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ЛР 6

1. Определить номер варианта nv = Nmod6 + 1 (N- номер по списку в группе), и выбрать многочлен для построения РСЛОС из таблицы:

1. Определить номер варианта nv = N_{mod6} + 1 (N- номер по списку в группе), и выбрать многочлен для построения РСЛОС из таблицы:

nv	Многочлен	nv	Многочлен
1	$1+x^2+x^5$	4	$1+x+x^2+x^4+x^5$
2	$1+x^3+x^5$	5	$1+x+x^3+x^4+x^5$
3	$1+x+x^2+x^3+x^5$	6	$1+x^2+x^3+x^4+x^5$

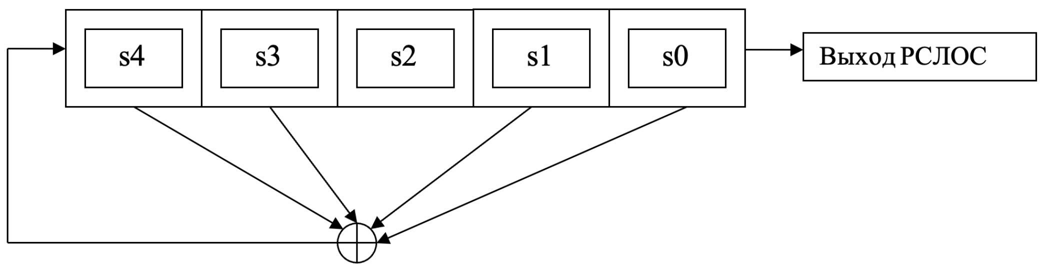
N=4; nv=N mod 6 + 1 = 4+1=5

Многочлен: 1+x+x^3+x^4+x^5

2. Составить таблицу соответствия степеней многочлена, элементов РСЛОС и коэффициентов обратной связи.

Многочлен	$1*x^5$	$1*x^4$	$1*x^3$	$0*x^2$	1*x	1
РСЛОС		s4	s3	s2	s1	s0
Коэффициенты обратной связи		1	1	0	1	1

3. Нарисовать структуру РСЛОС с учетом функции обратной связи.



4. Разработать программный модуль, реализующий работу заданного РСЛОС, провести проверку работоспособности при начальной загрузке 1Fh и получить выходную последовательность длиной 2*(25-1).

2*(2^5-1)=2*(32-1)=2*31=62

1Fh=1*16+15=31=11111b

In[143]:=
```
RSLOS[list0_, length0_] := Module[{list = list0, length = length0},
   outlfsr = {};
   Do[outlfsr = Append[outlfsr, list[[5]]];
    list = {Mod[list[[5]] + list[[4]] + list[[2]] + list[[1]], 2],
      list[[1]], list[[2]], list[[3]], list[[4]]}, {i, length}];
   outlfsr
  ];
list4 = RSLOS[{1, 1, 1, 1, 1}, 2 * (2^5 - 1)]
Length[list4]
```

Out[144]=
```
{1, 1, 1, 1, 1, 0, 1, 1, 0, 0, 1, 1, 1, 0, 0, 0, 0, 1, 1, 0, 1, 0, 1, 0, 0, 1, 0, 0, 0, 1, 0,
 1, 1, 1, 1, 1, 0, 1, 1, 0, 0, 1, 1, 1, 0, 0, 0, 0, 1, 1, 0, 1, 0, 1, 0, 0, 1, 0, 0, 0, 1, 0}
```

Out[145]= 62

5. Определить “вручную” и программным путем число тактов РСЛОС для достижения состояния 1Eh из начального состояния N.

N=4=0100h=00100h

Определение программным путём:

In[146]:=
```
{s4, s3, s2, s1, s0} = {0, 0, 1, 0, 0};
Do[{s4, s3, s2, s1, s0} = {Mod[s0 + s1 + s3 + s4, 2], s4, s3, s2, s1};
  If[{s4, s3, s2, s1, s0} == {1, 1, 1, 1, 0}, {Print["Число тактов: ", i];
    Break[];}], {i, 2^5 - 1}];
```

```
Число тактов: 7
```

Определение числа тактов вручную:

6. Сформировать программным путем матрицу m и вектор b, с параметрами n=5 k=N+7 ,для решения системы линейных уравнений (m*c)mod2 = b, которая позволяет по 2n элементам последовательности S РСЛОС (см. п.4) определить коэффициенты обратной связи.

In[148]:=
```
n = 5;
k = 4 + 7;
list6 = list4[[k ;; k + 2 * n - 1]]
```

Out[150]=
```
{1, 1, 1, 0, 0, 0, 0, 1, 1, 0}
```

In[151]:=
```
m = Table[0, {n}, {n}];
Do[m[[i]] = list6[[i ;; i + n - 1]], {i, n}];
m // MatrixForm
```

Out[153]//MatrixForm=

$$\begin{pmatrix} 1 & 1 & 1 & 0 & 0 \\ 1 & 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 1 & 1 \end{pmatrix}$$

In[154]:=
```
b = list4[[k + n ;; k + 2 * n - 1]]
```
Out[154]=
```
{0, 0, 1, 1, 0}
```

7. Найти коэффициенты обратной связи {c4,c3,c2,c1,c0} решая следующее матричное уравнение:
Reverse[LinearSolve[m,b,Modulus]2]].

In[155]:=
```
Reverse[LinearSolve[m, b, Modulus → 2]]
```
Out[155]=
```
{1, 1, 0, 1, 1}
```

8. Проверить линейную сложность, применив алгоритм Берлекэмпа-Масси к случайному отрезку последовательности длиной 2n.

In[156]:=
```
s = list4[[1 ;; 2 * 5]];
Lol = 0; fol = 1;
diff = 0; Clear[x];
f = 1;
L = 0;
g = CoefficientList[f, {x}];
Do[If[Mod[Sum[g[[i]] s[[j - 1 - L + i]], {i, 1, L}], 2] == s[[j]], diff = diff + 1,
  Lne = Max[j - L, L];          fne = PolynomialMod[x^(Lne-L) f + x^(Lne-Lol-diff-1) fol, 2];
  If[Lne ≠ L, fol = f;
   Lol = L;
   L = Lne;
   diff = 0, diff = diff + 1];
  f = fne;
  g = CoefficientList[f, {x}]];
 Print["j=", j, ",  L=", L, ",  f=", f], {j, Length[s]}]
```

j=1, L=1, f=1 + x

j=2, L=1, f=1 + x

j=3, L=1, f=1 + x

j=4, L=1, f=1 + x

j=5, L=1, f=1 + x

j=6, L=5, f=1 + x^4 + x^5

j=7, L=5, f=1 + x^4 + x^5

j=8, L=5, f=1 + x^2 + x^3 + x^4 + x^5

j=9, L=5, f=1 + x + x^3 + x^4 + x^5

j=10, L=5, f=1 + x + x^3 + x^4 + x^5

9. На базе трех РСЛОС с номерами вариантов nv, (nv+2)mod6, (nv+4)mod6,сформировать программную реализацию генератора Геффе. Использовать поразрядные логические операторы: BitAnd[], BitNot[], BitXor[]. Получить последовательность в 150 бит.

```
In[160]:= nv = Mod[4, 6] + 1
Out[160]= 5

In[161]:= Mod[nv + 2, 6]
Out[161]= 1

In[162]:= Mod[nv + 4, 6]
Out[162]= 3

In[163]:= RSLOS1 = {}; {s4, s3, s2, s1, s0} = {1, 1, 0, 1, 1};
          Do[RSLOS1 = Append[RSLOS1, s0];
            {s4, s3, s2, s1, s0} = {Mod[s0 + s1 + s3 + s4, 2], s4, s3, s2, s1}, {i, 150}];
          RSLOS1

Out[165]= {1, 1, 0, 1, 1, 0, 0, 1, 1, 1, 0, 0, 0, 0, 1, 1, 0, 1, 0, 1, 0, 0, 1, 0, 0, 0, 1, 0, 1, 1, 1,
           1, 1, 0, 1, 1, 0, 0, 1, 1, 1, 0, 0, 0, 0, 1, 1, 0, 1, 0, 1, 0, 0, 1, 0, 0, 0, 1, 0, 1, 1,
           1, 1, 1, 0, 1, 1, 0, 0, 1, 1, 1, 0, 0, 0, 0, 1, 1, 0, 1, 0, 1, 0, 0, 1, 0, 0, 0, 1, 0, 1,
           1, 1, 1, 1, 0, 1, 1, 0, 0, 1, 1, 1, 0, 0, 0, 0, 1, 1, 0, 1, 0, 1, 0, 0, 1, 0, 0, 0, 1, 0,
           1, 1, 1, 1, 1, 0, 1, 1, 0, 0, 1, 1, 1, 0, 0, 0, 0, 1, 1, 0, 1, 0, 1, 0, 0, 1, 0, 0, 0}

In[166]:= RSLOS2 = {}; {s4, s3, s2, s1, s0} = {0, 0, 1, 0, 1};
          Do[RSLOS2 = Append[RSLOS2, s0];
            {s4, s3, s2, s1, s0} = {Mod[s0 + s2, 2], s4, s3, s2, s1}, {i, 150}];
          RSLOS2

Out[168]= {1, 0, 1, 0, 0, 0, 0, 1, 0, 0, 1, 0, 1, 1, 0, 0, 1, 1, 1, 1, 1, 0, 0, 0, 1, 1, 0, 1, 1, 1, 0,
           1, 0, 1, 0, 0, 0, 0, 1, 0, 0, 1, 0, 1, 1, 0, 0, 1, 1, 1, 1, 1, 0, 0, 0, 1, 1, 0, 1, 1, 1,
           0, 1, 0, 1, 0, 0, 0, 0, 1, 0, 0, 1, 0, 1, 1, 0, 0, 1, 1, 1, 1, 1, 0, 0, 0, 1, 1, 0, 1, 1,
           1, 0, 1, 0, 1, 0, 0, 0, 0, 1, 0, 0, 1, 0, 1, 1, 0, 0, 1, 1, 1, 1, 1, 0, 0, 0, 1, 1, 0, 1,
           1, 1, 0, 1, 0, 1, 0, 0, 0, 0, 1, 0, 0, 1, 0, 1, 1, 0, 0, 1, 1, 1, 1, 1, 0, 0, 0, 1, 1}

In[169]:= RSLOS3 = {}; {s4, s3, s2, s1, s0} = {0, 1, 1, 1, 1};
          Do[RSLOS3 = Append[RSLOS3, s0];
            {s4, s3, s2, s1, s0} = {Mod[s0 + s1 + s2 + s3, 2], s4, s3, s2, s1}, {i, 150}];
          RSLOS3

Out[171]= {1, 1, 1, 1, 0, 0, 1, 0, 0, 1, 1, 0, 0, 0, 0, 1, 0, 1, 1, 0, 1, 0, 1, 0, 0, 0, 1, 1, 1, 0, 1,
           1, 1, 1, 1, 0, 0, 1, 0, 0, 1, 1, 0, 0, 0, 0, 1, 0, 1, 1, 0, 1, 0, 1, 0, 0, 0, 1, 1, 1, 0,
           1, 1, 1, 1, 1, 0, 0, 1, 0, 0, 1, 1, 0, 0, 0, 0, 1, 0, 1, 1, 0, 1, 0, 1, 0, 0, 0, 1, 1, 1,
           0, 1, 1, 1, 1, 1, 0, 0, 1, 0, 0, 1, 1, 0, 0, 0, 0, 1, 0, 1, 1, 0, 1, 0, 1, 0, 0, 0, 1, 1,
           1, 0, 1, 1, 1, 1, 1, 0, 0, 1, 0, 0, 1, 1, 0, 0, 0, 0, 1, 0, 1, 1, 0, 1, 0, 1, 0, 0, 0}

In[172]:= GenGeffe = BitXor[BitAnd[RSLOS1, RSLOS2], BitAnd[BitNot[RSLOS1], RSLOS3]]

Out[172]= {1, 0, 1, 0, 0, 0, 1, 1, 0, 0, 1, 0, 0, 0, 0, 0, 0, 1, 1, 1, 1, 0, 0, 0, 0, 0, 0, 1, 1, 1, 0,
           1, 0, 1, 0, 0, 0, 1, 1, 0, 0, 1, 0, 0, 0, 0, 0, 0, 1, 1, 1, 1, 0, 0, 0, 0, 0, 0, 1, 1, 1,
           0, 1, 0, 1, 0, 0, 0, 1, 1, 0, 0, 1, 0, 0, 0, 0, 0, 0, 1, 1, 1, 1, 0, 0, 0, 0, 0, 0, 1, 1,
           1, 0, 1, 0, 1, 0, 0, 0, 1, 1, 0, 0, 1, 0, 0, 0, 0, 0, 0, 1, 1, 1, 1, 0, 0, 0, 0, 0, 0, 1,
           1, 1, 0, 1, 0, 1, 0, 0, 0, 1, 1, 0, 0, 1, 0, 0, 0, 0, 0, 0, 1, 1, 1, 1, 0, 0, 0, 0, 0}
```

10. Определить линейную сложность генератора Геффе.

```
In[173]:= s = GenGeffe;
Lol = 0; fol = 1;
diff = 0; Clear[x];
f = 1;
L = 0;
g = CoefficientList[f, {x}];
Do[If[Mod[Sum[g[[i]] s[[j - 1 - L + i]], {i, 1, L}], 2] == s[[j]], diff = diff + 1,
  Lne = Max[j - L, L];        fne = PolynomialMod[x^(Lne-L) f + x^(Lne-Lol-diff-1) fol, 2];
  If[Lne ≠ L, fol = f;
   Lol = L;
   L = Lne;
   diff = 0, diff = diff + 1];
  f = fne;
  g = CoefficientList[f, {x}]];
 Print["j=", j, ", L=", L, ", f=", f], {j, Length[s]}]
```

j=1, L=1, f=$1+x$

j=2, L=1, f=x

j=3, L=2, f=$1+x^2$

j=4, L=2, f=$1+x^2$

j=5, L=3, f=x^3

j=6, L=3, f=x^3

j=7, L=4, f=$1+x^2+x^4$

j=8, L=4, f=$1+x^2+x^3+x^4$

j=9, L=4, f=$1+x^2+x^3+x^4$

j=10, L=6, f=$x^2+x^3+x^4+x^5+x^6$

j=11, L=6, f=$x+x^2+x^6$

j=12, L=6, f=$x+x^2+x^6$

j=13, L=7, f=$1+x^4+x^7$

j=14, L=7, f=$1+x^4+x^7$

j=15, L=8, f=$x^2+x^5+x^6+x^8$

j=16, L=8, f=$x^2+x^5+x^6+x^8$

j=17, L=9, f=$1+x^3+x^4+x^6+x^9$

j=18, L=9, f=$1+x^2+x^3+x^4+x^5+x^8+x^9$

j=19, L=9, f=$1+x^2+x^3+x^4+x^5+x^8+x^9$

j=20, L=11, f=$x^4+x^7+x^8+x^{10}+x^{11}$

j=21, L=11, f=$x+x^3+x^5+x^6+x^7+x^8+x^9+x^{11}$

j=22, L=11, f=$1+x+x^2+x^4+x^6+x^7+x^{11}$

j=23, L=11, f=$1+x+x^2+x^4+x^6+x^7+x^{11}$

j=24, L=11, f=$1+x+x^2+x^4+x^6+x^7+x^{11}$

j=25, L=14, $f=1+x^2+x^7+x^8+x^{10}+x^{14}$

j=26, L=14, $f=1+x^2+x^7+x^8+x^{10}+x^{14}$

j=27, L=14, $f=1+x^2+x^7+x^8+x^{10}+x^{14}$

j=28, L=14, $f=1+x^2+x^7+x^8+x^{10}+x^{14}$

j=29, L=15, $f=1+x^2+x^3+x^4+x^6+x^7+x^8+x^9+x^{15}$

j=30, L=15, $f=1+x^2+x^3+x^4+x^6+x^7+x^8+x^9+x^{15}$

j=31, L=16, $f=1+x+x^2+x^3+x^4+x^5+x^9+x^{14}+x^{16}$

j=32, L=16, $f=1+x+x^2+x^3+x^4+x^5+x^9+x^{14}+x^{16}$

j=33, L=16, $f=1+x+x^2+x^3+x^4+x^5+x^9+x^{14}+x^{16}$

j=34, L=16, $f=1+x+x^2+x^3+x^4+x^5+x^9+x^{14}+x^{16}$

j=35, L=16, $f=1+x+x^2+x^3+x^4+x^5+x^9+x^{14}+x^{16}$

j=36, L=16, $f=1+x+x^2+x^3+x^4+x^5+x^9+x^{14}+x^{16}$

j=37, L=16, $f=1+x+x^2+x^3+x^4+x^5+x^9+x^{14}+x^{16}$

j=38, L=22, $f=1+x^2+x^3+x^4+x^{10}+x^{11}+x^{20}+x^{22}$

j=39, L=22, $f=1+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{11}+x^{14}+x^{19}+x^{20}+x^{21}+x^{22}$

j=40, L=22, $f=1+x^2+x^3+x^{11}+x^{13}+x^{14}+x^{18}+x^{19}+x^{21}+x^{22}$

j=41, L=22, $f=1+x^2+x^4+x^5+x^6+x^7+x^8+x^{11}+x^{12}+x^{13}+x^{14}+x^{17}+x^{18}+x^{21}+x^{22}$

j=42, L=22, $f=1+x^2+x^4+x^5+x^6+x^7+x^8+x^{11}+x^{12}+x^{13}+x^{14}+x^{17}+x^{18}+x^{21}+x^{22}$

j=43, L=22, $f=1+x^2+x^4+x^5+x^6+x^7+x^8+x^{11}+x^{12}+x^{13}+x^{14}+x^{17}+x^{18}+x^{21}+x^{22}$

j=44, L=22, $f=x+x^3+x^6+x^7+x^8+x^9+x^{11}+x^{12}+x^{13}+x^{16}+x^{17}+x^{18}+x^{21}+x^{22}$

j=45, L=23, $f=1+x+x^3+x^5+x^7+x^8+x^{10}+x^{12}+x^{13}+x^{16}+x^{17}+x^{18}+x^{19}+x^{22}+x^{23}$

j=46, L=23, $f=1+x+x^3+x^5+x^7+x^8+x^{10}+x^{12}+x^{13}+x^{16}+x^{17}+x^{18}+x^{19}+x^{22}+x^{23}$

j=47, L=23, $f=1+x+x^3+x^5+x^7+x^8+x^{10}+x^{12}+x^{13}+x^{16}+x^{17}+x^{18}+x^{19}+x^{22}+x^{23}$

j=48, L=25, $f=x+x^2+x^5+x^6+x^8+x^{10}+x^{11}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{19}+x^{20}+x^{22}+x^{24}+x^{25}$

j=49, L=25, $f=x^4+x^5+x^9+x^{10}+x^{15}+x^{16}+x^{18}+x^{22}+x^{23}+x^{25}$

j=50, L=25, $f=x^4+x^5+x^9+x^{10}+x^{15}+x^{16}+x^{18}+x^{22}+x^{23}+x^{25}$

j=51, L=25, $f=x^4+x^5+x^9+x^{10}+x^{15}+x^{16}+x^{18}+x^{22}+x^{23}+x^{25}$

j=52, L=27, $f=1+x+x^3+x^5+x^6+x^8+x^{10}+x^{11}+x^{13}+x^{16}+x^{19}+x^{20}+x^{22}+x^{23}+x^{24}+x^{25}+x^{27}$

j=53, L=27, $f=1+x+x^3+x^5+x^6+x^8+x^{10}+x^{11}+x^{13}+x^{16}+x^{19}+x^{20}+x^{22}+x^{23}+x^{24}+x^{25}+x^{27}$

j=54, L=27, $f=1+x+x^3+x^5+x^6+x^8+x^{10}+x^{11}+x^{13}+x^{16}+x^{19}+x^{20}+x^{22}+x^{23}+x^{24}+x^{25}+x^{27}$

j=55, L=27, $f=1+x+x^3+x^5+x^6+x^8+x^{10}+x^{11}+x^{13}+x^{16}+x^{19}+x^{20}+x^{22}+x^{23}+x^{24}+x^{25}+x^{27}$

j=56, L=29, $f=x^2+x^3+x^4+x^7+x^8+x^9+x^{12}+x^{13}+x^{16}+x^{21}+x^{23}+x^{24}+x^{26}+x^{27}+x^{29}$

j=57, L=29, $f=x+x^3+x^6+x^8+x^{11}+x^{13}+x^{14}+x^{16}+x^{17}+x^{20}+x^{25}+x^{27}+x^{28}+x^{29}$

j=58, L=29, $f=x+x^3+x^6+x^8+x^{11}+x^{13}+x^{14}+x^{16}+x^{17}+x^{20}+x^{25}+x^{27}+x^{28}+x^{29}$

j=59, L=30, $f=1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=60, L=30, $f=1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=61, L=30, $f=1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

$j=62,\ L=30,\ f=1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

$j=63,\ L=30,\ f=1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

$j=64,\ L=30,\ f=1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

$j=65,\ L=30,\ f=1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

$j=66,\ L=30,\ f=1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

$j=67,\ L=30,\ f=1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

$j=68,\ L=30,\ f=1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

$j=69,\ L=30,\ f=1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

$j=70,\ L=30,\ f=1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

$j=71,\ L=30,\ f=1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

$j=72,\ L=30,\ f=1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

$j=73,\ L=30,\ f=1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

$j=74,\ L=30,\ f=1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

$j=75,\ L=30,\ f=1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

$j=76,\ L=30,\ f=1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

$j=77,\ L=30,\ f=1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

$j=78,\ L=30,\ f=1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

$j=79,\ L=30,\ f=1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

$j=80,\ L=30,\ f=1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

$j=81,\ L=30,\ f=1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

$j=82,\ L=30,\ f=1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

$j=83,\ L=30,\ f=1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=84, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=85, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=86, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=87, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=88, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=89, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=90, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=91, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=92, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=93, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=94, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=95, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=96, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=97, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=98, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=99, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=100, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=101, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=102, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=103, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=104, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=105, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=106, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=107, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=108, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=109, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=110, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=111, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=112, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=113, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=114, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=115, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=116, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=117, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=118, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=119, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=120, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=121, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=122, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=123, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=124, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=125, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=126, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=127, L=30, f=$1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$

j=128, L=30, f=$1 + x + x^2 + x^3 + x^4 + x^5 + x^6 + x^7 + x^8 + x^9 + x^{10} + x^{11} + x^{12} + x^{13} + x^{14} + x^{15} + x^{16} + x^{17} + x^{18} + x^{19} + x^{20} + x^{21} + x^{22} + x^{23} + x^{24} + x^{25} + x^{26} + x^{27} + x^{28} + x^{29} + x^{30}$

j=129, L=30, f=$1 + x + x^2 + x^3 + x^4 + x^5 + x^6 + x^7 + x^8 + x^9 + x^{10} + x^{11} + x^{12} + x^{13} + x^{14} + x^{15} + x^{16} + x^{17} + x^{18} + x^{19} + x^{20} + x^{21} + x^{22} + x^{23} + x^{24} + x^{25} + x^{26} + x^{27} + x^{28} + x^{29} + x^{30}$

j=130, L=30, f=$1 + x + x^2 + x^3 + x^4 + x^5 + x^6 + x^7 + x^8 + x^9 + x^{10} + x^{11} + x^{12} + x^{13} + x^{14} + x^{15} + x^{16} + x^{17} + x^{18} + x^{19} + x^{20} + x^{21} + x^{22} + x^{23} + x^{24} + x^{25} + x^{26} + x^{27} + x^{28} + x^{29} + x^{30}$

j=131, L=30, f=$1 + x + x^2 + x^3 + x^4 + x^5 + x^6 + x^7 + x^8 + x^9 + x^{10} + x^{11} + x^{12} + x^{13} + x^{14} + x^{15} + x^{16} + x^{17} + x^{18} + x^{19} + x^{20} + x^{21} + x^{22} + x^{23} + x^{24} + x^{25} + x^{26} + x^{27} + x^{28} + x^{29} + x^{30}$

j=132, L=30, f=$1 + x + x^2 + x^3 + x^4 + x^5 + x^6 + x^7 + x^8 + x^9 + x^{10} + x^{11} + x^{12} + x^{13} + x^{14} + x^{15} + x^{16} + x^{17} + x^{18} + x^{19} + x^{20} + x^{21} + x^{22} + x^{23} + x^{24} + x^{25} + x^{26} + x^{27} + x^{28} + x^{29} + x^{30}$

j=133, L=30, f=$1 + x + x^2 + x^3 + x^4 + x^5 + x^6 + x^7 + x^8 + x^9 + x^{10} + x^{11} + x^{12} + x^{13} + x^{14} + x^{15} + x^{16} + x^{17} + x^{18} + x^{19} + x^{20} + x^{21} + x^{22} + x^{23} + x^{24} + x^{25} + x^{26} + x^{27} + x^{28} + x^{29} + x^{30}$

j=134, L=30, f=$1 + x + x^2 + x^3 + x^4 + x^5 + x^6 + x^7 + x^8 + x^9 + x^{10} + x^{11} + x^{12} + x^{13} + x^{14} + x^{15} + x^{16} + x^{17} + x^{18} + x^{19} + x^{20} + x^{21} + x^{22} + x^{23} + x^{24} + x^{25} + x^{26} + x^{27} + x^{28} + x^{29} + x^{30}$

j=135, L=30, f=$1 + x + x^2 + x^3 + x^4 + x^5 + x^6 + x^7 + x^8 + x^9 + x^{10} + x^{11} + x^{12} + x^{13} + x^{14} + x^{15} + x^{16} + x^{17} + x^{18} + x^{19} + x^{20} + x^{21} + x^{22} + x^{23} + x^{24} + x^{25} + x^{26} + x^{27} + x^{28} + x^{29} + x^{30}$

j=136, L=30, f=$1 + x + x^2 + x^3 + x^4 + x^5 + x^6 + x^7 + x^8 + x^9 + x^{10} + x^{11} + x^{12} + x^{13} + x^{14} + x^{15} + x^{16} + x^{17} + x^{18} + x^{19} + x^{20} + x^{21} + x^{22} + x^{23} + x^{24} + x^{25} + x^{26} + x^{27} + x^{28} + x^{29} + x^{30}$

j=137, L=30, f=$1 + x + x^2 + x^3 + x^4 + x^5 + x^6 + x^7 + x^8 + x^9 + x^{10} + x^{11} + x^{12} + x^{13} + x^{14} + x^{15} + x^{16} + x^{17} + x^{18} + x^{19} + x^{20} + x^{21} + x^{22} + x^{23} + x^{24} + x^{25} + x^{26} + x^{27} + x^{28} + x^{29} + x^{30}$

j=138, L=30, f=$1 + x + x^2 + x^3 + x^4 + x^5 + x^6 + x^7 + x^8 + x^9 + x^{10} + x^{11} + x^{12} + x^{13} + x^{14} + x^{15} + x^{16} + x^{17} + x^{18} + x^{19} + x^{20} + x^{21} + x^{22} + x^{23} + x^{24} + x^{25} + x^{26} + x^{27} + x^{28} + x^{29} + x^{30}$

j=139, L=30, f=$1 + x + x^2 + x^3 + x^4 + x^5 + x^6 + x^7 + x^8 + x^9 + x^{10} + x^{11} + x^{12} + x^{13} + x^{14} + x^{15} + x^{16} + x^{17} + x^{18} + x^{19} + x^{20} + x^{21} + x^{22} + x^{23} + x^{24} + x^{25} + x^{26} + x^{27} + x^{28} + x^{29} + x^{30}$

j=140, L=30, f=$1 + x + x^2 + x^3 + x^4 + x^5 + x^6 + x^7 + x^8 + x^9 + x^{10} + x^{11} + x^{12} + x^{13} + x^{14} + x^{15} + x^{16} + x^{17} + x^{18} + x^{19} + x^{20} + x^{21} + x^{22} + x^{23} + x^{24} + x^{25} + x^{26} + x^{27} + x^{28} + x^{29} + x^{30}$

j=141, L=30, f=$1 + x + x^2 + x^3 + x^4 + x^5 + x^6 + x^7 + x^8 + x^9 + x^{10} + x^{11} + x^{12} + x^{13} + x^{14} + x^{15} + x^{16} + x^{17} + x^{18} + x^{19} + x^{20} + x^{21} + x^{22} + x^{23} + x^{24} + x^{25} + x^{26} + x^{27} + x^{28} + x^{29} + x^{30}$

j=142, L=30, f=$1 + x + x^2 + x^3 + x^4 + x^5 + x^6 + x^7 + x^8 + x^9 + x^{10} + x^{11} + x^{12} + x^{13} + x^{14} + x^{15} + x^{16} + x^{17} + x^{18} + x^{19} + x^{20} + x^{21} + x^{22} + x^{23} + x^{24} + x^{25} + x^{26} + x^{27} + x^{28} + x^{29} + x^{30}$

j=143, L=30, f=$1 + x + x^2 + x^3 + x^4 + x^5 + x^6 + x^7 + x^8 + x^9 + x^{10} + x^{11} + x^{12} + x^{13} + x^{14} + x^{15} + x^{16} + x^{17} + x^{18} + x^{19} + x^{20} + x^{21} + x^{22} + x^{23} + x^{24} + x^{25} + x^{26} + x^{27} + x^{28} + x^{29} + x^{30}$

j=144, L=30, f=$1 + x + x^2 + x^3 + x^4 + x^5 + x^6 + x^7 + x^8 + x^9 + x^{10} + x^{11} + x^{12} + x^{13} + x^{14} + x^{15} + x^{16} + x^{17} + x^{18} + x^{19} + x^{20} + x^{21} + x^{22} + x^{23} + x^{24} + x^{25} + x^{26} + x^{27} + x^{28} + x^{29} + x^{30}$

j=145, L=30, f=$1 + x + x^2 + x^3 + x^4 + x^5 + x^6 + x^7 + x^8 + x^9 + x^{10} + x^{11} + x^{12} + x^{13} + x^{14} + x^{15} + x^{16} + x^{17} + x^{18} + x^{19} + x^{20} + x^{21} + x^{22} + x^{23} + x^{24} + x^{25} + x^{26} + x^{27} + x^{28} + x^{29} + x^{30}$

j=146, L=30, f=$1 + x + x^2 + x^3 + x^4 + x^5 + x^6 + x^7 + x^8 + x^9 + x^{10} + x^{11} + x^{12} + x^{13} + x^{14} + x^{15} + x^{16} + x^{17} + x^{18} + x^{19} + x^{20} + x^{21} + x^{22} + x^{23} + x^{24} + x^{25} + x^{26} + x^{27} + x^{28} + x^{29} + x^{30}$

j=147, L=30, f=$1 + x + x^2 + x^3 + x^4 + x^5 + x^6 + x^7 + x^8 + x^9 + x^{10} + x^{11} + x^{12} + x^{13} + x^{14} + x^{15} + x^{16} + x^{17} + x^{18} + x^{19} + x^{20} + x^{21} + x^{22} + x^{23} + x^{24} + x^{25} + x^{26} + x^{27} + x^{28} + x^{29} + x^{30}$

j=148, L=30, f=$1 + x + x^2 + x^3 + x^4 + x^5 + x^6 + x^7 + x^8 + x^9 + x^{10} + x^{11} + x^{12} + x^{13} + x^{14} + x^{15} + x^{16} + x^{17} + x^{18} + x^{19} + x^{20} + x^{21} + x^{22} + x^{23} + x^{24} + x^{25} + x^{26} + x^{27} + x^{28} + x^{29} + x^{30}$

j=149, L=30, f=$1 + x + x^2 + x^3 + x^4 + x^5 + x^6 + x^7 + x^8 + x^9 + x^{10} + x^{11} + x^{12} + x^{13} + x^{14} + x^{15} + x^{16} + x^{17} + x^{18} + x^{19} + x^{20} + x^{21} + x^{22} + x^{23} + x^{24} + x^{25} + x^{26} + x^{27} + x^{28} + x^{29} + x^{30}$

$j=150$, $L=30$, $f=1+x+x^2+x^3+x^4+x^5+x^6+x^7+x^8+x^9+x^{10}+x^{11}+x^{12}+x^{13}+x^{14}+x^{15}+x^{16}+x^{17}+x^{18}+x^{19}+x^{20}+x^{21}+x^{22}+x^{23}+x^{24}+x^{25}+x^{26}+x^{27}+x^{28}+x^{29}+x^{30}$