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\\ create the list of all possible Q-Fanos X of Fano index q=qW(X)\ge 3
\\ read from list_baskets.out
\\ [BASKET, Kc, GGI, LENGTH]
\\ write to list_fano_ge3.out
\\ [BASKET,GGI ,q, A3, Ac, dimtAc, LENGTH]
\\GGI -- GLOBAL_GORENSTEIN_INDEX

INDEX_FANO_MAX=50;
extern("rm list_fano_ge3.out");
{
schetchik=0;
\\ allocatemem(s=200000000);
NN=matsize(readvec("list_baskets.out"))[2];
\\ allocatemem(s=100000000);

for(iji=1,NN,
FANO=readvec("list_baskets.out")[iji];
for(q=3,INDEX_FANO_MAX,

Kc=FANO[2];
GGI=FANO[3];
LENGTH=FANO[4];

INDEX=vector(LENGTH);
WEIGHT=vector(LENGTH);
for (i=1,LENGTH, INDEX[i]= FANO[1][i][1]; WEIGHT[i]= FANO[1][i][2]; );

if(gcd(GGI,q)==1,
Ac=Kc/q;

\\ WEIGHT_A is the weight of the generator
\\ i.e.  $A \sim \text{WEIGHT}_A[i] K_X$  near  $P_i$  and  $0 \leq \text{WEIGHT}_A[i] < r$ 
WEIGHT_A=vector(LENGTH,i, (-bezout(q,INDEX[i])[1]) %INDEX[i]);

\\ computations  $A^3$  and  $-K^3$ 
iii=vector(LENGTH, i, ((-WEIGHT_A[i]) %INDEX[i]));
cP=0;
for (i=1, LENGTH,
cP=cP-iii[i]*(INDEX[i]^2-1)/(12*INDEX[i]);
for (j= 1, iii[i]-1, cP=cP+ (WEIGHT[i]*j%INDEX[i])*(INDEX[i]- (WEIGHT[i]*j%INDEX[i]))/(2*INDEX[i]));
);
A3=(12/((q-1)*(q-2)))*(1-Ac/12+cP);
K3=A3*q^3;

bool= (A3>0);
bool=bool && (denominator(A3*GGI)==1);

\\ computations of dim  $|-tA|$ 
for (t=-q+1, -1,
iii=vector(LENGTH,i, (t*WEIGHT_A[i]%INDEX[i]));
cP=0;
for (i=1, LENGTH, cP=cP-iii[i]*(INDEX[i]^2-1)/(12*INDEX[i]);
for (j= 1, iii[i]-1, cP=cP+ (WEIGHT[i]*j%INDEX[i])*(INDEX[i]- (WEIGHT[i]*j%INDEX[i]))/(2*INDEX[i])); );
);
htA=1+t*(q+t)*(q+2*t)*A3/12+t*Ac/12+cP;
bool=bool && (htA==0);
);

\\ computations of dim  $|tA|$ 
dimtAc=vector(q);
for (t=1,q,
iii=vector(LENGTH,i, (t*WEIGHT_A[i]%INDEX[i]));
cP=0;

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for (i=1, LENGTH, cP=cP-iii[i]*(INDEX[i]^2-1)/(12*INDEX[i]);
for (j= 1, iii[i]-1, cP=cP+(WEIGHT[i]*j%INDEX[i])*(INDEX[i]-(WEIGHT[i]*j%INDEX[i]))/(2*INDEX[i]); );
);
dim_tA=t*(q+t)*(q+2*t)*A3/12+t*Ac/12+cP;
dimtAc[t]=dim_tA;
bool=bool && (dim_tA>=-1);
);

if(bool,
schetchik=schetchik+1;

BASKET=vector(LENGTH,ij,[INDEX[ij],WEIGHT[ij]]);
write("list_fano_ge3.out", [BASKET,GGI ,q, A3, Ac, dimtAc, LENGTH]);
\\ optional
print("write Q-Fano No. ", schetchik);
);
);
);
);

print("-----");
print1(schetchik); print(" Q-Fanos found");
\\ allocatemem(s=4000000);
}
```