + x^{42} + x^{105} + x^{72} + x^{90} + x^{66} + x^{57} + x^{96} + x^{48} + x^{54} + x^{99} + x^{102} + x^{108} + x^{114} + x^{60} + x^{117} + x^{111} + x^{93} + x^{87} + x^{81} + x^{78} + x^{75} + x^{69} + x^{51} + x^{45})\hat{}2 (1 - x^{2} + x^{6} - x^{10} + x^{24} + x^{30} + x^{12} + x^{36} - x^{26} - x^{34} - x^{98} + x^{84} + x^{72} + x^{96} + x^{48} - x^{106} + x^{54} - x^{50} + x^{102} + x^{108} + x^{60} - x^{82} + x^{78} - x^{74} - x^{58}))$$

```
> L7gfstandnum:=simplify(numer(L7gf)*simplify(stan7denom/denom(L7gf)));
  L7gf:=L7gfstandnum/stan7denom:
```

$$L7gfstandnum := 72\, x^{10} (x^{20} + x^{19} + x^{18} + x^{17} + x^{16} + x^{15} + x^{14} + x^{13} + x^{12} + x^{11} + x^{10} + x^{9} + x^{8} + x^{7} + x^{6} + x^{5} + x^{4} + x^{3} + x^{2} + x + 1) (x^{12} - x^{11} + x^{9} - x^{8} + x^{6} - x^{4} + x^{3} - x + 1)$$

G.f. as rational function with standard denominator.

```
> Rgfstandnum:=simplify(numer(Rgf)*standenom/denom(Rgf)):
  Rgf:=Rgfstandnum/standenom:
```

G.f. as rational function with standard denominator.

```
> lgfstandnum:=simplify(numer(lgf)*simplify(standenom/denom(lgf))):
  lgf:=lgfstandnum/standenom:
```

```
> lno7gfstandnum:=simplify(numer(lno7gf)*simplify(stanno7denom/denom(lno7g
  f))):
  lno7gf:=lno7gfstandnum/stanno7denom;
```

$$lno7gf := \frac{1}{(1 - x^{120})^{5}} (x^{6} (8 x^{22} + 9 x^{21} + 13 x^{20} + 10 x^{19} + 12 x^{18} + 7 x^{17} + 10 x^{16} + 11 x^{15} + 16 x^{14} + 20 x^{13} + 26 x^{12} + 28 x^{11} + 34 x^{10} + 33 x^{9} + 33 x^{8} + 27 x^{7} + 24 x^{6} + 15 x^{5} + 11 x^{4} + 6 x^{3} + 4 x^{2} + 2 x + 1) (1 - x + x^{4} + x^{8} - x^{6} - x^{11} + x^{24} - x^{21} + x^{28} + x^{12} - x^{41} + x^{20} - x^{31} - x^{26} + x^{32} + x^{40} + x^{112} - x^{91} + x^{84} + x^{72} + x^{64} - x^{66} + x^{48} - x^{71} - x^{106} + x^{108} + x^{92} + x^{60} - x^{111} + x^{104} - x^{101} + x^{100} + x^{88} - x^{86} - x^{81} + x^{80} + x^{68} - x^{61} + x^{52} - x^{51} - x^{46} + x^{44}) (1 + x^{2} + x^{4} + x^{8} + x^{6} + x^{16} + x^{14} + x^{10} + x^{24} + x^{22} + x^{18} + x^{30} + x^{28} + x^{12} + x^{36} + x^{38} + x^{20} + x^{26} + x^{32} + x^{34} + x^{40} + x^{112} + x^{98} + x^{84} + x^{70} + x^{56} + x^{42} + x^{72} + x^{64} + x^{90} + x^{66} + x^{96} + x^{48} + x^{106} + x^{54} + x^{50} + x^{102} + x^{108} + x^{114} + x^{92} + x^{60} + x^{118} + x^{116} + x^{110} + x^{104} + x^{100} + x^{94} + x^{88} + x^{86} + x^{82} + x^{80} + x^{78} + x^{76} + x^{74} + x^{68} + x^{62} + x^{58} + x^{52} + x^{46} + x^{44}) (1 + x^{3} + x^{6} + x^{9} + x^{24} + x^{21} + x^{18} + x^{15} + x^{30} + x^{27} + x^{12} + x^{33} + x^{36} + x^{39} + x^{84} + x^{63} + x^{42} + x^{105} + x^{72} + x^{90} + x^{66} + x^{57} + x^{96} + x^{48} + x^{54} + x^{99} + x^{102} + x^{108} + x^{114} + x^{60} + x^{117} + x^{111} + x^{93} + x^{87} + x^{81} + x^{78} + x^{75} + x^{69} + x^{51} + x^{45})\hat{}2 (1 - x^{2} + x^{6} - x^{10} + x^{24} + x^{30} + x^{12} + x^{36} - x^{26} - x^{34} - x^{98} + x^{84} + x^{72} + x^{96} + x^{48} - x^{106} + x^{54} - x^{50} + x^{102} + x^{108} + x^{60} - x^{82} + x^{78} - x^{74} - x^{58}))$$

```
> l7gfstandnum:=simplify(numer(l7gf)*simplify(stan7denom/denom(l7gf))):
  l7gf:=l7gfstandnum/stan7denom;
```

$$l7gf := \frac{1}{(1 - x^{21})^{2}} (x^{10} (x^{20} + x^{19} + x^{18} + x^{17} + x^{16} + x^{15} + x^{14} + x^{13} + x^{12} + x^{11} + x^{10} + x^{9} + x^{8} + x^{7} + x^{6} + x^{5} + x^{4} + x^{3} + x^{2} + x + 1) (x^{12} - x^{11} + x^{9} - x^{8} + x^{6} - x^{4} + x^{3} - x + 1))$$

G.f. as rational function with standard denominator.

```
> rgfstandnum:=simplify(numer(rgf)*standenom/denom(rgf)):
  rgf:=rgfstandnum/standenom:
```

Expand the series to find the first few values of the number of squares.

```
> Lseries:=series(Lgf,x=0,enddegree+1);
```

$$Lseries := 12x^6 + 12x^7 + 24x^8 + 72x^9 + 156x^{10} + 240x^{11} + 552x^{12} + 600x^{13} + 1020x^{14} + 1548x^{15} + 2004x^{16} + 2568x^{17} + 4008x^{18} + 4644x^{19} + 6264x^{20} + 8136x^{21} + 10152x^{22} + 12168x^{23} + 16284x^{24} + 18372x^{25} + 22992x^{26} + 27972x^{27} + 32736x^{28} + 37896x^{29} + 47352x^{30} + 52332x^{31} + 62004x^{32} + 72288x^{33} + 82572x^{34} + 93108x^{35} + 110280x^{36} + 120492x^{37} + 138420x^{38} + 157428x^{39} + 175248x^{40} + 193824x^{41} + 223428x^{42} + 241500x^{43} + 270744x^{44} + 301716x^{45} + 331464x^{46} + 362076x^{47} + 406956x^{48} + 436668x^{49} + 482412x^{50} + 529596x^{51} + 574404x^{52} + 620976x^{53} + 687576x^{54} + 732960x^{55} + 798660x^{56} + 867204x^{57} + 933084x^{58} + 1000548x^{59} + 1093044x^{60} + 1158708x^{61} + 1251456x^{62} + 1346940x^{63} + 1437888x^{64} + 1531716x^{65} + 1657740x^{66} + 1749408x^{67} + 1873560x^{68} + 2002140x^{69} + 2126004x^{70} + 2252388x^{71} + 2417160x^{72} + 2540556x^{73} + 2705148x^{74} + 2873664x^{75} + 3034980x^{76} + 3200868x^{77} + 3413784x^{78} + 3576072x^{79} + 3786072x^{80} + 4002012x^{81} + 4210680x^{82} + 4423164x^{83} + 4690452x^{84} + 4898760x^{85} + 5164608x^{86} + 5436360x^{87} + 5697744x^{88} + 5965212x^{89} + 6297960x^{90} + 6560280x^{91} + 6888420x^{92} + 7224516x^{93} + 7550028x^{94} + 7881336x^{95} + 8286168x^{96} + 8611248x^{97} + 9013740x^{98} + 9423864x^{99} + 9819984x^{100} + O(x^{101})$$

Expand the series to find the first few values of the number of reduced squares.

```
> Rseries:=series(Rgf,x=0,enddegree+1);
```

$$Rseries := 12x^3 + 12x^4 + 24x^5 + 60x^6 + 144x^7 + 216x^8 + 480x^9 + 444x^{10} + 780x^{11} + 996x^{12} + 1404x^{13} + 1548x^{14} + 2460x^{15} + 2640x^{16} + 3696x^{17} + 4128x^{18} + 5508x^{19} + 5904x^{20} + 8148x^{21} + 8220x^{22} + 10824x^{23} + 11688x^{24} + 14364x^{25} + 14904x^{26} + 19380x^{27} + 19596x^{28} + 24108x^{29} + 24936x^{30} + 30240x^{31} + 31104x^{32} + 37992x^{33} + 37920x^{34} + 45312x^{35} + 47148x^{36} + 54756x^{37} + 55404x^{38} + 66000x^{39} + 66252x^{40} + 76920x^{41} + 78288x^{42} + 89964x^{43} + 91332x^{44} + 105240x^{45} + 105204x^{46} + 120336x^{47} + 122640x^{48} + 137736x^{49} + 138564x^{50} + 157980x^{51} + 158556x^{52} + 177684x^{53} + 179628x^{54} + 200124x^{55} + 201888x^{56} + 225840x^{57} + 225624x^{58} + 250908x^{59} + 253896x^{60} + 279180x^{61} + 280260x^{62} + 310800x^{63} + 311520x^{64} + 341844x^{65} + 344400x^{66} + 376596x^{67} + 378828x^{68} + 415020x^{69} + 414552x^{70} + 452760x^{71} + 456504x^{72} + 494424x^{73} + 495720x^{74} + 540120x^{75} + 541092x^{76} + 585204x^{77} + 588228x^{78} + 634608x^{79} + 637092x^{80} + 688440x^{81} + 688080x^{82} + 741444x^{83} + 745908x^{84} + 798984x^{85} + 800604x^{86} + 861600x^{87} + 862536x^{88} + 923208x^{89} + 926556x^{90} + 989748x^{91} + 992916x^{92} + 1061652x^{93} + 1061220x^{94} + 1132404x^{95} + 1137696x^{96} + 1208736x^{97} + 1210392x^{98} + 1290540x^{99} + 1291584x^{100} + O(x^{101})$$

Expand the series to find the first few values of the number of symmetry types.

```
> lseries:=series(lgf,x=0,enddegree+1);
```

$$lseries := x^6 + x^7 + 2x^8 + 4x^9 + 7x^{10} + 10x^{11} + 20x^{12} + 22x^{13} + 35x^{14} + 50x^{15} + 63x^{16} + 78x^{17} + 116x^{18} + 131x^{19} + 170x^{20} + 215x^{21} + 260x^{22} + 306x^{23} + 395x^{24} + 440x^{25} + 537x^{26} + 640x^{27} + 737x^{28} + 841x^{29} + 1025x^{30} + 1125x^{31} + 1310x^{32} + 1507x^{33} + 1700x^{34} + 1898x^{35} + 2213x^{36} + 2404x^{37} + 2729x^{38} + 3071x^{39} + 3391x^{40} + 3725x^{41} + 4242x^{42} + 4566x^{43} + 5075x^{44} + 5612x^{45} + 6127x^{46} + 6656x^{47} + 7418x^{48} + 7931x^{49} + 8703x^{50} + 9499x^{51} + 10254x^{52} + 11038x^{53} + 12140x^{54} + 12903x^{55} + 13989x^{56} + 15119x^{57} + 16205x^{58} + 17316x^{59}$$

$+ 18819 x^{60} + 19901 x^{61} + 21405 x^{62} + 22952 x^{63} + 24426 x^{64} + 25945 x^{65} + 27962 x^{66} + 29446 x^{67} + 31432 x^{68} + 33485 x^{69} + 35463 x^{70} + 37481 x^{71} + 40086 x^{72} + 42057 x^{73} + 44656 x^{74} + 47315 x^{75} + 49863 x^{76} + 52480 x^{77} + 55811 x^{78} + 58372 x^{79} + 61656 x^{80} + 65030 x^{81} + 68291 x^{82} + 71611 x^{83} + 75756 x^{84} + 79011 x^{85} + 83132 x^{86} + 87341 x^{87} + 91393 x^{88} + 95536 x^{89} + 100656 x^{90} + 104721 x^{91} + 109770 x^{92} + 114938 x^{93} + 119945 x^{94} + 125039 x^{95} + 131229 x^{96} + 136229 x^{97} + 142381 x^{98} + 148646 x^{99} + 154701 x^{100} + O(x^{101})$

Expand the series to find the first few values of the number of reduced symmetry types.

```
> rseries:=series(rgf,x=0,enddegree+1);
```

$rseries := x^3 + x^4 + 2 x^5 + 3 x^6 + 6 x^7 + 8 x^8 + 16 x^9 + 15 x^{10} + 25 x^{11} + 30 x^{12} + 41 x^{13} + 43 x^{14} + 66 x^{15} + 68 x^{16} + 92 x^{17} + 99 x^{18} + 129 x^{19} + 136 x^{20} + 180 x^{21} + 180 x^{22} + 231 x^{23} + 245 x^{24} + 297 x^{25} + 304 x^{26} + 385 x^{27} + 388 x^{28} + 469 x^{29} + 482 x^{30} + 575 x^{31} + 588 x^{32} + 706 x^{33} + 704 x^{34} + 831 x^{35} + 858 x^{36} + 987 x^{37} + 996 x^{38} + 1171 x^{39} + 1175 x^{40} + 1350 x^{41} + 1370 x^{42} + 1561 x^{43} + 1581 x^{44} + 1806 x^{45} + 1804 x^{46} + 2047 x^{47} + 2081 x^{48} + 2323 x^{49} + 2335 x^{50} + 2641 x^{51} + 2649 x^{52} + 2951 x^{53} + 2979 x^{54} + 3302 x^{55} + 3327 x^{56} + 3700 x^{57} + 3696 x^{58} + 4089 x^{59} + 4133 x^{60} + 4525 x^{61} + 4540 x^{62} + 5010 x^{63} + 5020 x^{64} + 5487 x^{65} + 5523 x^{66} + 6017 x^{67} + 6049 x^{68} + 6601 x^{69} + 6594 x^{70} + 7175 x^{71} + 7229 x^{72} + 7806 x^{73} + 7824 x^{74} + 8496 x^{75} + 8509 x^{76} + 9176 x^{77} + 9219 x^{78} + 9919 x^{79} + 9955 x^{80} + 10726 x^{81} + 10720 x^{82} + 11521 x^{83} + 11585 x^{84} + 12382 x^{85} + 12404 x^{86} + 13315 x^{87} + 13328 x^{88} + 14234 x^{89} + 14282 x^{90} + 15224 x^{91} + 15269 x^{92} + 16291 x^{93} + 16284 x^{94} + 17342 x^{95} + 17417 x^{96} + 18472 x^{97} + 18495 x^{98} + 19681 x^{99} + 19696 x^{100} + O(x^{101})$

Find the constituents

First, the true 0th constitutent.

```
> Lzeroth:=expand(
  sum( coeff(Lgfstandnum,x,p*j)*binomial(d+t/p-j,d) ,j=0..d+1) );
  print(subs(t=0,Lzeroth)):
```

$$Lzeroth := -\frac{9192}{35} t + \frac{151}{4} t^2 - 3 t^3 + \frac{1}{8} t^4 + 948$$

$$948$$

Second, the truncated constituents, with no H term (denominator power 7).

Calculate the zeroth constituent of the **magilatin counting function**. Find its constant term.

```
> Lno7zeroth:=expand(
  sum(coeff(Lno7gfstandnum,x,pno7*j)*binomial(d+t/pno7-j,d),j=0..d+1) );
  print(subs(t=0,Lno7zeroth)):
```

$$Lno7zeroth := -\frac{1296}{5} t + \frac{151}{4} t^2 - 3 t^3 + \frac{1}{8} t^4 + 876$$

$$876$$

Extract the constituents of the total magilatin counting function.

```
> Lno7constituent[0]:=Lno7zeroth:
  for r from 1 to pno7  do
```

```
  Lno7constituent[r]:=expand(sum(
coeff(Lno7gfstandnum,x,pno7*j+r)*binomial(d+(t-r)/pno7-j,d),   j=0..d)):
#  print(r):
#  print( Lno7constituent[r] ):
  print( factor(Lno7constituent[r]) ):
od;
```

$$Lno7constituent_1 := -\frac{1347}{10}t+\frac{63}{2}t^2-3t^3+\frac{1}{8}t^4+\frac{4243}{40}$$

$$\frac{1}{40}(t-1)(5t^3-115t^2+1145t-4243)$$

$$Lno7constituent_2 := -\frac{831}{5}t+\frac{135}{4}t^2-3t^3+\frac{1}{8}t^4+\frac{1097}{5}$$

$$\frac{1}{40}(t-2)(5t^3-110t^2+1130t-4388)$$

$$Lno7constituent_3 := -\frac{2097}{10}t+\frac{71}{2}t^2-3t^3+\frac{1}{8}t^4+\frac{15219}{40}$$

$$\frac{1}{40}(t-3)(5t^3-105t^2+1105t-5073)$$

$$Lno7constituent_4 := -\frac{876}{5}t+\frac{135}{4}t^2-3t^3+\frac{1}{8}t^4+\frac{1604}{5}$$

$$\frac{1}{40}(t-4)(5t^3-100t^2+950t-3208)$$

$$Lno7constituent_5 := -\frac{1347}{10}t+\frac{63}{2}t^2-3t^3+\frac{1}{8}t^4+\frac{1463}{8}$$

$$\frac{1}{40}(t-5)(5t^3-95t^2+785t-1463)$$

$$Lno7constituent_6 := -\frac{1251}{5}t-3t^3+\frac{1}{8}t^4+\frac{151}{4}t^2+\frac{3201}{5}$$

$$-\frac{1251}{5}t-3t^3+\frac{1}{8}t^4+\frac{151}{4}t^2+\frac{3201}{5}$$

$$Lno7constituent_7 := -\frac{1257}{10}t-3t^3+\frac{1}{8}t^4+\frac{63}{2}t^2+\frac{3091}{40}$$

$$-\frac{1257}{10}t-3t^3+\frac{1}{8}t^4+\frac{63}{2}t^2+\frac{3091}{40}$$

$$Lno7constituent_8 := -\frac{876}{5}t-3t^3+\frac{1}{8}t^4+\frac{135}{4}t^2+\frac{1448}{5}$$

$$-\frac{876}{5}t-3t^3+\frac{1}{8}t^4+\frac{135}{4}t^2+\frac{1448}{5}$$

$$Lno7constituent_9 := -\frac{2187}{10}t-3t^3+\frac{1}{8}t^4+\frac{71}{2}t^2+\frac{21267}{40}$$

$$-\frac{2187}{10}t-3t^3+\frac{1}{8}t^4+\frac{71}{2}t^2+\frac{21267}{40}$$

$$Lno7constituent_{10} := 265 - \frac{831}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2$$

$$265 - \frac{831}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2$$

$$Lno7constituent_{11} := - \frac{1257}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{63}{2} t^2 - \frac{1037}{40}$$

$$- \frac{1257}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{63}{2} t^2 - \frac{1037}{40}$$

$$Lno7constituent_{12} := - \frac{1296}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{151}{4} t^2 + \frac{4092}{5}$$

$$- \frac{1296}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{151}{4} t^2 + \frac{4092}{5}$$

$$Lno7constituent_{13} := - \frac{1347}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{4819}{40} + \frac{63}{2} t^2$$

$$- \frac{1347}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{4819}{40} + \frac{63}{2} t^2$$

$$Lno7constituent_{14} := - \frac{831}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2 + \frac{809}{5}$$

$$- \frac{831}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2 + \frac{809}{5}$$

$$Lno7constituent_{15} := - \frac{2097}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{4023}{8} + \frac{71}{2} t^2$$

$$- \frac{2097}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{4023}{8} + \frac{71}{2} t^2$$

$$Lno7constituent_{16} := - \frac{876}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2 + \frac{1676}{5}$$

$$- \frac{876}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2 + \frac{1676}{5}$$

$$Lno7constituent_{17} := - \frac{1347}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{5011}{40} + \frac{63}{2} t^2$$

$$- \frac{1347}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{5011}{40} + \frac{63}{2} t^2$$

$$Lno7constituent_{18} := - \frac{1251}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{3273}{5} + \frac{151}{4} t^2$$

$$- \frac{1251}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{3273}{5} + \frac{151}{4} t^2$$

$$Lno7constituent_{19} := - \frac{1257}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{787}{40} + \frac{63}{2} t^2$$

$$- \frac{1257}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{787}{40} + \frac{63}{2} t^2$$

$$Lno7constituent_{20} := 340 - \frac{876}{5}t - 3\,t^3 + \frac{1}{8}t^4 + \frac{135}{4}t^2$$

$$340 - \frac{876}{5}t - 3\,t^3 + \frac{1}{8}t^4 + \frac{135}{4}t^2$$

$$Lno7constituent_{21} := -\frac{2187}{10}t - 3\,t^3 + \frac{1}{8}t^4 + \frac{71}{2}t^2 + \frac{21843}{40}$$

$$-\frac{2187}{10}t - 3\,t^3 + \frac{1}{8}t^4 + \frac{71}{2}t^2 + \frac{21843}{40}$$

$$Lno7constituent_{22} := -\frac{831}{5}t + \frac{1037}{5} - 3\,t^3 + \frac{1}{8}t^4 + \frac{135}{4}t^2$$

$$-\frac{831}{5}t + \frac{1037}{5} - 3\,t^3 + \frac{1}{8}t^4 + \frac{135}{4}t^2$$

$$Lno7constituent_{23} := -\frac{1257}{10}t - 3\,t^3 + \frac{1}{8}t^4 + \frac{63}{2}t^2 - \frac{461}{40}$$

$$-\frac{1257}{10}t - 3\,t^3 + \frac{1}{8}t^4 + \frac{63}{2}t^2 - \frac{461}{40}$$

$$Lno7constituent_{24} := -\frac{1296}{5}t - 3\,t^3 + \frac{1}{8}t^4 + \frac{151}{4}t^2 + \frac{4164}{5}$$

$$-\frac{1296}{5}t - 3\,t^3 + \frac{1}{8}t^4 + \frac{151}{4}t^2 + \frac{4164}{5}$$

$$Lno7constituent_{25} := -\frac{1347}{10}t - 3\,t^3 + \frac{1367}{8} + \frac{1}{8}t^4 + \frac{63}{2}t^2$$

$$-\frac{1347}{10}t - 3\,t^3 + \frac{1367}{8} + \frac{1}{8}t^4 + \frac{63}{2}t^2$$

$$Lno7constituent_{26} := -\frac{831}{5}t - 3\,t^3 + \frac{1}{8}t^4 + \frac{135}{4}t^2 + \frac{881}{5}$$

$$-\frac{831}{5}t - 3\,t^3 + \frac{1}{8}t^4 + \frac{135}{4}t^2 + \frac{881}{5}$$

$$Lno7constituent_{27} := -\frac{2097}{10}t - 3\,t^3 + \frac{1}{8}t^4 + \frac{71}{2}t^2 + \frac{17811}{40}$$

$$-\frac{2097}{10}t - 3\,t^3 + \frac{1}{8}t^4 + \frac{71}{2}t^2 + \frac{17811}{40}$$

$$Lno7constituent_{28} := -\frac{876}{5}t - 3\,t^3 + \frac{1}{8}t^4 + \frac{135}{4}t^2 + \frac{1388}{5}$$

$$-\frac{876}{5}t - 3\,t^3 + \frac{1}{8}t^4 + \frac{135}{4}t^2 + \frac{1388}{5}$$

$$Lno7constituent_{29} := -\frac{1347}{10}t - 3\,t^3 + \frac{1}{8}t^4 + \frac{5587}{40} + \frac{63}{2}t^2$$

$$-\frac{1347}{10}t - 3\,t^3 + \frac{1}{8}t^4 + \frac{5587}{40} + \frac{63}{2}t^2$$

$$Lno7constituent_{30} := 705 - \frac{1251}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{151}{4} t^2$$

$$705 - \frac{1251}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{151}{4} t^2$$

$$Lno7constituent_{31} := -\frac{1257}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{63}{2} t^2 + \frac{1363}{40}$$

$$-\frac{1257}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{63}{2} t^2 + \frac{1363}{40}$$

$$Lno7constituent_{32} := -\frac{876}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2 + \frac{1772}{5}$$

$$-\frac{876}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2 + \frac{1772}{5}$$

$$Lno7constituent_{33} := -\frac{2187}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{19539}{40} + \frac{71}{2} t^2$$

$$-\frac{2187}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{19539}{40} + \frac{71}{2} t^2$$

$$Lno7constituent_{34} := -\frac{831}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2 + \frac{1109}{5}$$

$$-\frac{831}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2 + \frac{1109}{5}$$

$$Lno7constituent_{35} := -\frac{1257}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{63}{2} t^2 + \frac{311}{8}$$

$$-\frac{1257}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{63}{2} t^2 + \frac{311}{8}$$

$$Lno7constituent_{36} := -\frac{1296}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{3876}{5} + \frac{151}{4} t^2$$

$$-\frac{1296}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{3876}{5} + \frac{151}{4} t^2$$

$$Lno7constituent_{37} := -\frac{1347}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{7411}{40} + \frac{63}{2} t^2$$

$$-\frac{1347}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{7411}{40} + \frac{63}{2} t^2$$

$$Lno7constituent_{38} := -\frac{831}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2 + \frac{593}{5}$$

$$-\frac{831}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2 + \frac{593}{5}$$

$$Lno7constituent_{39} := -\frac{2097}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{71}{2} t^2 + \frac{18387}{40}$$

$$-\frac{2097}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{71}{2} t^2 + \frac{18387}{40}$$

$$Lno7constituent_{40} := 400 - \frac{876}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2$$

$$400 - \frac{876}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2$$

$$Lno7constituent_{41} := - \frac{1347}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{3283}{40} + \frac{63}{2} t^2$$

$$- \frac{1347}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{3283}{40} + \frac{63}{2} t^2$$

$$Lno7constituent_{42} := - \frac{1251}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{151}{4} t^2 + \frac{3597}{5}$$

$$- \frac{1251}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{151}{4} t^2 + \frac{3597}{5}$$

$$Lno7constituent_{43} := - \frac{1257}{10} t - 3 t^3 + \frac{1}{8} t^4 - \frac{941}{40} + \frac{63}{2} t^2$$

$$- \frac{1257}{10} t - 3 t^3 + \frac{1}{8} t^4 - \frac{941}{40} + \frac{63}{2} t^2$$

$$Lno7constituent_{44} := - \frac{876}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2 + \frac{1484}{5}$$

$$- \frac{876}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2 + \frac{1484}{5}$$

$$Lno7constituent_{45} := - \frac{2187}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{71}{2} t^2 + \frac{4887}{8}$$

$$- \frac{2187}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{71}{2} t^2 + \frac{4887}{8}$$

$$Lno7constituent_{46} := - \frac{831}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2 + \frac{821}{5}$$

$$- \frac{831}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2 + \frac{821}{5}$$

$$Lno7constituent_{47} := - \frac{1257}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{2131}{40} + \frac{63}{2} t^2$$

$$- \frac{1257}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{2131}{40} + \frac{63}{2} t^2$$

$$Lno7constituent_{48} := - \frac{1296}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{151}{4} t^2 + \frac{3948}{5}$$

$$- \frac{1296}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{151}{4} t^2 + \frac{3948}{5}$$

$$Lno7constituent_{49} := - \frac{1347}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{5107}{40} + \frac{63}{2} t^2$$

$$- \frac{1347}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{5107}{40} + \frac{63}{2} t^2$$

$$Lno7constituent_{50} := 241 - \frac{831}{5}t - 3\,t^3 + \frac{1}{8}t^4 + \frac{135}{4}t^2$$

$$241 - \frac{831}{5}t - 3\,t^3 + \frac{1}{8}t^4 + \frac{135}{4}t^2$$

$$Lno7constituent_{51} := -\frac{2097}{10}t - 3\,t^3 + \frac{1}{8}t^4 + \frac{16083}{40} + \frac{71}{2}t^2$$

$$-\frac{2097}{10}t - 3\,t^3 + \frac{1}{8}t^4 + \frac{16083}{40} + \frac{71}{2}t^2$$

$$Lno7constituent_{52} := -\frac{876}{5}t - 3\,t^3 + \frac{1}{8}t^4 + \frac{1712}{5} + \frac{135}{4}t^2$$

$$-\frac{876}{5}t - 3\,t^3 + \frac{1}{8}t^4 + \frac{1712}{5} + \frac{135}{4}t^2$$

$$Lno7constituent_{53} := -\frac{1347}{10}t + \frac{3859}{40} - 3\,t^3 + \frac{1}{8}t^4 + \frac{63}{2}t^2$$

$$-\frac{1347}{10}t + \frac{3859}{40} - 3\,t^3 + \frac{1}{8}t^4 + \frac{63}{2}t^2$$

$$Lno7constituent_{54} := -\frac{1251}{5}t - 3\,t^3 + \frac{1}{8}t^4 + \frac{151}{4}t^2 + \frac{3309}{5}$$

$$-\frac{1251}{5}t - 3\,t^3 + \frac{1}{8}t^4 + \frac{151}{4}t^2 + \frac{3309}{5}$$

$$Lno7constituent_{55} := -\frac{1257}{10}t - 3\,t^3 + \frac{1}{8}t^4 + \frac{791}{8} + \frac{63}{2}t^2$$

$$-\frac{1257}{10}t - 3\,t^3 + \frac{1}{8}t^4 + \frac{791}{8} + \frac{63}{2}t^2$$

$$Lno7constituent_{56} := -\frac{876}{5}t - 3\,t^3 + \frac{1}{8}t^4 + \frac{135}{4}t^2 + \frac{1556}{5}$$

$$-\frac{876}{5}t - 3\,t^3 + \frac{1}{8}t^4 + \frac{135}{4}t^2 + \frac{1556}{5}$$

$$Lno7constituent_{57} := -\frac{2187}{10}t - 3\,t^3 + \frac{22131}{40} + \frac{1}{8}t^4 + \frac{71}{2}t^2$$

$$-\frac{2187}{10}t - 3\,t^3 + \frac{22131}{40} + \frac{1}{8}t^4 + \frac{71}{2}t^2$$

$$Lno7constituent_{58} := -\frac{831}{5}t - 3\,t^3 + \frac{1}{8}t^4 + \frac{893}{5} + \frac{135}{4}t^2$$

$$-\frac{831}{5}t - 3\,t^3 + \frac{1}{8}t^4 + \frac{893}{5} + \frac{135}{4}t^2$$

$$Lno7constituent_{59} := -\frac{1257}{10}t - 3\,t^3 + \frac{1}{8}t^4 + \frac{63}{2}t^2 - \frac{173}{40}$$

$$-\frac{1257}{10}t - 3\,t^3 + \frac{1}{8}t^4 + \frac{63}{2}t^2 - \frac{173}{40}$$

$$Lno7constituent_{60} := 840 - \frac{1296}{5} t + \frac{151}{4} t^2 - 3 t^3 + \frac{1}{8} t^4$$

$$840 - \frac{1296}{5} t + \frac{151}{4} t^2 - 3 t^3 + \frac{1}{8} t^4$$

$$Lno7constituent_{61} := \frac{5683}{40} - \frac{1347}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{63}{2} t^2$$

$$\frac{5683}{40} - \frac{1347}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{63}{2} t^2$$

$$Lno7constituent_{62} := - \frac{831}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{917}{5} + \frac{135}{4} t^2$$

$$- \frac{831}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{917}{5} + \frac{135}{4} t^2$$

$$Lno7constituent_{63} := - \frac{2097}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{16659}{40} + \frac{71}{2} t^2$$

$$- \frac{2097}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{16659}{40} + \frac{71}{2} t^2$$

$$Lno7constituent_{64} := - \frac{876}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{1784}{5} + \frac{135}{4} t^2$$

$$- \frac{876}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{1784}{5} + \frac{135}{4} t^2$$

$$Lno7constituent_{65} := - \frac{1347}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{63}{2} t^2 + \frac{1175}{8}$$

$$- \frac{1347}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{63}{2} t^2 + \frac{1175}{8}$$

$$Lno7constituent_{66} := - \frac{1251}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{151}{4} t^2 + \frac{3381}{5}$$

$$- \frac{1251}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{151}{4} t^2 + \frac{3381}{5}$$

$$Lno7constituent_{67} := - \frac{1257}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{1651}{40} + \frac{63}{2} t^2$$

$$- \frac{1257}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{1651}{40} + \frac{63}{2} t^2$$

$$Lno7constituent_{68} := - \frac{876}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2 + \frac{1268}{5}$$

$$- \frac{876}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2 + \frac{1268}{5}$$

$$Lno7constituent_{69} := - \frac{2187}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{71}{2} t^2 + \frac{22707}{40}$$

$$- \frac{2187}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{71}{2} t^2 + \frac{22707}{40}$$

$$Lno7constituent_{70} := 229 - \frac{831}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2$$

$$229 - \frac{831}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2$$

$$Lno7constituent_{71} := - \frac{1257}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{63}{2} t^2 + \frac{403}{40}$$

$$- \frac{1257}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{63}{2} t^2 + \frac{403}{40}$$

$$Lno7constituent_{72} := - \frac{1296}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{151}{4} t^2 + \frac{4272}{5}$$

$$- \frac{1296}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{151}{4} t^2 + \frac{4272}{5}$$

$$Lno7constituent_{73} := - \frac{1347}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{63}{2} t^2 + \frac{3379}{40}$$

$$- \frac{1347}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{63}{2} t^2 + \frac{3379}{40}$$

$$Lno7constituent_{74} := - \frac{831}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{989}{5} + \frac{135}{4} t^2$$

$$- \frac{831}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{989}{5} + \frac{135}{4} t^2$$

$$Lno7constituent_{75} := \frac{3735}{8} - \frac{2097}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{71}{2} t^2$$

$$\frac{3735}{8} - \frac{2097}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{71}{2} t^2$$

$$Lno7constituent_{76} := - \frac{876}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2 + \frac{1496}{5}$$

$$- \frac{876}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2 + \frac{1496}{5}$$

$$Lno7constituent_{77} := \frac{6451}{40} - \frac{1347}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{63}{2} t^2$$

$$\frac{6451}{40} - \frac{1347}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{63}{2} t^2$$

$$Lno7constituent_{78} := - \frac{1251}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{151}{4} t^2 + \frac{3093}{5}$$

$$- \frac{1251}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{151}{4} t^2 + \frac{3093}{5}$$

$$Lno7constituent_{79} := - \frac{1257}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{2227}{40} + \frac{63}{2} t^2$$

$$- \frac{1257}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{2227}{40} + \frac{63}{2} t^2$$

$$Lno7constituent_{80} := 376 - \frac{876}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2$$

$$376 - \frac{876}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2$$

$$Lno7constituent_{81} := - \frac{2187}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{71}{2} t^2 + \frac{20403}{40}$$

$$- \frac{2187}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{71}{2} t^2 + \frac{20403}{40}$$

$$Lno7constituent_{82} := - \frac{831}{5} t - 3 t^3 + \frac{1217}{5} + \frac{1}{8} t^4 + \frac{135}{4} t^2$$

$$- \frac{831}{5} t - 3 t^3 + \frac{1217}{5} + \frac{1}{8} t^4 + \frac{135}{4} t^2$$

$$Lno7constituent_{83} := - \frac{1901}{40} - \frac{1257}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{63}{2} t^2$$

$$- \frac{1901}{40} - \frac{1257}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{63}{2} t^2$$

$$Lno7constituent_{84} := - \frac{1296}{5} t + \frac{3984}{5} - 3 t^3 + \frac{1}{8} t^4 + \frac{151}{4} t^2$$

$$- \frac{1296}{5} t + \frac{3984}{5} - 3 t^3 + \frac{1}{8} t^4 + \frac{151}{4} t^2$$

$$Lno7constituent_{85} := - \frac{1347}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{63}{2} t^2 + \frac{1655}{8}$$

$$- \frac{1347}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{63}{2} t^2 + \frac{1655}{8}$$

$$Lno7constituent_{86} := - \frac{831}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2 + \frac{701}{5}$$

$$- \frac{831}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2 + \frac{701}{5}$$

$$Lno7constituent_{87} := - \frac{2097}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{71}{2} t^2 + \frac{19251}{40}$$

$$- \frac{2097}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{71}{2} t^2 + \frac{19251}{40}$$

$$Lno7constituent_{88} := - \frac{876}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2 + \frac{1568}{5}$$

$$- \frac{876}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2 + \frac{1568}{5}$$

$$Lno7constituent_{89} := - \frac{1347}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{4147}{40} + \frac{63}{2} t^2$$

$$- \frac{1347}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{4147}{40} + \frac{63}{2} t^2$$

$$Lno7constituent_{90} := 741 - \frac{1251}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{151}{4} t^2$$

$$741 - \frac{1251}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{151}{4} t^2$$

$$Lno7constituent_{91} := - \frac{1257}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{63}{2} t^2 - \frac{77}{40}$$

$$- \frac{1257}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{63}{2} t^2 - \frac{77}{40}$$

$$Lno7constituent_{92} := - \frac{876}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2 + \frac{1592}{5}$$

$$- \frac{876}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2 + \frac{1592}{5}$$

$$Lno7constituent_{93} := - \frac{2187}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{71}{2} t^2 + \frac{20979}{40}$$

$$- \frac{2187}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{71}{2} t^2 + \frac{20979}{40}$$

$$Lno7constituent_{94} := - \frac{831}{5} t - 3 t^3 + \frac{929}{5} + \frac{1}{8} t^4 + \frac{135}{4} t^2$$

$$- \frac{831}{5} t - 3 t^3 + \frac{929}{5} + \frac{1}{8} t^4 + \frac{135}{4} t^2$$

$$Lno7constituent_{95} := - \frac{1257}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{63}{2} t^2 + \frac{599}{8}$$

$$- \frac{1257}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{63}{2} t^2 + \frac{599}{8}$$

$$Lno7constituent_{96} := \frac{4056}{5} - \frac{1296}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{151}{4} t^2$$

$$\frac{4056}{5} - \frac{1296}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{151}{4} t^2$$

$$Lno7constituent_{97} := - \frac{1347}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{63}{2} t^2 + \frac{5971}{40}$$

$$- \frac{1347}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{63}{2} t^2 + \frac{5971}{40}$$

$$Lno7constituent_{98} := - \frac{831}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{773}{5} + \frac{135}{4} t^2$$

$$- \frac{831}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{773}{5} + \frac{135}{4} t^2$$

$$Lno7constituent_{99} := - \frac{2097}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{71}{2} t^2 + \frac{16947}{40}$$

$$- \frac{2097}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{71}{2} t^2 + \frac{16947}{40}$$

$$Lno7constituent_{100} := 364 - \frac{876}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2$$

$$364 - \frac{876}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2$$

$$Lno7constituent_{101} := - \frac{1347}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{4723}{40} + \frac{63}{2} t^2$$

$$- \frac{1347}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{4723}{40} + \frac{63}{2} t^2$$

$$Lno7constituent_{102} := - \frac{1251}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{151}{4} t^2 + \frac{3417}{5}$$

$$- \frac{1251}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{151}{4} t^2 + \frac{3417}{5}$$

$$Lno7constituent_{103} := - \frac{1257}{10} t - 3 t^3 + \frac{499}{40} + \frac{1}{8} t^4 + \frac{63}{2} t^2$$

$$- \frac{1257}{10} t - 3 t^3 + \frac{499}{40} + \frac{1}{8} t^4 + \frac{63}{2} t^2$$

$$Lno7constituent_{104} := - \frac{876}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2 + \frac{1664}{5}$$

$$- \frac{876}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2 + \frac{1664}{5}$$

$$Lno7constituent_{105} := - \frac{2187}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{71}{2} t^2 + \frac{4599}{8}$$

$$- \frac{2187}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{71}{2} t^2 + \frac{4599}{8}$$

$$Lno7constituent_{106} := - \frac{831}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2 + \frac{1001}{5}$$

$$- \frac{831}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2 + \frac{1001}{5}$$

$$Lno7constituent_{107} := - \frac{1257}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{63}{2} t^2 + \frac{691}{40}$$

$$- \frac{1257}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{63}{2} t^2 + \frac{691}{40}$$

$$Lno7constituent_{108} := - \frac{1296}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{151}{4} t^2 + \frac{3768}{5}$$

$$- \frac{1296}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{151}{4} t^2 + \frac{3768}{5}$$

$$Lno7constituent_{109} := - \frac{1347}{10} t + \frac{6547}{40} - 3 t^3 + \frac{1}{8} t^4 + \frac{63}{2} t^2$$

$$- \frac{1347}{10} t + \frac{6547}{40} - 3 t^3 + \frac{1}{8} t^4 + \frac{63}{2} t^2$$

$$Lno7constituent_{110} := 205 - \frac{831}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2$$

$$205 - \frac{831}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2$$

$$Lno7constituent_{111} := -\frac{2097}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{71}{2} t^2 + \frac{17523}{40}$$

$$-\frac{2097}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{71}{2} t^2 + \frac{17523}{40}$$

$$Lno7constituent_{112} := -\frac{876}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2 + \frac{1892}{5}$$

$$-\frac{876}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2 + \frac{1892}{5}$$

$$Lno7constituent_{113} := -\frac{1347}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{63}{2} t^2 + \frac{2419}{40}$$

$$-\frac{1347}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{63}{2} t^2 + \frac{2419}{40}$$

$$Lno7constituent_{114} := -\frac{1251}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{151}{4} t^2 + \frac{3489}{5}$$

$$-\frac{1251}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{151}{4} t^2 + \frac{3489}{5}$$

$$Lno7constituent_{115} := -\frac{1257}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{503}{8} + \frac{63}{2} t^2$$

$$-\frac{1257}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{503}{8} + \frac{63}{2} t^2$$

$$Lno7constituent_{116} := -\frac{876}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2 + \frac{1376}{5}$$

$$-\frac{876}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2 + \frac{1376}{5}$$

$$Lno7constituent_{117} := -\frac{2187}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{71}{2} t^2 + \frac{23571}{40}$$

$$-\frac{2187}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{71}{2} t^2 + \frac{23571}{40}$$

$$Lno7constituent_{118} := -\frac{831}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2 + \frac{713}{5}$$

$$-\frac{831}{5} t - 3 t^3 + \frac{1}{8} t^4 + \frac{135}{4} t^2 + \frac{713}{5}$$

$$Lno7constituent_{119} := -\frac{1257}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{63}{2} t^2 + \frac{1267}{40}$$

$$-\frac{1257}{10} t - 3 t^3 + \frac{1}{8} t^4 + \frac{63}{2} t^2 + \frac{1267}{40}$$

$$Lno7constituent_{120} := -\frac{1296}{5}t + \frac{151}{4}t^2 - 3t^3 + \frac{1}{8}t^4 + 876$$

$$-\frac{1296}{5}t + \frac{151}{4}t^2 - 3t^3 + \frac{1}{8}t^4 + 876$$

Extract the coefficients of the constituents. ?

```
> for r from 1 to pno7  do
   for coeffdeg from 0 to d do
    Lno7c[coeffdeg,r]:=coeff(Lno7constituent[r],t,coeffdeg):
    #print( r, Lno7c[coeffdeg,r] ):
   od:
  od:
```

?

Print and analyze the constituent coefficients for periods. First the higher coefficients, which ought to be constant. Print the first coefficient, then any that don't repeat the preceding value.

```
> for coeffdeg from 3 to d do
    print("degree", coeffdeg, "coeff", Lno7c[coeffdeg,1]):
    print(1,Lno7c[coeffdeg,1]);
    for r from 2 to pno7  do
      stepdifference:=Lno7c[coeffdeg,r]-Lno7c[coeffdeg,r-1]:
      if( stepdifference<>0 ) then
      print(r,Lno7c[coeffdeg,r],stepdifference):
      fi:
    od:
    print("Compared all coefficients of degree", coeffdeg);
  od:
```

"degree", 3, "coeff", -3

1, -3

"Compared all coefficients of degree", 3

"degree", 4, "coeff", $\frac{1}{8}$

1, $\frac{1}{8}$

"Compared all coefficients of degree", 4

Next, the constant terms, whose period is expected to be pno7. Print all constant terms up to the presumed period "stepsize". Print the difference (at step "stepsize") if they are not repeating.

Note that the even terms repeat at step 30 (a period of 15, half the expected period).

```
> stepsize:=30;
  for r from 1 to stepsize do
    print(r, Lno7c[0,r]);
  od:
  for r from stepsize+1 to pno7  do
    stepdifference:=Lno7c[0,r]-Lno7c[0,r-stepsize]:
    if( stepdifference<>0 ) then print(r,Lno7c[0,r],stepdifference): fi:
    print(r,Lno7c[0,r],stepdifference);
  od:
  print("Constant terms completed.");
```

$$stepsize := 30$$

$$1, \frac{4243}{40}$$

$$2, \frac{1097}{5}$$

$$3, \frac{15219}{40}$$

$$4, \frac{1604}{5}$$

$$5, \frac{1463}{8}$$

$$6, \frac{3201}{5}$$

$$7, \frac{3091}{40}$$

$$8, \frac{1448}{5}$$

$$9, \frac{21267}{40}$$

$$10, 265$$

$$11, \frac{-1037}{40}$$

$$12, \frac{4092}{5}$$

$$13, \frac{4819}{40}$$

$$14, \frac{809}{5}$$

$$15, \frac{4023}{8}$$

$$16, \frac{1676}{5}$$

$$17, \frac{5011}{40}$$

$$18, \frac{3273}{5}$$

$$19, \frac{787}{40}$$

$$20, 340$$

$$21, \frac{21843}{40}$$

$$22, \frac{1037}{5}$$

$$23, \frac{-461}{40}$$

$$24, \frac{4164}{5}$$

$$25, \frac{1367}{8}$$

$$26, \frac{881}{5}$$

$$27, \frac{17811}{40}$$

$$28, \frac{1388}{5}$$

$$29, \frac{5587}{40}$$

$$30, 705$$

$$31, \frac{1363}{40}, -72$$

$$31, \frac{1363}{40}, -72$$

$$32, \frac{1772}{5}, 135$$

$$32, \frac{1772}{5}, 135$$

$$33, \frac{19539}{40}, 108$$

$$33, \frac{19539}{40}, 108$$

$$34, \frac{1109}{5}, -99$$

$$34, \frac{1109}{5}, -99$$

$$35, \frac{311}{8}, -144$$

$$35, \frac{311}{8}, -144$$

$$36, \frac{3876}{5}, 135$$

$$36, \frac{3876}{5}, 135$$

$$37, \frac{7411}{40}, 108$$

$$37, \frac{7411}{40}, 108$$

$$38, \frac{593}{5}, -171$$

$$38, \frac{593}{5}, -171$$

$$39, \frac{18387}{40}, -72$$

$$39, \frac{18387}{40}, -72$$

$$40, 400, 135$$

$$40, 400, 135$$

$$41, \frac{3283}{40}, 108$$

$$41, \frac{3283}{40}, 108$$

$$42, \frac{3597}{5}, -99$$

$$42, \frac{3597}{5}, -99$$

$$43, \frac{-941}{40}, -144$$

$$43, \frac{-941}{40}, -144$$

$$44, \frac{1484}{5}, 135$$

$$44, \frac{1484}{5}, 135$$

$$45, \frac{4887}{8}, 108$$

$$45, \frac{4887}{8}, 108$$

$$46, \frac{821}{5}, -171$$

$$46, \frac{821}{5}, -171$$

$$47, \frac{2131}{40}, -72$$

$$47, \frac{2131}{40}, -72$$

$$48, \frac{3948}{5}, 135$$

$$48, \frac{3948}{5}, 135$$

$$49, \frac{5107}{40}, 108$$

$$49, \frac{5107}{40}, 108$$

$$50, 241, -99$$

$$50, 241, -99$$

$$51, \frac{16083}{40}, -144$$

$$51, \frac{16083}{40}, -144$$

$$52, \frac{1712}{5}, 135$$

$$52, \frac{1712}{5}, 135$$

$$53, \frac{3859}{40}, 108$$

$$53, \frac{3859}{40}, 108$$

$$54, \frac{3309}{5}, -171$$

$$54, \frac{3309}{5}, -171$$

$$55, \frac{791}{8}, -72$$

$$55, \frac{791}{8}, -72$$

$$56, \frac{1556}{5}, 135$$

$$56, \frac{1556}{5}, 135$$

$$57, \frac{22131}{40}, 108$$

$$57, \frac{22131}{40}, 108$$

$$58, \frac{893}{5}, -99$$

$$58, \frac{893}{5}, -99$$

$$59, \frac{-173}{40}, -144$$

$$59, \frac{-173}{40}, -144$$

$$60, 840, 135$$

$$60, 840, 135$$

$$61, \frac{5683}{40}, 108$$

$$61, \frac{5683}{40}, 108$$

$$62, \frac{917}{5}, -171$$

$$62, \frac{917}{5}, -171$$

$$63, \frac{16659}{40}, -72$$

$$63, \frac{16659}{40}, -72$$

$$64, \frac{1784}{5}, 135$$

$$64, \frac{1784}{5}, 135$$

$$65, \frac{1175}{8}, 108$$

$$65, \frac{1175}{8}, 108$$

$$66, \frac{3381}{5}, -99$$

$$66, \frac{3381}{5}, -99$$

$$67, \frac{1651}{40}, -144$$

$67, \frac{1651}{40}, -144$

$68, \frac{1268}{5}, 135$

$68, \frac{1268}{5}, 135$

$69, \frac{22707}{40}, 108$

$69, \frac{22707}{40}, 108$

$70, 229, -171$

$70, 229, -171$

$71, \frac{403}{40}, -72$

$71, \frac{403}{40}, -72$

$72, \frac{4272}{5}, 135$

$72, \frac{4272}{5}, 135$

$73, \frac{3379}{40}, 108$

$73, \frac{3379}{40}, 108$

$74, \frac{989}{5}, -99$

$74, \frac{989}{5}, -99$

$75, \frac{3735}{8}, -144$

$75, \frac{3735}{8}, -144$

$76, \frac{1496}{5}, 135$

$76, \frac{1496}{5}, 135$

$77, \frac{6451}{40}, 108$

$77, \frac{6451}{40}, 108$

$$78, \frac{3093}{5}, -171$$

$$78, \frac{3093}{5}, -171$$

$$79, \frac{2227}{40}, -72$$

$$79, \frac{2227}{40}, -72$$

$$80, 376, 135$$

$$80, 376, 135$$

$$81, \frac{20403}{40}, 108$$

$$81, \frac{20403}{40}, 108$$

$$82, \frac{1217}{5}, -99$$

$$82, \frac{1217}{5}, -99$$

$$83, \frac{-1901}{40}, -144$$

$$83, \frac{-1901}{40}, -144$$

$$84, \frac{3984}{5}, 135$$

$$84, \frac{3984}{5}, 135$$

$$85, \frac{1655}{8}, 108$$

$$85, \frac{1655}{8}, 108$$

$$86, \frac{701}{5}, -171$$

$$86, \frac{701}{5}, -171$$

$$87, \frac{19251}{40}, -72$$

$$87, \frac{19251}{40}, -72$$

$$88, \frac{1568}{5}, 135$$

$$88, \frac{1568}{5}, 135$$

$$89, \frac{4147}{40}, 108$$

$$89, \frac{4147}{40}, 108$$

$$90, 741, -99$$

$$90, 741, -99$$

$$91, \frac{-77}{40}, -144$$

$$91, \frac{-77}{40}, -144$$

$$92, \frac{1592}{5}, 135$$

$$92, \frac{1592}{5}, 135$$

$$93, \frac{20979}{40}, 108$$

$$93, \frac{20979}{40}, 108$$

$$94, \frac{929}{5}, -171$$

$$94, \frac{929}{5}, -171$$

$$95, \frac{599}{8}, -72$$

$$95, \frac{599}{8}, -72$$

$$96, \frac{4056}{5}, 135$$

$$96, \frac{4056}{5}, 135$$

$$97, \frac{5971}{40}, 108$$

$$97, \frac{5971}{40}, 108$$

$$98, \frac{773}{5}, -99$$

$$98, \frac{773}{5}, -99$$

$$99, \frac{16947}{40}, -144$$

$$99, \frac{16947}{40}, -144$$

$$100, 364, 135$$

$$100, 364, 135$$

$$101, \frac{4723}{40}, 108$$

$$101, \frac{4723}{40}, 108$$

$$102, \frac{3417}{5}, -171$$

$$102, \frac{3417}{5}, -171$$

$$103, \frac{499}{40}, -72$$

$$103, \frac{499}{40}, -72$$

$$104, \frac{1664}{5}, 135$$

$$104, \frac{1664}{5}, 135$$

$$105, \frac{4599}{8}, 108$$

$$105, \frac{4599}{8}, 108$$

$$106, \frac{1001}{5}, -99$$

$$106, \frac{1001}{5}, -99$$

$$107, \frac{691}{40}, -144$$

$$107, \frac{691}{40}, -144$$

$$108, \frac{3768}{5}, 135$$

$$108, \frac{3768}{5}, 135$$

$$109, \frac{6547}{40}, 108$$

$$109, \frac{6547}{40}, 108$$

$$110, 205, -171$$

$$110, 205, -171$$

$$111, \frac{17523}{40}, -72$$

$$111, \frac{17523}{40}, -72$$

$$112, \frac{1892}{5}, 135$$

$$112, \frac{1892}{5}, 135$$

$$113, \frac{2419}{40}, 108$$

$$113, \frac{2419}{40}, 108$$

$$114, \frac{3489}{5}, -99$$

$$114, \frac{3489}{5}, -99$$

$$115, \frac{503}{8}, -144$$

$$115, \frac{503}{8}, -144$$

$$116, \frac{1376}{5}, 135$$

$$116, \frac{1376}{5}, 135$$

$$117, \frac{23571}{40}, 108$$

$$117, \frac{23571}{40}, 108$$

$$118, \frac{713}{5}, -171$$

$$118, \frac{713}{5}, -171$$

$$119, \frac{1267}{40}, -72$$

$$119, \frac{1267}{40}, -72$$

$$120, 876, 135$$

$$120, 876, 135$$

"Constant terms completed."

Now, the linear terms. First print all linear coefficients up to the presumed period "stepsize".. Then analyze for period and print the difference (at step "stepsize") if they are not repeating.

```
> stepsize:=6;
  for r from 1 to stepsize do
    print(r, Lno7c[1,r]);
  od:
  for r from stepsize+1 to pno7  do
    stepdifference:=Lno7c[1,r]-Lno7c[1,r-stepsize]:
    if( stepdifference<>0 ) then print(r,Lno7c[1,r],stepdifference): fi:
  od:
  print("Lno7inear coefficients completed.");
```

$$stepsize := 6$$

$$1, \frac{-1347}{10}$$

$$2, \frac{-831}{5}$$

$$3, \frac{-2097}{10}$$

$$4, \frac{-876}{5}$$

$$5, \frac{-1347}{10}$$

$$6, \frac{-1251}{5}$$

$$7, \frac{-1257}{10}, 9$$

$$8, \frac{-876}{5}, -9$$

$$9, \frac{-2187}{10}, -9$$

$$10, \frac{-831}{5}, 9$$

$$11, \frac{-1257}{10}, 9$$

$$12, \frac{-1296}{5}, -9$$

$$13, \frac{-1347}{10}, -9$$

$$14, \frac{-831}{5}, 9$$

$$15, \frac{-2097}{10}, 9$$

$$16, \frac{-876}{5}, -9$$

$$17, \frac{-1347}{10}, -9$$

$$18, \frac{-1251}{5}, 9$$

$$19, \frac{-1257}{10}, 9$$

$$20, \frac{-876}{5}, -9$$

$$21, \frac{-2187}{10}, -9$$

$$22, \frac{-831}{5}, 9$$

$$23, \frac{-1257}{10}, 9$$

$$24, \frac{-1296}{5}, -9$$

$$25, \frac{-1347}{10}, -9$$

$$26, \frac{-831}{5}, 9$$

$$27, \frac{-2097}{10}, 9$$

$$28, \frac{-876}{5}, -9$$

$$29, \frac{-1347}{10}, -9$$

$$30, \frac{-1251}{5}, 9$$

$$31, \frac{-1257}{10}, 9$$

$$32, \frac{-876}{5}, -9$$

$$33, \frac{-2187}{10}, -9$$

$$34, \frac{-831}{5}, 9$$

$$35, \frac{-1257}{10}, 9$$

$$36, \frac{-1296}{5}, -9$$

$$37, \frac{-1347}{10}, -9$$

$$38, \frac{-831}{5}, 9$$

$$39, \frac{-2097}{10}, 9$$

$$40, \frac{-876}{5}, -9$$

$$41, \frac{-1347}{10}, -9$$

$$42, \frac{-1251}{5}, 9$$

$$43, \frac{-1257}{10}, 9$$

$$44, \frac{-876}{5}, -9$$

$$45, \frac{-2187}{10}, -9$$

$$46, \frac{-831}{5}, 9$$

$$47, \frac{-1257}{10}, 9$$

$$48, \frac{-1296}{5}, -9$$

$$49, \frac{-1347}{10}, -9$$

$$50, \frac{-831}{5}, 9$$

$$51, \frac{-2097}{10}, 9$$

$$52, \frac{-876}{5}, -9$$

$$53, \frac{-1347}{10}, -9$$

$$54, \frac{-1251}{5}, 9$$

$$55, \frac{-1257}{10}, 9$$

$$56, \frac{-876}{5}, -9$$

$$57, \frac{-2187}{10}, -9$$

$$58, \frac{-831}{5}, 9$$

$$59, \frac{-1257}{10}, 9$$

$$60, \frac{-1296}{5}, -9$$

$$61, \frac{-1347}{10}, -9$$

$$62, \frac{-831}{5}, 9$$

$$63, \frac{-2097}{10}, 9$$

$$64, \frac{-876}{5}, -9$$

$$65, \frac{-1347}{10}, -9$$

$$66, \frac{-1251}{5}, 9$$

$$67, \frac{-1257}{10}, 9$$

$$68, \frac{-876}{5}, -9$$

$$69, \frac{-2187}{10}, -9$$

$$70, \frac{-831}{5}, 9$$

$$71, \frac{-1257}{10}, 9$$

$$72, \frac{-1296}{5}, -9$$

$$73, \frac{-1347}{10}, -9$$

$74, \frac{-831}{5}, 9$

$75, \frac{-2097}{10}, 9$

$76, \frac{-876}{5}, -9$

$77, \frac{-1347}{10}, -9$

$78, \frac{-1251}{5}, 9$

$79, \frac{-1257}{10}, 9$

$80, \frac{-876}{5}, -9$

$81, \frac{-2187}{10}, -9$

$82, \frac{-831}{5}, 9$

$83, \frac{-1257}{10}, 9$

$84, \frac{-1296}{5}, -9$

$85, \frac{-1347}{10}, -9$

$86, \frac{-831}{5}, 9$

$87, \frac{-2097}{10}, 9$

$88, \frac{-876}{5}, -9$

$89, \frac{-1347}{10}, -9$

$90, \frac{-1251}{5}, 9$

$91, \frac{-1257}{10}, 9$

$92, \frac{-876}{5}, -9$

$93, \frac{-2187}{10}, -9$

$94, \frac{-831}{5}, 9$

$95, \frac{-1257}{10}, 9$

$96, \frac{-1296}{5}, -9$

$97, \frac{-1347}{10}, -9$

$98, \frac{-831}{5}, 9$

$99, \frac{-2097}{10}, 9$

$100, \frac{-876}{5}, -9$

$101, \frac{-1347}{10}, -9$

$102, \frac{-1251}{5}, 9$

$103, \frac{-1257}{10}, 9$

$104, \frac{-876}{5}, -9$

$105, \frac{-2187}{10}, -9$

$106, \frac{-831}{5}, 9$

$107, \frac{-1257}{10}, 9$

$108, \frac{-1296}{5}, -9$

$109, \frac{-1347}{10}, -9$

$110, \frac{-831}{5}, 9$

$111, \frac{-2097}{10}, 9$

$112, \frac{-876}{5}, -9$

$113, \frac{-1347}{10}, -9$

$$114, \frac{-1251}{5}, 9$$

$$115, \frac{-1257}{10}, 9$$

$$116, \frac{-876}{5}, -9$$

$$117, \frac{-2187}{10}, -9$$

$$118, \frac{-831}{5}, 9$$

$$119, \frac{-1257}{10}, 9$$

$$120, \frac{-1296}{5}, -9$$

"Lno7inear coefficients completed."

The quadratic terms. First print all quadratic coefficients up to the presumed period "stepsize".. Then analyze for period and print the difference (at step "stepsize") if they are not repeating.

```
> stepsize:=2;
  for r from 1 to stepsize do
    print(r, Lno7c[2,r]);
  od:
  for r from stepsize+1 to pno7  do
    stepdifference:=Lno7c[2,r]-Lno7c[2,r-stepsize]:
    if( stepdifference<>0 ) then print(r,Lno7c[2,r],stepdifference): fi:
  od:
  print("Quadratic coefficients completed.");
```

$$stepsize := 2$$

$$1, \frac{63}{2}$$

$$2, \frac{135}{4}$$

$$3, \frac{71}{2}, 4$$

$$5, \frac{63}{2}, -4$$

$$6, \frac{151}{4}, 4$$

$$8, \frac{135}{4}, -4$$

$$9, \frac{71}{2}, 4$$

$11, \frac{63}{2}, -4$

$12, \frac{151}{4}, 4$

$14, \frac{135}{4}, -4$

$15, \frac{71}{2}, 4$

$17, \frac{63}{2}, -4$

$18, \frac{151}{4}, 4$

$20, \frac{135}{4}, -4$

$21, \frac{71}{2}, 4$

$23, \frac{63}{2}, -4$

$24, \frac{151}{4}, 4$

$26, \frac{135}{4}, -4$

$27, \frac{71}{2}, 4$

$29, \frac{63}{2}, -4$

$30, \frac{151}{4}, 4$

$32, \frac{135}{4}, -4$

$33, \frac{71}{2}, 4$

$35, \frac{63}{2}, -4$

$36, \frac{151}{4}, 4$

$38, \frac{135}{4}, -4$

$39, \frac{71}{2}, 4$

$$41, \frac{63}{2}, -4$$

$$42, \frac{151}{4}, 4$$

$$44, \frac{135}{4}, -4$$

$$45, \frac{71}{2}, 4$$

$$47, \frac{63}{2}, -4$$

$$48, \frac{151}{4}, 4$$

$$50, \frac{135}{4}, -4$$

$$51, \frac{71}{2}, 4$$

$$53, \frac{63}{2}, -4$$

$$54, \frac{151}{4}, 4$$

$$56, \frac{135}{4}, -4$$

$$57, \frac{71}{2}, 4$$

$$59, \frac{63}{2}, -4$$

$$60, \frac{151}{4}, 4$$

$$62, \frac{135}{4}, -4$$

$$63, \frac{71}{2}, 4$$

$$65, \frac{63}{2}, -4$$

$$66, \frac{151}{4}, 4$$

$$68, \frac{135}{4}, -4$$

$$69, \frac{71}{2}, 4$$

$71, \frac{63}{2}, -4$

$72, \frac{151}{4}, 4$

$74, \frac{135}{4}, -4$

$75, \frac{71}{2}, 4$

$77, \frac{63}{2}, -4$

$78, \frac{151}{4}, 4$

$80, \frac{135}{4}, -4$

$81, \frac{71}{2}, 4$

$83, \frac{63}{2}, -4$

$84, \frac{151}{4}, 4$

$86, \frac{135}{4}, -4$

$87, \frac{71}{2}, 4$

$89, \frac{63}{2}, -4$

$90, \frac{151}{4}, 4$

$92, \frac{135}{4}, -4$

$93, \frac{71}{2}, 4$

$95, \frac{63}{2}, -4$

$96, \frac{151}{4}, 4$

$98, \frac{135}{4}, -4$

$99, \frac{71}{2}, 4$

$$101, \frac{63}{2}, -4$$

$$102, \frac{151}{4}, 4$$

$$104, \frac{135}{4}, -4$$

$$105, \frac{71}{2}, 4$$

$$107, \frac{63}{2}, -4$$

$$108, \frac{151}{4}, 4$$

$$110, \frac{135}{4}, -4$$

$$111, \frac{71}{2}, 4$$

$$113, \frac{63}{2}, -4$$

$$114, \frac{151}{4}, 4$$

$$116, \frac{135}{4}, -4$$

$$117, \frac{71}{2}, 4$$

$$119, \frac{63}{2}, -4$$

$$120, \frac{151}{4}, 4$$

"Quadratic coefficients completed."

Calculate the zeroth constituent of the **truncated magilatin symmetry-type counting function** . Find its constant term.

```
> lno7zeroth:=expand(
  sum(coeff(lno7gfstandnum,x,pno7*j)*binomial(d+t/pno7-j,d),j=0..d+1) );
  print(subs(t=0,lno7zeroth)):
```

$$lno7zeroth := -\frac{31}{15}t + \frac{25}{96}t^2 - \frac{1}{48}t^3 + \frac{1}{576}t^4 + 8$$

$$8$$

Extract the constituents of the truncated magilatin symmetry-type counting function.

```
> lno7constituent[0]:=lno7zeroth:
  for r from 1 to pno7  do
    lno7constituent[r]:=expand(sum(
```

```
coeff(lno7gfstandnum,x,pno7*j+r)*binomial(d+(t-r)/pno7-j,d),   j=0..d)):
#  print(r):
#  print( lno7constituent[r] ):
  print( factor(lno7constituent[r]) ):
od;
```

$$lno7constituent_1 := -\frac{103}{120}t+\frac{25}{144}t^2-\frac{1}{48}t^3+\frac{1}{576}t^4+\frac{2027}{2880}$$

$$\frac{1}{2880}(t-1)(5t^3-55t^2+445t-2027)$$

$$lno7constituent_2 := -\frac{133}{120}t+\frac{59}{288}t^2-\frac{1}{48}t^3+\frac{1}{576}t^4+\frac{553}{360}$$

$$\frac{1}{2880}(t-2)(5t^3-50t^2+490t-2212)$$

$$lno7constituent_3 := -\frac{47}{30}t+\frac{11}{48}t^2-\frac{1}{48}t^3+\frac{1}{576}t^4+\frac{979}{320}$$

$$\frac{1}{2880}(t-3)(5t^3-45t^2+525t-2937)$$

$$lno7constituent_4 := -\frac{37}{30}t+\frac{59}{288}t^2-\frac{1}{48}t^3+\frac{1}{576}t^4+\frac{229}{90}$$

$$\frac{1}{2880}(t-4)(5t^3-40t^2+430t-1832)$$

$$lno7constituent_5 := -\frac{103}{120}t+\frac{25}{144}t^2-\frac{1}{48}t^3+\frac{1}{576}t^4+\frac{847}{576}$$

$$\frac{1}{2880}(t-5)(5t^3-35t^2+325t-847)$$

$$lno7constituent_6 := -\frac{233}{120}t-\frac{1}{48}t^3+\frac{1}{576}t^4+\frac{221}{40}+\frac{25}{96}t^2$$

$$-\frac{233}{120}t-\frac{1}{48}t^3+\frac{1}{576}t^4+\frac{221}{40}+\frac{25}{96}t^2$$

$$lno7constituent_7 := -\frac{11}{15}t-\frac{1}{48}t^3+\frac{1}{576}t^4+\frac{25}{144}t^2+\frac{1739}{2880}$$

$$-\frac{11}{15}t-\frac{1}{48}t^3+\frac{1}{576}t^4+\frac{25}{144}t^2+\frac{1739}{2880}$$

$$lno7constituent_8 := -\frac{37}{30}t+\frac{104}{45}-\frac{1}{48}t^3+\frac{1}{576}t^4+\frac{59}{288}t^2$$

$$-\frac{37}{30}t+\frac{104}{45}-\frac{1}{48}t^3+\frac{1}{576}t^4+\frac{59}{288}t^2$$

$$lno7constituent_9 := -\frac{203}{120}t-\frac{1}{48}t^3+\frac{1}{576}t^4+\frac{11}{48}t^2+\frac{1427}{320}$$

$$-\frac{203}{120}t-\frac{1}{48}t^3+\frac{1}{576}t^4+\frac{11}{48}t^2+\frac{1427}{320}$$

$$lno7constituent_{10} := -\frac{133}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{149}{72}$$

$$-\frac{133}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{149}{72}$$

$$lno7constituent_{11} := -\frac{11}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 - \frac{1813}{2880}$$

$$-\frac{11}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 - \frac{1813}{2880}$$

$$lno7constituent_{12} := -\frac{31}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{96}t^2 + \frac{73}{10}$$

$$-\frac{31}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{96}t^2 + \frac{73}{10}$$

$$lno7constituent_{13} := -\frac{103}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 + \frac{2891}{2880}$$

$$-\frac{103}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 + \frac{2891}{2880}$$

$$lno7constituent_{14} := -\frac{133}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{301}{360}$$

$$-\frac{133}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{301}{360}$$

$$lno7constituent_{15} := \frac{279}{64} - \frac{47}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{11}{48}t^2$$

$$\frac{279}{64} - \frac{47}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{11}{48}t^2$$

$$lno7constituent_{16} := -\frac{37}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{128}{45}$$

$$-\frac{37}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{128}{45}$$

$$lno7constituent_{17} := -\frac{103}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{2219}{2880} + \frac{25}{144}t^2$$

$$-\frac{103}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{2219}{2880} + \frac{25}{144}t^2$$

$$lno7constituent_{18} := \frac{233}{40} - \frac{233}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{96}t^2$$

$$\frac{233}{40} - \frac{233}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{96}t^2$$

$$lno7constituent_{19} := -\frac{11}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 - \frac{277}{2880}$$

$$-\frac{11}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 - \frac{277}{2880}$$

$$lno7constituent_{20} := -\frac{37}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{47}{18}$$

$$-\frac{37}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{47}{18}$$

$$lno7constituent_{21} := -\frac{203}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{11}{48}t^2 + \frac{1523}{320}$$

$$-\frac{203}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{11}{48}t^2 + \frac{1523}{320}$$

$$lno7constituent_{22} := -\frac{133}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{493}{360}$$

$$-\frac{133}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{493}{360}$$

$$lno7constituent_{23} := -\frac{11}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 - \frac{949}{2880}$$

$$-\frac{11}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 - \frac{949}{2880}$$

$$lno7constituent_{24} := -\frac{31}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{38}{5} + \frac{25}{96}t^2$$

$$-\frac{31}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{38}{5} + \frac{25}{96}t^2$$

$$lno7constituent_{25} := -\frac{103}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{751}{576} + \frac{25}{144}t^2$$

$$-\frac{103}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{751}{576} + \frac{25}{144}t^2$$

$$lno7constituent_{26} := -\frac{133}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{409}{360}$$

$$-\frac{133}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{409}{360}$$

$$lno7constituent_{27} := \frac{1171}{320} - \frac{47}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{11}{48}t^2$$

$$\frac{1171}{320} - \frac{47}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{11}{48}t^2$$

$$lno7constituent_{28} := -\frac{37}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{193}{90} + \frac{59}{288}t^2$$

$$-\frac{37}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{193}{90} + \frac{59}{288}t^2$$

$$lno7constituent_{29} := -\frac{103}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 + \frac{3083}{2880}$$

$$-\frac{103}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 + \frac{3083}{2880}$$

$$lno7constituent_{30} := -\frac{233}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{49}{8} + \frac{25}{96}t^2$$

$$-\frac{233}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{49}{8} + \frac{25}{96}t^2$$

$$lno7constituent_{31} := -\frac{11}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 + \frac{587}{2880}$$

$$-\frac{11}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 + \frac{587}{2880}$$

$$lno7constituent_{32} := -\frac{37}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{131}{45}$$

$$-\frac{37}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{131}{45}$$

$$lno7constituent_{33} := -\frac{203}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{1299}{320} + \frac{11}{48}t^2$$

$$-\frac{203}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{1299}{320} + \frac{11}{48}t^2$$

$$lno7constituent_{34} := -\frac{133}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{601}{360}$$

$$-\frac{133}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{601}{360}$$

$$lno7constituent_{35} := -\frac{11}{15}t - \frac{17}{576} - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2$$

$$-\frac{11}{15}t - \frac{17}{576} - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2$$

$$lno7constituent_{36} := -\frac{31}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{96}t^2 + \frac{69}{10}$$

$$-\frac{31}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{96}t^2 + \frac{69}{10}$$

$$lno7constituent_{37} := -\frac{103}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{4619}{2880} + \frac{25}{144}t^2$$

$$-\frac{103}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{4619}{2880} + \frac{25}{144}t^2$$

$$lno7constituent_{38} := -\frac{133}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{157}{360} + \frac{59}{288}t^2$$

$$-\frac{133}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{157}{360} + \frac{59}{288}t^2$$

$$lno7constituent_{39} := -\frac{47}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{1267}{320} + \frac{11}{48}t^2$$

$$-\frac{47}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{1267}{320} + \frac{11}{48}t^2$$

$$lno7constituent_{40} := \frac{31}{9} - \frac{37}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2$$

$$\frac{31}{9} - \frac{37}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2$$

$$lno7constituent_{41} := -\frac{103}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 + \frac{1067}{2880}$$

$$-\frac{103}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 + \frac{1067}{2880}$$

$$lno7constituent_{42} := -\frac{233}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{96}t^2 + \frac{257}{40}$$

$$-\frac{233}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{96}t^2 + \frac{257}{40}$$

$$lno7constituent_{43} := -\frac{11}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 - \frac{1429}{2880} + \frac{25}{144}t^2$$

$$-\frac{11}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 - \frac{1429}{2880} + \frac{25}{144}t^2$$

$$lno7constituent_{44} := -\frac{37}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{199}{90}$$

$$-\frac{37}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{199}{90}$$

$$lno7constituent_{45} := -\frac{203}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{343}{64} + \frac{11}{48}t^2$$

$$-\frac{203}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{343}{64} + \frac{11}{48}t^2$$

$$lno7constituent_{46} := -\frac{133}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{349}{360}$$

$$-\frac{133}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{349}{360}$$

$$lno7constituent_{47} := -\frac{11}{15}t - \frac{1}{48}t^3 + \frac{779}{2880} + \frac{1}{576}t^4 + \frac{25}{144}t^2$$

$$-\frac{11}{15}t - \frac{1}{48}t^3 + \frac{779}{2880} + \frac{1}{576}t^4 + \frac{25}{144}t^2$$

$$lno7constituent_{48} := -\frac{31}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{96}t^2 + \frac{36}{5}$$

$$-\frac{31}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{96}t^2 + \frac{36}{5}$$

$$lno7constituent_{49} := -\frac{103}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 + \frac{2603}{2880}$$

$$-\frac{103}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 + \frac{2603}{2880}$$

$$lno7constituent_{50} := -\frac{133}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{125}{72}$$

$$-\frac{133}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{125}{72}$$

$$lno7constituent_{51} := -\frac{47}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{11}{48}t^2 + \frac{1043}{320}$$

$$-\frac{47}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{11}{48}t^2 + \frac{1043}{320}$$

$$lno7constituent_{52} := -\frac{37}{30}t + \frac{247}{90} - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2$$

$$-\frac{37}{30}t + \frac{247}{90} - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2$$

$$lno7constituent_{53} := -\frac{103}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 + \frac{1931}{2880}$$

$$-\frac{103}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 + \frac{1931}{2880}$$

$$lno7constituent_{54} := -\frac{233}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{96}t^2 + \frac{229}{40}$$

$$-\frac{233}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{96}t^2 + \frac{229}{40}$$

$$lno7constituent_{55} := -\frac{11}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 + \frac{463}{576}$$

$$-\frac{11}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 + \frac{463}{576}$$

$$lno7constituent_{56} := -\frac{37}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{113}{45}$$

$$-\frac{37}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{113}{45}$$

$$lno7constituent_{57} := -\frac{203}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{11}{48}t^2 + \frac{1491}{320}$$

$$-\frac{203}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{11}{48}t^2 + \frac{1491}{320}$$

$$lno7constituent_{58} := -\frac{133}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{457}{360}$$

$$-\frac{133}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{457}{360}$$

$$lno7constituent_{59} := -\frac{11}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 - \frac{1237}{2880} + \frac{25}{144}t^2$$

$$-\frac{11}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 - \frac{1237}{2880} + \frac{25}{144}t^2$$

$$lno7constituent_{60} := \frac{15}{2} - \frac{31}{15}t + \frac{25}{96}t^2 - \frac{1}{48}t^3 + \frac{1}{576}t^4$$

$$\frac{15}{2} - \frac{31}{15}t + \frac{25}{96}t^2 - \frac{1}{48}t^3 + \frac{1}{576}t^4$$

$$lno7constituent_{61} := -\frac{103}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 + \frac{3467}{2880}$$

$$-\frac{103}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 + \frac{3467}{2880}$$

$$lno7constituent_{62} := -\frac{133}{120}t + \frac{373}{360} - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2$$

$$-\frac{133}{120}t + \frac{373}{360} - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2$$

$$lno7constituent_{63} := -\frac{47}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{11}{48}t^2 + \frac{1139}{320}$$

$$-\frac{47}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{11}{48}t^2 + \frac{1139}{320}$$

$$lno7constituent_{64} := -\frac{37}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{137}{45}$$

$$-\frac{37}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{137}{45}$$

$$lno7constituent_{65} := -\frac{103}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 + \frac{559}{576}$$

$$-\frac{103}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 + \frac{559}{576}$$

$$lno7constituent_{66} := -\frac{233}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{241}{40} + \frac{25}{96}t^2$$

$$-\frac{233}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{241}{40} + \frac{25}{96}t^2$$

$$lno7constituent_{67} := \frac{299}{2880} - \frac{11}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2$$

$$\frac{299}{2880} - \frac{11}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2$$

$$lno7constituent_{68} := -\frac{37}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{163}{90} + \frac{59}{288}t^2$$

$$-\frac{37}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{163}{90} + \frac{59}{288}t^2$$

$$lno7constituent_{69} := -\frac{203}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{11}{48}t^2 + \frac{1587}{320}$$

$$-\frac{203}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{11}{48}t^2 + \frac{1587}{320}$$

$$lno7constituent_{70} := -\frac{133}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{113}{72}$$

$$-\frac{133}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{113}{72}$$

$$lno7constituent_{71} := -\frac{11}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 - \frac{373}{2880}$$

$$-\frac{11}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 - \frac{373}{2880}$$

$$lno7constituent_{72} := -\frac{31}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{96}t^2 + \frac{39}{5}$$

$$-\frac{31}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{96}t^2 + \frac{39}{5}$$

$$lno7constituent_{73} := -\frac{103}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 + \frac{1451}{2880}$$

$$-\frac{103}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 + \frac{1451}{2880}$$

$$lno7constituent_{74} := -\frac{133}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{481}{360} + \frac{59}{288}t^2$$

$$-\frac{133}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{481}{360} + \frac{59}{288}t^2$$

$$lno7constituent_{75} := -\frac{47}{30}t - \frac{1}{48}t^3 + \frac{247}{64} + \frac{1}{576}t^4 + \frac{11}{48}t^2$$

$$-\frac{47}{30}t - \frac{1}{48}t^3 + \frac{247}{64} + \frac{1}{576}t^4 + \frac{11}{48}t^2$$

$$lno7constituent_{76} := -\frac{37}{30}t + \frac{211}{90} - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2$$

$$-\frac{37}{30}t + \frac{211}{90} - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2$$

$$lno7constituent_{77} := -\frac{103}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 + \frac{3659}{2880}$$

$$-\frac{103}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 + \frac{3659}{2880}$$

$$lno7constituent_{78} := \frac{213}{40} - \frac{233}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{96}t^2$$

$$\frac{213}{40} - \frac{233}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{96}t^2$$

$$lno7constituent_{79} := -\frac{11}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 + \frac{1163}{2880}$$

$$-\frac{11}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 + \frac{1163}{2880}$$

$$lno7constituent_{80} := -\frac{37}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{28}{9} + \frac{59}{288}t^2$$

$$-\frac{37}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{28}{9} + \frac{59}{288}t^2$$

$$lno7constituent_{81} := -\frac{203}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{11}{48}t^2 + \frac{1363}{320}$$

$$-\frac{203}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{11}{48}t^2 + \frac{1363}{320}$$

$$lno7constituent_{82} := -\frac{133}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{673}{360}$$

$$-\frac{133}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{673}{360}$$

$$lno7constituent_{83} := -\frac{11}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 - \frac{2389}{2880} + \frac{25}{144}t^2$$

$$-\frac{11}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 - \frac{2389}{2880} + \frac{25}{144}t^2$$

$$lno7constituent_{84} := -\frac{31}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{96}t^2 + \frac{71}{10}$$

$$-\frac{31}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{96}t^2 + \frac{71}{10}$$

$$lno7constituent_{85} := -\frac{103}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 + \frac{1039}{576}$$

$$-\frac{103}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 + \frac{1039}{576}$$

$$lno7constituent_{86} := \frac{229}{360} - \frac{133}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2$$

$$\frac{229}{360} - \frac{133}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2$$

$$lno7constituent_{87} := -\frac{47}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{11}{48}t^2 + \frac{1331}{320}$$

$$-\frac{47}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{11}{48}t^2 + \frac{1331}{320}$$

$$lno7constituent_{88} := -\frac{37}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{119}{45}$$

$$-\frac{37}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{119}{45}$$

$$lno7constituent_{89} := -\frac{103}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 + \frac{1643}{2880}$$

$$-\frac{103}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 + \frac{1643}{2880}$$

$$lno7constituent_{90} := -\frac{233}{120}t - \frac{1}{48}t^3 + \frac{53}{8} + \frac{1}{576}t^4 + \frac{25}{96}t^2$$

$$-\frac{233}{120}t - \frac{1}{48}t^3 + \frac{53}{8} + \frac{1}{576}t^4 + \frac{25}{96}t^2$$

$$lno7constituent_{91} := -\frac{11}{15}t - \frac{1}{48}t^3 - \frac{853}{2880} + \frac{1}{576}t^4 + \frac{25}{144}t^2$$

$$-\frac{11}{15}t - \frac{1}{48}t^3 - \frac{853}{2880} + \frac{1}{576}t^4 + \frac{25}{144}t^2$$

$$lno7constituent_{92} := -\frac{37}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{217}{90} + \frac{59}{288}t^2$$

$$-\frac{37}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{217}{90} + \frac{59}{288}t^2$$

$$lno7constituent_{93} := \frac{1459}{320} - \frac{203}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{11}{48}t^2$$

$$\frac{1459}{320} - \frac{203}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{11}{48}t^2$$

$$lno7constituent_{94} := -\frac{133}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{421}{360}$$

$$-\frac{133}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{421}{360}$$

$$lno7constituent_{95} := -\frac{11}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 + \frac{271}{576}$$

$$-\frac{11}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 + \frac{271}{576}$$

$$lno7constituent_{96} := -\frac{31}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{96}t^2 + \frac{37}{5}$$

$$-\frac{31}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{96}t^2 + \frac{37}{5}$$

$$lno7constituent_{97} := -\frac{103}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{3179}{2880} + \frac{25}{144}t^2$$

$$-\frac{103}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{3179}{2880} + \frac{25}{144}t^2$$

$$lno7constituent_{98} := -\frac{133}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{337}{360}$$

$$-\frac{133}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{337}{360}$$

$$lno7constituent_{99} := -\frac{47}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{1107}{320} + \frac{11}{48}t^2$$

$$-\frac{47}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{1107}{320} + \frac{11}{48}t^2$$

$$lno7constituent_{100} := -\frac{37}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{53}{18}$$

$$-\frac{37}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{53}{18}$$

$$lno7constituent_{101} := -\frac{103}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 + \frac{2507}{2880}$$

$$-\frac{103}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 + \frac{2507}{2880}$$

$$lno7constituent_{102} := -\frac{233}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{96}t^2 + \frac{237}{40}$$

$$-\frac{233}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{96}t^2 + \frac{237}{40}$$

$$lno7constituent_{103} := -\frac{11}{15}t - \frac{1}{48}t^3 + \frac{11}{2880} + \frac{1}{576}t^4 + \frac{25}{144}t^2$$

$$-\frac{11}{15}t - \frac{1}{48}t^3 + \frac{11}{2880} + \frac{1}{576}t^4 + \frac{25}{144}t^2$$

$$lno7constituent_{104} := -\frac{37}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{122}{45}$$

$$-\frac{37}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{122}{45}$$

$$lno7constituent_{105} := -\frac{203}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{311}{64} + \frac{11}{48}t^2$$

$$-\frac{203}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{311}{64} + \frac{11}{48}t^2$$

$$lno7constituent_{106} := -\frac{133}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{529}{360} + \frac{59}{288}t^2$$

$$-\frac{133}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{529}{360} + \frac{59}{288}t^2$$

$$lno7constituent_{107} := -\frac{11}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 - \frac{661}{2880} + \frac{25}{144}t^2$$

$$-\frac{11}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 - \frac{661}{2880} + \frac{25}{144}t^2$$

$$lno7constituent_{108} := -\frac{31}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{67}{10} + \frac{25}{96}t^2$$

$$-\frac{31}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{67}{10} + \frac{25}{96}t^2$$

$$lno7constituent_{109} := -\frac{103}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 + \frac{4043}{2880}$$

$$-\frac{103}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 + \frac{4043}{2880}$$

$$lno7constituent_{110} := -\frac{133}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{89}{72} + \frac{59}{288}t^2$$

$$-\frac{133}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{89}{72} + \frac{59}{288}t^2$$

$$lno7constituent_{111} := -\frac{47}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{1203}{320} + \frac{11}{48}t^2$$

$$-\frac{47}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{1203}{320} + \frac{11}{48}t^2$$

$$lno7constituent_{112} := -\frac{37}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{146}{45}$$

$$-\frac{37}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{146}{45}$$

$$lno7constituent_{113} := -\frac{103}{120}t + \frac{491}{2880} - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2$$

$$-\frac{103}{120}t + \frac{491}{2880} - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2$$

$$lno7constituent_{114} := -\frac{233}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{96}t^2 + \frac{249}{40}$$

$$-\frac{233}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{96}t^2 + \frac{249}{40}$$

$$lno7constituent_{115} := -\frac{11}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 + \frac{175}{576}$$

$$-\frac{11}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2 + \frac{175}{576}$$

$$lno7constituent_{116} := -\frac{37}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{181}{90} + \frac{59}{288}t^2$$

$$-\frac{37}{30}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{181}{90} + \frac{59}{288}t^2$$

$$lno7constituent_{117} := -\frac{203}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{11}{48}t^2 + \frac{1651}{320}$$

$$-\frac{203}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{11}{48}t^2 + \frac{1651}{320}$$

$$lno7constituent_{118} := -\frac{133}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{277}{360}$$

$$-\frac{133}{120}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{59}{288}t^2 + \frac{277}{360}$$

$$lno7constituent_{119} := \frac{203}{2880} - \frac{11}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2$$

$$\frac{203}{2880} - \frac{11}{15}t - \frac{1}{48}t^3 + \frac{1}{576}t^4 + \frac{25}{144}t^2$$

$$lno7constituent_{120} := -\frac{31}{15}t + \frac{25}{96}t^2 - \frac{1}{48}t^3 + \frac{1}{576}t^4 + 8$$

$$-\frac{31}{15}t + \frac{25}{96}t^2 - \frac{1}{48}t^3 + \frac{1}{576}t^4 + 8$$

Extract the coefficients of the constituents.

```
> for r from 1 to pno7  do
   for coeffdeg from 0 to d do
    lno7c[coeffdeg,r]:=coeff(lno7constituent[r],t,coeffdeg):
    #print( r, coeffdeg, lno7c[coeffdeg,r] ):
   od:
  od:
```

Print and analyze the constituent coefficients for periods. First the higher coefficients, which are constant. Print the first coefficient, then any that don't repeat the preceding value (there are none).

```
> for coeffdeg from 3 to d do
    print("degree", coeffdeg, "coeff", lno7c[coeffdeg,1]):
    for r from 2 to pno7  do
      stepdifference:=lno7c[coeffdeg,r]-lno7c[coeffdeg,r-1]:
      if( stepdifference<>0 ) then
      print(r,lno7c[coeffdeg,r],stepdifference):
      fi:
    od:
  od:
```

$$\text{"degree"}, 3, \text{"coeff"}, \frac{-1}{48}$$

$$\text{"degree"}, 4, \text{"coeff"}, \frac{1}{576}$$

Next, the constant terms, whose period is expected to be pno7=120. Print all constant terms up to the presumed period "stepsize". Print the difference (at step "stepsize") if they are not repeating.

```
> stepsize:=pno7;
  for r from 1 to stepsize do
    print(r, lno7c[0,r]);
  od:
  for r from stepsize+1 to pno7  do
    stepdifference:=lno7c[0,r]-lno7c[0,r-stepsize]:
    if( stepdifference<>0 ) then print(r,lno7c[0,r],stepdifference): fi:
  od:
  print("Constant terms completed.");
```

$$stepsize := 120$$

$$1, \frac{2027}{2880}$$

$$2, \frac{553}{360}$$

$$3, \frac{979}{320}$$

$$4, \frac{229}{90}$$

$$5, \frac{847}{576}$$

$$6, \frac{221}{40}$$

$$7, \frac{1739}{2880}$$

$$8, \frac{104}{45}$$

$$9, \frac{1427}{320}$$

$$10, \frac{149}{72}$$

$$11, \frac{-1813}{2880}$$

$$12, \frac{73}{10}$$

$$13, \frac{2891}{2880}$$

$$14, \frac{301}{360}$$

$$15, \frac{279}{64}$$

$$16, \frac{128}{45}$$

$$17, \frac{2219}{2880}$$

$$18, \frac{233}{40}$$

$$19, \frac{-277}{2880}$$

$$20, \frac{47}{18}$$

$$21, \frac{1523}{320}$$

$$22, \frac{493}{360}$$

$$23, \frac{-949}{2880}$$

$$24, \frac{38}{5}$$

$$25, \frac{751}{576}$$

$$26, \frac{409}{360}$$

$$27, \frac{1171}{320}$$

$$28, \frac{193}{90}$$

$$29, \frac{3083}{2880}$$

$$30, \frac{49}{8}$$

$$31, \frac{587}{2880}$$

$$32, \frac{131}{45}$$

$$33, \frac{1299}{320}$$

$$34, \frac{601}{360}$$

$$35, \frac{-17}{576}$$

$$36, \frac{69}{10}$$

$$37, \frac{4619}{2880}$$

$$38, \frac{157}{360}$$

$$39, \frac{1267}{320}$$

$$40, \frac{31}{9}$$

$$41, \frac{1067}{2880}$$

$$42, \frac{257}{40}$$

$$43, \frac{-1429}{2880}$$

$$44, \frac{199}{90}$$

$45, \frac{343}{64}$

$46, \frac{349}{360}$

$47, \frac{779}{2880}$

$48, \frac{36}{5}$

$49, \frac{2603}{2880}$

$50, \frac{125}{72}$

$51, \frac{1043}{320}$

$52, \frac{247}{90}$

$53, \frac{1931}{2880}$

$54, \frac{229}{40}$

$55, \frac{463}{576}$

$56, \frac{113}{45}$

$57, \frac{1491}{320}$

$58, \frac{457}{360}$

$59, \frac{-1237}{2880}$

$60, \frac{15}{2}$

$61, \frac{3467}{2880}$

$62, \frac{373}{360}$

$63, \frac{1139}{320}$

$64, \frac{137}{45}$

$65, \frac{559}{576}$

$66, \frac{241}{40}$

$67, \frac{299}{2880}$

$68, \frac{163}{90}$

$69, \frac{1587}{320}$

$70, \frac{113}{72}$

$71, \frac{-373}{2880}$

$72, \frac{39}{5}$

$73, \frac{1451}{2880}$

$74, \frac{481}{360}$

$75, \frac{247}{64}$

$76, \frac{211}{90}$

$77, \frac{3659}{2880}$

$78, \frac{213}{40}$

$79, \frac{1163}{2880}$

$80, \frac{28}{9}$

$81, \frac{1363}{320}$

$82, \frac{673}{360}$

$83, \frac{-2389}{2880}$

$84, \frac{71}{10}$

$85, \frac{1039}{576}$

$86, \frac{229}{360}$

$87, \frac{1331}{320}$

$88, \frac{119}{45}$

$89, \frac{1643}{2880}$

$90, \frac{53}{8}$

$91, \frac{-853}{2880}$

$92, \frac{217}{90}$

$93, \frac{1459}{320}$

$94, \frac{421}{360}$

$95, \frac{271}{576}$

$96, \frac{37}{5}$

$97, \frac{3179}{2880}$

$98, \frac{337}{360}$

$99, \frac{1107}{320}$

$100, \frac{53}{18}$

$101, \frac{2507}{2880}$

$102, \frac{237}{40}$

$103, \frac{11}{2880}$

$104, \frac{122}{45}$

$$105, \frac{311}{64}$$

$$106, \frac{529}{360}$$

$$107, \frac{-661}{2880}$$

$$108, \frac{67}{10}$$

$$109, \frac{4043}{2880}$$

$$110, \frac{89}{72}$$

$$111, \frac{1203}{320}$$

$$112, \frac{146}{45}$$

$$113, \frac{491}{2880}$$

$$114, \frac{249}{40}$$

$$115, \frac{175}{576}$$

$$116, \frac{181}{90}$$

$$117, \frac{1651}{320}$$

$$118, \frac{277}{360}$$

$$119, \frac{203}{2880}$$

$$120, 8$$

"Constant terms completed."

Now, the linear terms. First print all linear coefficients up to the presumed period "stepsize". Then analyze for period and print the difference (at step "stepsize") if they are not repeating.

```
> stepsize:=6;
  for r from 1 to stepsize do
    print(r, lno7c[1,r]);
  od:
  for r from stepsize+1 to pno7  do
    stepdifference:=lno7c[1,r]-lno7c[1,r-stepsize]:
    if( stepdifference<>0 ) then print(r,lno7c[1,r],stepdifference): fi:
  od:
```

```
print("Linear coefficients completed.");
```

$$stepsize := 6$$

$$1, \frac{-103}{120}$$

$$2, \frac{-133}{120}$$

$$3, \frac{-47}{30}$$

$$4, \frac{-37}{30}$$

$$5, \frac{-103}{120}$$

$$6, \frac{-233}{120}$$

$$7, \frac{-11}{15}, \frac{1}{8}$$

$$8, \frac{-37}{30}, \frac{-1}{8}$$

$$9, \frac{-203}{120}, \frac{-1}{8}$$

$$10, \frac{-133}{120}, \frac{1}{8}$$

$$11, \frac{-11}{15}, \frac{1}{8}$$

$$12, \frac{-31}{15}, \frac{-1}{8}$$

$$13, \frac{-103}{120}, \frac{-1}{8}$$

$$14, \frac{-133}{120}, \frac{1}{8}$$

$$15, \frac{-47}{30}, \frac{1}{8}$$

$$16, \frac{-37}{30}, \frac{-1}{8}$$

$$17, \frac{-103}{120}, \frac{-1}{8}$$

$$18, \frac{-233}{120}, \frac{1}{8}$$

$$19, \frac{-11}{15}, \frac{1}{8}$$

$$20, \frac{-37}{30}, \frac{-1}{8}$$

$$21, \frac{-203}{120}, \frac{-1}{8}$$

$$22, \frac{-133}{120}, \frac{1}{8}$$

$$23, \frac{-11}{15}, \frac{1}{8}$$

$$24, \frac{-31}{15}, \frac{-1}{8}$$

$$25, \frac{-103}{120}, \frac{-1}{8}$$

$$26, \frac{-133}{120}, \frac{1}{8}$$

$$27, \frac{-47}{30}, \frac{1}{8}$$

$$28, \frac{-37}{30}, \frac{-1}{8}$$

$$29, \frac{-103}{120}, \frac{-1}{8}$$

$$30, \frac{-233}{120}, \frac{1}{8}$$

$$31, \frac{-11}{15}, \frac{1}{8}$$

$$32, \frac{-37}{30}, \frac{-1}{8}$$

$$33, \frac{-203}{120}, \frac{-1}{8}$$

$$34, \frac{-133}{120}, \frac{1}{8}$$

$$35, \frac{-11}{15}, \frac{1}{8}$$

$$36, \frac{-31}{15}, \frac{-1}{8}$$

$$37, \frac{-103}{120}, \frac{-1}{8}$$

$$38, \frac{-133}{120}, \frac{1}{8}$$

$$39, \frac{-47}{30}, \frac{1}{8}$$

$$40, \frac{-37}{30}, \frac{-1}{8}$$

$$41, \frac{-103}{120}, \frac{-1}{8}$$

$$42, \frac{-233}{120}, \frac{1}{8}$$

$$43, \frac{-11}{15}, \frac{1}{8}$$

$$44, \frac{-37}{30}, \frac{-1}{8}$$

$$45, \frac{-203}{120}, \frac{-1}{8}$$

$$46, \frac{-133}{120}, \frac{1}{8}$$

$$47, \frac{-11}{15}, \frac{1}{8}$$

$$48, \frac{-31}{15}, \frac{-1}{8}$$

$$49, \frac{-103}{120}, \frac{-1}{8}$$

$$50, \frac{-133}{120}, \frac{1}{8}$$

$$51, \frac{-47}{30}, \frac{1}{8}$$

$$52, \frac{-37}{30}, \frac{-1}{8}$$

$$53, \frac{-103}{120}, \frac{-1}{8}$$

$$54, \frac{-233}{120}, \frac{1}{8}$$

$$55, \frac{-11}{15}, \frac{1}{8}$$

$$56, \frac{-37}{30}, \frac{-1}{8}$$

$$57, \frac{-203}{120}, \frac{-1}{8}$$

$$58, \frac{-133}{120}, \frac{1}{8}$$

$$59, \frac{-11}{15}, \frac{1}{8}$$

$60, \frac{-31}{15}, \frac{-1}{8}$

$61, \frac{-103}{120}, \frac{-1}{8}$

$62, \frac{-133}{120}, \frac{1}{8}$

$63, \frac{-47}{30}, \frac{1}{8}$

$64, \frac{-37}{30}, \frac{-1}{8}$

$65, \frac{-103}{120}, \frac{-1}{8}$

$66, \frac{-233}{120}, \frac{1}{8}$

$67, \frac{-11}{15}, \frac{1}{8}$

$68, \frac{-37}{30}, \frac{-1}{8}$

$69, \frac{-203}{120}, \frac{-1}{8}$

$70, \frac{-133}{120}, \frac{1}{8}$

$71, \frac{-11}{15}, \frac{1}{8}$

$72, \frac{-31}{15}, \frac{-1}{8}$

$73, \frac{-103}{120}, \frac{-1}{8}$

$74, \frac{-133}{120}, \frac{1}{8}$

$75, \frac{-47}{30}, \frac{1}{8}$

$76, \frac{-37}{30}, \frac{-1}{8}$

$77, \frac{-103}{120}, \frac{-1}{8}$

$78, \frac{-233}{120}, \frac{1}{8}$

$79, \frac{-11}{15}, \frac{1}{8}$

$$80, \frac{-37}{30}, \frac{-1}{8}$$
$$81, \frac{-203}{120}, \frac{-1}{8}$$
$$82, \frac{-133}{120}, \frac{1}{8}$$
$$83, \frac{-11}{15}, \frac{1}{8}$$
$$84, \frac{-31}{15}, \frac{-1}{8}$$
$$85, \frac{-103}{120}, \frac{-1}{8}$$
$$86, \frac{-133}{120}, \frac{1}{8}$$
$$87, \frac{-47}{30}, \frac{1}{8}$$
$$88, \frac{-37}{30}, \frac{-1}{8}$$
$$89, \frac{-103}{120}, \frac{-1}{8}$$
$$90, \frac{-233}{120}, \frac{1}{8}$$
$$91, \frac{-11}{15}, \frac{1}{8}$$
$$92, \frac{-37}{30}, \frac{-1}{8}$$
$$93, \frac{-203}{120}, \frac{-1}{8}$$
$$94, \frac{-133}{120}, \frac{1}{8}$$
$$95, \frac{-11}{15}, \frac{1}{8}$$
$$96, \frac{-31}{15}, \frac{-1}{8}$$
$$97, \frac{-103}{120}, \frac{-1}{8}$$
$$98, \frac{-133}{120}, \frac{1}{8}$$
$$99, \frac{-47}{30}, \frac{1}{8}$$

$$100, \frac{-37}{30}, \frac{-1}{8}$$

$$101, \frac{-103}{120}, \frac{-1}{8}$$

$$102, \frac{-233}{120}, \frac{1}{8}$$

$$103, \frac{-11}{15}, \frac{1}{8}$$

$$104, \frac{-37}{30}, \frac{-1}{8}$$

$$105, \frac{-203}{120}, \frac{-1}{8}$$

$$106, \frac{-133}{120}, \frac{1}{8}$$

$$107, \frac{-11}{15}, \frac{1}{8}$$

$$108, \frac{-31}{15}, \frac{-1}{8}$$

$$109, \frac{-103}{120}, \frac{-1}{8}$$

$$110, \frac{-133}{120}, \frac{1}{8}$$

$$111, \frac{-47}{30}, \frac{1}{8}$$

$$112, \frac{-37}{30}, \frac{-1}{8}$$

$$113, \frac{-103}{120}, \frac{-1}{8}$$

$$114, \frac{-233}{120}, \frac{1}{8}$$

$$115, \frac{-11}{15}, \frac{1}{8}$$

$$116, \frac{-37}{30}, \frac{-1}{8}$$

$$117, \frac{-203}{120}, \frac{-1}{8}$$

$$118, \frac{-133}{120}, \frac{1}{8}$$

$$119, \frac{-11}{15}, \frac{1}{8}$$

$$120, \frac{-31}{15}, \frac{-1}{8}$$

"Linear coefficients completed."

The quadratic terms. First print all quadratic coefficients up to the presumed period "stepsize". Then analyze for period and print the difference (at step "stepsize") if they are not repeating.

```
> stepsize:=2;
  for r from 1 to stepsize do
    print(r, lno7c[2,r]);
  od:
  for r from stepsize+1 to pno7  do
    stepdifference:=lno7c[2,r]-lno7c[2,r-stepsize]:
    if( stepdifference<>0 ) then print(r,lno7c[2,r],stepdifference): fi:
  od:
  print("Quadratic coefficients completed.");
```

$$stepsize := 2$$

$$1, \frac{25}{144}$$

$$2, \frac{59}{288}$$

$$3, \frac{11}{48}, \frac{1}{18}$$

$$5, \frac{25}{144}, \frac{-1}{18}$$

$$6, \frac{25}{96}, \frac{1}{18}$$

$$8, \frac{59}{288}, \frac{-1}{18}$$

$$9, \frac{11}{48}, \frac{1}{18}$$

$$11, \frac{25}{144}, \frac{-1}{18}$$

$$12, \frac{25}{96}, \frac{1}{18}$$

$$14, \frac{59}{288}, \frac{-1}{18}$$

$$15, \frac{11}{48}, \frac{1}{18}$$

$$17, \frac{25}{144}, \frac{-1}{18}$$

$$18, \frac{25}{96}, \frac{1}{18}$$

$$20, \frac{59}{288}, \frac{-1}{18}$$

$$21, \frac{11}{48}, \frac{1}{18}$$

$$23, \frac{25}{144}, \frac{-1}{18}$$

$$24, \frac{25}{96}, \frac{1}{18}$$

$$26, \frac{59}{288}, \frac{-1}{18}$$

$$27, \frac{11}{48}, \frac{1}{18}$$

$$29, \frac{25}{144}, \frac{-1}{18}$$

$$30, \frac{25}{96}, \frac{1}{18}$$

$$32, \frac{59}{288}, \frac{-1}{18}$$

$$33, \frac{11}{48}, \frac{1}{18}$$

$$35, \frac{25}{144}, \frac{-1}{18}$$

$$36, \frac{25}{96}, \frac{1}{18}$$

$$38, \frac{59}{288}, \frac{-1}{18}$$

$$39, \frac{11}{48}, \frac{1}{18}$$

$$41, \frac{25}{144}, \frac{-1}{18}$$

$$42, \frac{25}{96}, \frac{1}{18}$$

$$44, \frac{59}{288}, \frac{-1}{18}$$

$$45, \frac{11}{48}, \frac{1}{18}$$

$$47, \frac{25}{144}, \frac{-1}{18}$$

$$48, \frac{25}{96}, \frac{1}{18}$$

$$50, \frac{59}{288}, \frac{-1}{18}$$

$$51, \frac{11}{48}, \frac{1}{18}$$

$$53, \frac{25}{144}, \frac{-1}{18}$$

$$54, \frac{25}{96}, \frac{1}{18}$$

$$56, \frac{59}{288}, \frac{-1}{18}$$

$$57, \frac{11}{48}, \frac{1}{18}$$

$$59, \frac{25}{144}, \frac{-1}{18}$$

$$60, \frac{25}{96}, \frac{1}{18}$$

$$62, \frac{59}{288}, \frac{-1}{18}$$

$$63, \frac{11}{48}, \frac{1}{18}$$

$$65, \frac{25}{144}, \frac{-1}{18}$$

$$66, \frac{25}{96}, \frac{1}{18}$$

$$68, \frac{59}{288}, \frac{-1}{18}$$

$$69, \frac{11}{48}, \frac{1}{18}$$

$$71, \frac{25}{144}, \frac{-1}{18}$$

$$72, \frac{25}{96}, \frac{1}{18}$$

$$74, \frac{59}{288}, \frac{-1}{18}$$

$$75, \frac{11}{48}, \frac{1}{18}$$

$$77, \frac{25}{144}, \frac{-1}{18}$$

$$78, \frac{25}{96}, \frac{1}{18}$$

$80, \frac{59}{288}, \frac{-1}{18}$

$81, \frac{11}{48}, \frac{1}{18}$

$83, \frac{25}{144}, \frac{-1}{18}$

$84, \frac{25}{96}, \frac{1}{18}$

$86, \frac{59}{288}, \frac{-1}{18}$

$87, \frac{11}{48}, \frac{1}{18}$

$89, \frac{25}{144}, \frac{-1}{18}$

$90, \frac{25}{96}, \frac{1}{18}$

$92, \frac{59}{288}, \frac{-1}{18}$

$93, \frac{11}{48}, \frac{1}{18}$

$95, \frac{25}{144}, \frac{-1}{18}$

$96, \frac{25}{96}, \frac{1}{18}$

$98, \frac{59}{288}, \frac{-1}{18}$

$99, \frac{11}{48}, \frac{1}{18}$

$101, \frac{25}{144}, \frac{-1}{18}$

$102, \frac{25}{96}, \frac{1}{18}$

$104, \frac{59}{288}, \frac{-1}{18}$

$105, \frac{11}{48}, \frac{1}{18}$

$107, \frac{25}{144}, \frac{-1}{18}$

$108, \frac{25}{96}, \frac{1}{18}$

$$110, \frac{59}{288}, \frac{-1}{18}$$

$$111, \frac{11}{48}, \frac{1}{18}$$

$$113, \frac{25}{144}, \frac{-1}{18}$$

$$114, \frac{25}{96}, \frac{1}{18}$$

$$116, \frac{59}{288}, \frac{-1}{18}$$

$$117, \frac{11}{48}, \frac{1}{18}$$

$$119, \frac{25}{144}, \frac{-1}{18}$$

$$120, \frac{25}{96}, \frac{1}{18}$$

"Quadratic coefficients completed."

Third, the H constituents (denominator power 7).

```
> L7gfstandnum; p7; d7;
```

$$72\,x^{10}\,(x^{20}+x^{19}+x^{18}+x^{17}+x^{16}+x^{15}+x^{14}+x^{13}+x^{12}+x^{11}+x^{10}+x^{9}+x^{8}+x^{7}+x^{6}+x^{5}+x^{4}+x^{3}+x^{2}+x+1)\,(x^{12}-x^{11}+x^{9}-x^{8}+x^{6}-x^{4}+x^{3}-x+1)$$

$$21$$

$$1$$

Calculate the zeroth constituent. Find its constant term.

```
> L7zeroth:=expand(
  sum(coeff(L7gfstandnum,x,p7*j)*binomial(d7+t/p7-j,d7),j=0..d7+1) );
  print(subs(t=0,L7zeroth)):
```

$$L7zeroth := -72 + \frac{24}{7}\,t$$

$$-72$$

Extract the constituents of the total magilatin counting function.

```
> L7constituent[0]:=L7zeroth:
  for r from 1 to p7  do
    L7constituent[r]:=expand(sum(
  coeff(L7gfstandnum,x,p7*j+r)*binomial(d7+(t-r)/p7-j,d7),   j=0..d7 )):
  #  print(r):
  #  print( L7constituent[r] ):
  #  print( factor(L7constituent[r]) ):
    print( L7constituent[r]-24/7*(t-r) ):
  od;
```

$$L7constituent_1 := \frac{24}{7}t - \frac{24}{7}$$

$$0$$

$$L7constituent_2 := \frac{24}{7}t - \frac{48}{7}$$

$$0$$

$$L7constituent_3 := \frac{24}{7}t - \frac{72}{7}$$

$$0$$

$$L7constituent_4 := \frac{24}{7}t - \frac{96}{7}$$

$$0$$

$$L7constituent_5 := \frac{24}{7}t - \frac{120}{7}$$

$$0$$

$$L7constituent_6 := \frac{24}{7}t - \frac{144}{7}$$

$$0$$

$$L7constituent_7 := \frac{24}{7}t - 24$$

$$0$$

$$L7constituent_8 := \frac{24}{7}t - \frac{192}{7}$$

$$0$$

$$L7constituent_9 := \frac{24}{7}t - \frac{216}{7}$$

$$0$$

$$L7constituent_{10} := \frac{264}{7} + \frac{24}{7}t$$

$$72$$

$$L7constituent_{11} := \frac{24}{7}t - \frac{264}{7}$$

$$0$$

$$L7constituent_{12} := \frac{24}{7}t - \frac{288}{7}$$

$$0$$

$$L7constituent_{13} := \frac{192}{7} + \frac{24}{7}t$$

$$72$$

$$L7constituent_{14} := \frac{24}{7} t - 48$$

$$0$$

$$L7constituent_{15} := \frac{24}{7} t - \frac{360}{7}$$

$$0$$

$$L7constituent_{16} := \frac{120}{7} + \frac{24}{7} t$$

$$72$$

$$L7constituent_{17} := \frac{96}{7} + \frac{24}{7} t$$

$$72$$

$$L7constituent_{18} := \frac{24}{7} t - \frac{432}{7}$$

$$0$$

$$L7constituent_{19} := \frac{48}{7} + \frac{24}{7} t$$

$$72$$

$$L7constituent_{20} := \frac{24}{7} + \frac{24}{7} t$$

$$72$$

$$L7constituent_{21} := -72 + \frac{24}{7} t$$

$$0$$

Extract the coefficients of the constituents.

```
> for r from 1 to p7  do
   for coeffdeg from 0 to d7 do
    L7c[coeffdeg,r]:=coeff(L7constituent[r],t,coeffdeg):
    #print( r, L7c[coeffdeg,r] ):
   od:
  od:
```

Next, the constant terms, whose period is expected to be p7=21. Print all constant terms up to the presumed period "stepsize". Print the difference (at step "stepsize") if they are not repeating.

```
> stepsize:=21;
  for r from 1 to stepsize do
    print(r, L7c[0,r]);
  od:
  for r from stepsize+1 to p7  do
    stepdifference:=L7c[0,r]-L7c[0,r-stepsize]:
    if( stepdifference<>0 ) then print(r,L7c[0,r],stepdifference): fi:
    #print(r,L7c[0,r],stepdifference);
  od:
  print("Constant terms completed.");
```

$$stepsize := 21$$

$1, \frac{-24}{7}$

$2, \frac{-48}{7}$

$3, \frac{-72}{7}$

$4, \frac{-96}{7}$

$5, \frac{-120}{7}$

$6, \frac{-144}{7}$

$7, -24$

$8, \frac{-192}{7}$

$9, \frac{-216}{7}$

$10, \frac{264}{7}$

$11, \frac{-264}{7}$

$12, \frac{-288}{7}$

$13, \frac{192}{7}$

$14, -48$

$15, \frac{-360}{7}$

$16, \frac{120}{7}$

$17, \frac{96}{7}$

$18, \frac{-432}{7}$

$19, \frac{48}{7}$

$20, \frac{24}{7}$

$21, -72$

"Constant terms completed."

Calculate the zeroth constituent of the **symmetry-type H term** . Find its constant term.

```
> l7zeroth:=expand(
  sum(coeff(numer(l7gf),x,p7*j)*binomial(d7+t/p7-j,d7),j=0..d7+1) );
  print(subs(t=0,l7zeroth)):
```

$$l7zeroth := -1 + \frac{1}{21} t$$

$$-1$$

Extract the constituents of the magilatin symmetry-type counting function.

```
> l7constituent[0]:=l7zeroth:
  for r from 1 to p7  do
    l7constituent[r]:=expand(sum(
  coeff(numer(l7gf),x,p7*j+r)*binomial(d7+(t-r)/p7-j,d7),   j=0..d7)):
  #  print(r):
  #  print( l7constituent[r] ):
  #  print( factor(l7constituent[r]) ):
    print( l7constituent[r]-1/21*(t-r) ):
  od;
```

$$l7constituent_1 := \frac{1}{21} t - \frac{1}{21}$$

$$0$$

$$l7constituent_2 := \frac{1}{21} t - \frac{2}{21}$$

$$0$$

$$l7constituent_3 := \frac{1}{21} t - \frac{1}{7}$$

$$0$$

$$l7constituent_4 := \frac{1}{21} t - \frac{4}{21}$$

$$0$$

$$l7constituent_5 := \frac{1}{21} t - \frac{5}{21}$$

$$0$$

$$l7constituent_6 := \frac{1}{21} t - \frac{2}{7}$$

$$0$$

$$l7constituent_7 := \frac{1}{21} t - \frac{1}{3}$$

$$0$$

$$l7constituent_8 := \frac{1}{21} t - \frac{8}{21}$$

$$0$$

$$l7constituent_9 := \frac{1}{21}t - \frac{3}{7}$$

$$0$$

$$l7constituent_{10} := \frac{11}{21} + \frac{1}{21}t$$

$$1$$

$$l7constituent_{11} := \frac{1}{21}t - \frac{11}{21}$$

$$0$$

$$l7constituent_{12} := \frac{1}{21}t - \frac{4}{7}$$

$$0$$

$$l7constituent_{13} := \frac{8}{21} + \frac{1}{21}t$$

$$1$$

$$l7constituent_{14} := \frac{1}{21}t - \frac{2}{3}$$

$$0$$

$$l7constituent_{15} := \frac{1}{21}t - \frac{5}{7}$$

$$0$$

$$l7constituent_{16} := \frac{5}{21} + \frac{1}{21}t$$

$$1$$

$$l7constituent_{17} := \frac{4}{21} + \frac{1}{21}t$$

$$1$$

$$l7constituent_{18} := \frac{1}{21}t - \frac{6}{7}$$

$$0$$

$$l7constituent_{19} := \frac{2}{21} + \frac{1}{21}t$$

$$1$$

$$l7constituent_{20} := \frac{1}{21} + \frac{1}{21}t$$

$$1$$

$$l7constituent_{21} := -1 + \frac{1}{21}t$$

$$0$$

Extract the coefficients of the constituents.

```
> for r from 1 to p7  do
    for coeffdeg from 0 to d7+1 do
     l7c[coeffdeg,r]:=coeff(l7constituent[r],t,coeffdeg):
     #print( r, coeffdeg, l7c[coeffdeg,r] ):
    od:
  od:
```

Next, the constant terms, whose period is expected to be p7=21. Print all constant terms up to the presumed period "stepsize". Print the difference (at step "stepsize") if they are not repeating.

```
> stepsize:=21;
  for r from 1 to stepsize do
    print(r, l7c[0,r]);
  od:
  for r from stepsize+1 to p7  do
    stepdifference:=l7c[0,r]-l7c[0,r-stepsize]:
    if( stepdifference<>0 ) then print(r,l7c[0,r],stepdifference): fi:
  od:
  print("Constant terms completed.");
```

$$stepsize := 21$$

$$1, \frac{-1}{21}$$

$$2, \frac{-2}{21}$$

$$3, \frac{-1}{7}$$

$$4, \frac{-4}{21}$$

$$5, \frac{-5}{21}$$

$$6, \frac{-2}{7}$$

$$7, \frac{-1}{3}$$

$$8, \frac{-8}{21}$$

$$9, \frac{-3}{7}$$

$$10, \frac{11}{21}$$

$$11, \frac{-11}{21}$$

$$12, \frac{-4}{7}$$

$$13, \frac{8}{21}$$

$$14, \frac{-2}{3}$$

$$15, \frac{-5}{7}$$

$$16, \frac{5}{21}$$

$$17, \frac{4}{21}$$

$$18, \frac{-6}{7}$$

$$19, \frac{2}{21}$$

$$20, \frac{1}{21}$$

21, -1

"Constant terms completed."

>