

```

#####
#####
### File "b2_diS_to_S_in_ne_basis";
#####
### restart;

deb:=X-> [seq(op(k,X),k=1..nops(X)-1)]; ##
summa:=X-> add(op(k,X),k=1..nops(X)); ##

heen:=proc(X): proc(p): if p=0 or p>op(-1,X) then 0 else (-1)^(1+nops(X)+summa(X)-p)*op(+1,X)*a[summa(X)-p] fi end: end:
heen0:=proc(X): (-1)^(nops(X)+summa(X))*op(+1,X)*a[summa(X)] end:

## nep:='nep': nep[1]:=1: a:='a': [seq(a[r]=allr, r=1..14)]; assign(%);

Nep:=proc(X):
  if X=[] then 1
elif nops(X)=1 and op(X)=1 then +a[1]
elif nops(X)=1 and op(X)>1 then
+1/summa(X)*heen0(X)
+1/summa(X)*add(nep[p]*heen(X)(p),p=1..op(X)-1)
elif nops(X)>1 then
+1/summa(X)*add( nep[seq(op(k,X),k=1..i-1)]*heen0([seq(op(k,X),k=i..nops(X))]), i=1..nops(X))
+1/summa(X)*add(add( add( nep[seq(op(k,X),k=1..i-1)],p,seq(op(k,X),k=j+1..nops(X))]*heen([seq(op(k,X),k=i..j)])(p),
p=1.. min(op(j,X),add(op(k,X),k=i..j)-1)), i=1..j),j=1..nops(X))
fi end:

#####
senep1:= [nep[1] = a1] : ##

senep2:= [
nep[2] = -a2-a1^2,
nep[1,1] = 1/2*a2+a1^2
] : ##

senep3:= [
nep[3] = a3+2*a1*a2+a1^3,
nep[1,2] = -1/3*a3-5/3*a1*a2-a1^3,
nep[2,1] = -2/3*a3-4/3*a1*a2-a1^3,
nep[1,1,1] = 1/3*a3+7/6*a1*a2+a1^3
] : ##

senep4:= [
nep[4] = -a4-2*a1*a3-a2^2-3*a2*a1^2-a1^4,
nep[1,3] = 1/4*a4+3/2*a1*a3+5/8*a2^2+11/4*a2*a1^2+a1^4,
nep[2,2] = 1/2*a4+a2^2+5/2*a2*a1^2+a1*a3+a1^4,
nep[3,1] = 3/4*a4+3/2*a1*a3+9/4*a2*a1^2+a1^4+3/8*a2^2,
nep[1,1,2] = -1/4*a4-5/6*a1*a3-5/8*a2^2-29/12*a2*a1^2-a1^4,
nep[1,2,1] = -1/4*a4-7/6*a1*a3-25/12*a2*a1^2-a1^4-3/8*a2^2,
nep[2,1,1] = -1/2*a4-1/2*a2^2-2*a2*a1^2-a1*a3-a1^4,
nep[1,1,1,1] = 1/4*a4+5/6*a1*a3+3/8*a2^2+23/12*a2*a1^2+a1^4
] : ##

senep5:= [
nep[5] = a5+2*a1*a4+2*a3*a2+3*a3*a1^2+3*a1*a2^2+4*a2*a1^3+a1^5,
nep[1,4] = -1/5*a5-7/5*a1*a4-16/15*a3*a2-13/5*a3*a1^2-73/30*a1*a2^2-19/5*a2*a1^3-a1^5,
nep[2,3] = -2/5*a5-9/5*a3*a2-11/5*a3*a1^2-4/5*a1*a4-49/20*a1*a2^2-18/5*a2*a1^3-a1^5,
nep[3,2] = -3/5*a5-6/5*a3*a2-51/20*a1*a2^2-17/5*a2*a1^3-6/5*a1*a4-9/5*a3*a1^2-a1^5,
nep[4,1] = -4/5*a5-8/5*a1*a4-12/5*a3*a1^2-47/30*a1*a2^2-16/5*a2*a1^3-a1^5-14/15*a3*a2,
nep[1,1,3] = 71/20*a2*a1^3+247/120*a1*a2^2+21/10*a3*a1^2+16/15*a3*a2+13/20*a1*a4+1/5*a5+a1^5,
nep[1,2,2] = 1/5*a5+9/10*a1*a4+11/15*a3*a2+34/15*a1*a2^2+33/10*a2*a1^3+8/5*a3*a1^2+a1^5,
nep[1,3,1] = 61/20*a2*a1^3+167/120*a1*a2^2+21/10*a3*a1^2+11/15*a3*a2+23/20*a1*a4+1/5*a5+a1^5,
nep[2,1,2] = 49/15*a2*a1^3+127/60*a1*a2^2+23/15*a3*a1^2+17/15*a3*a2+4/5*a1*a4+2/5*a5+a1^5,
nep[2,2,1] = 2/5*a5+17/15*a3*a2+28/15*a3*a1^2+4/5*a1*a4+97/60*a1*a2^2+44/15*a2*a1^3+a1^5,
nep[3,1,1] = 3/5*a5+7/10*a3*a2+31/20*a1*a2^2+29/10*a2*a1^3+6/5*a1*a4+9/5*a3*a1^2+a1^5,
nep[1,1,1,2] = -1/5*a5-13/20*a1*a4-11/15*a3*a2-43/30*a3*a1^2-227/120*a1*a2^2-193/60*a2*a1^3-a1^5,
nep[1,1,2,1] = -173/60*a2*a1^3-167/120*a1*a2^2-53/30*a3*a1^2-11/15*a3*a2-13/20*a1*a4-1/5*a5-a1^5,
nep[1,2,1,1] = -14/5*a2*a1^3-43/30*a1*a2^2-8/5*a3*a1^2-17/30*a3*a2-9/10*a1*a4-1/5*a5-a1^5,
nep[2,1,1,1] = -2/5*a5-4/5*a3*a2-23/15*a3*a1^2-29/20*a1*a2^2-83/30*a2*a1^3-4/5*a1*a4-a1^5,
nep[1,1,1,1,1] = 1/5*a5+13/20*a1*a4+17/30*a3*a2+43/30*a3*a1^2+157/120*a1*a2^2+163/60*a2*a1^3+a1^5
] : ##

senep6:= [
nep[6] = -a6-2*a1*a5-2*a4*a2-3*a4*a1^2-a3^2-6*a3*a1*a2-4*a3*a1^3-a2^3-6*a2^2*a1^2-5*a2*a1^4-a1^6,
nep[1,5] = 163/36*a3*a1^2+a2^2+5/2*a4*a1^2+23/24*a4*a2+29/6*a2*a1^4+383/72*a2^2*a1^2+11/3*a3*a1^3+4/9*a3^2+1/6*a6+4/3*a1*a5+11/16*a2^3+a1^6,
nep[2,4] = 40/9*a3*a1^2+a2^2+5/3*a4*a1^2+5/3*a4*a2+14/3*a2*a1^4+46/9*a2^2*a1^2+10/3*a3*a1^3+7/9*a3^2+1/3*a6+2/3*a1*a5+a2^3+a1^6,
nep[3,3] = 5*a3*a1^2+a2^2+3/2*a4*a1^2+4*a4*a2+9/2*a2*a1^4+5*a2^2*a1^2+3*a3*a1^3+3*a3^2+1/2*a6+a1^5+1/2*a2^3+a1^6,
nep[4,2] = 32/9*a3*a1^2+a2^2+4*a4*a1^2+4/3*a4*a2+13/3*a2*a1^4+44/9*a2^2*a1^2+8/3*a3*a1^3+2/9*a3^2+2/3*a6+4/3*a1*a5+a2^3+a1^6,
nep[5,1] = 125/36*a3*a1^2+a2^2+5/2*a4*a1^2+25/24*a4*a2+25/6*a2*a1^4+265/72*a2^2*a1^2+10/3*a3*a1^3+5/9*a3^2+5/6*a6+5/3*a1*a5+5/16*a2^3+a1^6,
nep[1,1,4] = -647/180*a3*a1^2+a2^2-19/10*a4*a1^2-23/24*a4*a2-139/30*a2*a1^4-1711/360*a2^2*a1^2-249/15*a3*a1^3-4/9*a3^2-1/6*a6-8/15*a1*a5-11/16*a2^3-a1^6,
nep[1,2,3] = -367/90*a3*a1^2-13/10*a4*a1^2-7/12*a4*a2-133/30*a2*a1^4-209/45*a2^2*a1^2-43/15*a3*a1^3-4/9*a3^2-1/6*a6-11/15*a1*a5-1/2*a2^3-a1^6,

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/360\*a3^2\*a2-4769/2520\*a3^2\*a1^2-499/140\*a3\*a1^5-10945/2016\*a2^3\*a1^2-101963/10080\*a2^2\*a1^4-1619/280\*a2\*a1^6-1157/840\*a4\*  
a1\*a3-11/28\*a1\*a7-5/12\*a6\*a2-139/168\*a6\*a1^2-19/60\*a5\*a3-307/210\*a5\*a1^3-5/32\*a4^2-83/96\*a4\*a2^2, nep[1,1,1,1,2,1] = -\n  
617/420\*a5\*a1\*a2-2237/560\*a4\*a2\*a1^2-6803/1680\*a3\*a1\*a2^2-8111/840\*a3\*a2\*a1^3-35/128\*a2^4-a1^8-1/8\*a8-657/280\*a4\*a1^4-97/  
120\*a3^2\*a2-1991/840\*a3^2\*a1^2-1637/420\*a3\*a1^5-14093/3360\*a2^3\*a1^2-5909/672\*a2^2\*a1^4-4577/840\*a2\*a1^6-1339/840\*a4\*a1\*a3  
-11/28\*a1\*a7-1/3\*a6\*a2-139/168\*a6\*a1^2-23/60\*a5\*a3-307/210\*a5\*a1^3-5/32\*a4^2-61/96\*a4\*a2^2, nep[1,1,1,1,2,1,1] = -201/140\*  
a5\*a1\*a2-7369/1680\*a4\*a2\*a1^2-3715/1008\*a3\*a1\*a2^2-22429/2520\*a3\*a2\*a1^3-41/128\*a2^4-a1^8-1/8\*a8-727/280\*a4\*a1^4-223/360\*  
a3^2\*a2-5119/2520\*a3^2\*a1^2-1567/420\*a3\*a1^5-42811/10080\*a2^3\*a1^2-86941/10080\*a2^2\*a1^4-4507/840\*a2\*a1^6-1367/840\*a4\*a1\*  
a3-11/28\*a1\*a7-1/3\*a6\*a2-139/168\*a6\*a1^2-19/60\*a5\*a3-307/210\*a5\*a1^3-7/32\*a4^2-73/96\*a4\*a2^2, nep[1,1,1,2,1,1,1] = -701/  
420\*a5\*a1\*a2-6823/1680\*a4\*a2\*a1^2-3869/1008\*a3\*a1\*a2^2-22373/2520\*a3\*a2\*a1^3-35/128\*a2^4-a1^8-1/8\*a8-699/280\*a4\*a1^4-251/  
360\*a3^2\*a2-4853/2520\*a3^2\*a1^2-513/140\*a3\*a1^5-41747/10080\*a2^3\*a1^2-86087/10080\*a2^2\*a1^4-1493/280\*a2\*a1^6-1199/840\*a4\*  
a1\*a3-11/28\*a1\*a7-1/3\*a6\*a2-139/168\*a6\*a1^2-23/60\*a5\*a3-349/210\*a5\*a1^3-5/32\*a4^2-61/96\*a4\*a2^2, nep[1,1,2,1,1,1,1] = -631  
/420\*a5\*a1\*a2-2321/560\*a4\*a2\*a1^2-2053/560\*a3\*a1\*a2^2-495/56\*a3\*a2\*a1^3-39/128\*a2^4-a1^8-1/8\*a8-137/56\*a4\*a1^4-27/40\*a3^2\*  
a2-561/280\*a3^2\*a1^2-305/84\*a3\*a1^5-13799/3360\*a2^3\*a1^2-28537/3360\*a2^2\*a1^4-893/168\*a2\*a1^6-1157/840\*a4\*a1\*a3-11/28\*a1\*  
a7-5/12\*a6\*a2-167/168\*a6\*a1^2-19/60\*a5\*a3-67/42\*a5\*a1^3-5/32\*a4^2-71/96\*a4\*a2^2, nep[1,2,1,1,1,1,1] = -227/140\*a5\*a1\*a2-\n  
7003/1680\*a4\*a2\*a1^2-18677/5040\*a3\*a1\*a2^2-22213/2520\*a3\*a2\*a1^3-35/128\*a2^4-a1^8-1/8\*a8-677/280\*a4\*a1^4-223/360\*a3^2\*a2-\n  
5149/2520\*a3^2\*a1^2-1517/420\*a3\*a1^5-41347/10080\*a2^3\*a1^2-85339/10080\*a2^2\*a1^4-4457/840\*a2\*a1^6-1327/840\*a4\*a1\*a3-15/28\*  
a1\*a7-1/3\*a6\*a2-53/56\*a6\*a1^2-19/60\*a5\*a3-109/70\*a5\*a1^3-5/32\*a4^2-61/96\*a4\*a2^2, nep[2,1,1,1,1,1,1] = -17/10\*a5\*a1\*a2-503  
/120\*a4\*a2\*a1^2-1409/360\*a3\*a1\*a2^2-317/36\*a3\*a2\*a1^3-5/16\*a2^4-a1^8-1/4\*a8-12/5\*a4\*a1^4-29/36\*a3^2\*a2-37/18\*a3^2\*a1^2-18/  
5\*a3\*a1^5-187/45\*a2^3\*a1^2-761/90\*a2^2\*a1^4-53/10\*a2\*a1^6-5/3\*a4\*a1^3-1/2\*a1^7-1/2\*a6\*a2-11/12\*a6\*a1^2-1/2\*a5\*a3-23/15\*  
a5\*a1^3-1/4\*a4^2-13/16\*a4\*a2^2, nep[1,1,1,1,1,1,1] = 201/140\*a5\*a1\*a2-6529/1680\*a4\*a2\*a1^2-3547/1008\*a3\*a1\*a2^2+21449/  
2520\*a3^2\*a1^3-35/128\*a2^4-a1^8+1/8\*a8+657/280\*a4\*a1^4+223/360\*a3^2\*a2+4769/2520\*a3^2\*a1^2-499/140\*a3\*a1^5+40081/10080\*a2  
^3\*a1^2+84071/10080\*a2^2\*a1^4+1479/280\*a2\*a1^6+1157/840\*a4\*a1\*a3+11/28\*a1\*a7+1/3\*a6\*a2+139/168\*a6\*a1^2+19/60\*a5\*a3+307/210  
\*a5\*a1^3+5/32\*a4^2+61/96\*a4\*a2^2  
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