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> restart;
> with (LinearAlgebra) :
> ##### (
> equimat:=proc (L,P,V)
> local i,s,h;
> h:=[];
> for i from 1 to nops(L) do;
> s:=[seq(eval(L[i],[seq(V[i]=P[k][i],i=1..nops(V))]),k=1..nops(P))
> ];
> h:=[op(h),s];
> end do;
> return(Matrix(h));
> end:
> with(numtheory) :
> with(combinat, powerset):
> #####
)
> NUM:=proc (L)
> local i,j,s,p;
> p:=[];
> for i from 1 to nops(L[1]) do;
> s:={seq(op(L[j][i]),j=1..nops(L))};
> p:=[op(p),nops(s)-1];
> end do;
> return(p);
> end:

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> #####
> MONOM2:=proc (m,n,L)
>
> local i,a,div,s,T,h,j,primes;
> s:=[];
> primes:=2;
> a:=2;
> for i from 1 to n-1 do;
> a:=nextprime(a);
> primes:=[op(primes),a];
> end do;
> h:=product(primes[j]^L[j],j=1..n);
> div:=divisors(h);
> for j from 1 to nops(div) do;
> if nops(divisors(div[j]))<=m then;
> s:=[op(s),div[j]];
> end if;
> end do;
> T:={seq(divisors(s[k]),k=2..nops(s))};
> return(T);
> end:
> #####
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> D

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> orderideal:=proc(L,w)
> local m,i,n,p,o,k,j,h,ii;
> o:=[];
> p:=powerset(L);
> n:=nops(p);
> m:=[];

> m:=[op(m),seq({op(p[i])},i=1..n)];

> for j from 1 to nops(m) do
>   k:=[op(m[j])];
>   h:={seq(op(k[ii]),ii=1..nops(k))};
>   if nops(h)=w then
>     o:={op(o),h};
>   end if;
> end do;
> return([op(o)]);
> end:#####

> BORDER:=proc(L,P)
> local i,j,s,w;
> i:=1;
> s:=[];
> w:=[];
> while i<=nops(L) do;

> s:={op(s),seq(P[j]*op(L[i]), j=1..nops(P))};

> w:=[op(w),s minus L[i]];
> s:=[];
> i:=i+1;
> end do;
> return(w);
> end:
> #####

> NUMB2MONOM:=proc(b,V,P)
> local i,h,c,a;
> h:=1;
> a:=b;
> for i from 1 to nops(V) do;
>   c:=0;
>   while a mod P[i]=0 do;
>     a:=a/P[i];
>     c:=c+1;
>   end do;
>   h:=h*V[i]^c;
> end do;
> return(h);
> end:
> #####
> # # #      (
>           )

> with(Groebner):
ORDERIDEAL:=proc(L,n,m,V)

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> local p,M2,ORI,BI,primes,a,ii,k,l,MORI,ll,iii,eqm;
> global i,j,s,w,c,b;
> primes:=2;
> a:=2;
> k:=1;
> ll:=[];
> l:=[];
> for ii from 1 to n-1 do;
> a:=nextprime(a);
> primes:=[op(primes),a];
> end do;
> p:=NUM(L);
> M2:=MONOM2(m,n,p);
> ORI:=orderideal(M2,m);
> MORI:=[seq({seq(NUMB2MONOM(q,V,primes),q=ORI[j])},j=1..nops(ORI))
]; iii:=1;
> while iii<= nops(MORI) do
> eqm:=equimat(MORI[iii],L,V);
> if Determinant(eqm)=0 then;
> MORI:={op(MORI)} minus {MORI[iii]};
> end if; iii:=iii+1; end do;
> return(MORI);
> end:

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> ORDERIDEAL([[1,1],[0,0],[0,-1],[-1,1],[1,0]],2,5,[x,y]);
      [{1,x,y,x2,xy},{1,x,y,x2,y2},{1,x,y,y2,xy}] (1)

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> ORDERIDEAL([[-1,-1,-1],[1,0,-1],[1,0,0],[0,1,1]],3,4,[x,y,z]);
      [{1,x,y,z},{1,x,y,xy},{1,x,z,x2},{1,x,z,z2},{1,x,z,xz},{1,y,z,y2},{1,y,z,z2},{1,y,z,
      yz}] (2)

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> ORDERIDEAL([[2,3],[1,4],[5,0]],2,3,[x,y]);
      [{1,x,x2},{1,y,y2}] (3)

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> ORDERIDEAL([[0,0,0],[0,1,1],[0,-1,1],[-1,1,-1],[1,1,-1],[1,0,1],
      [0,0,-1]],3,7,[x,y,z]);
      [{1,x,y,z,x2,y2,z2},{1,x,y,z,x2,y2,xy},{1,x,y,z,x2,y2,xz},{1,x,y,z,x2,y2,yz},{1,x,y,z,
      x2,z2,xy},{1,x,y,z,x2,z2,xz},{1,x,y,z,x2,z2,yz},{1,x,y,z,x2,xy,yz},{1,x,y,z,x2,xz,
      yz},{1,x,y,z,y2,z2,xy},{1,x,y,z,y2,z2,xz},{1,x,y,z,y2,z2,yz},{1,x,y,z,y2,xy,xz},
      {1,x,y,z,y2,xy,yz},{1,x,y,z,y2,xz,yz},{1,x,y,z,z2,xy,xz},{1,x,y,z,z2,xy,yz},{1,x,
      y,z,z2,xz,yz},{1,x,y,z,xy,xz,yz},{1,x,y,x2,y2,xy,x2y},{1,x,z,x2,z2,xz,x2z},{1,y,z,
      y2,z2,yz,y2z}] (4)

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