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#####
##### File "c5_diripil_to_ripil_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,q): 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:

## renep:='renep': renep[]:=1: a:='a': [seq(a[r]=-1/(1+r)!, 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(renep[p]*heen(X)(p),p=1..op(X)-1)
elif nops(X)>1 then
+1/summa(X)*add( renep[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( renep[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:

#####
serenop1:= [renop[1] = 1/2] :##
serenop2:= [renop[2] = -5/6, renop[1,1] = 2/3] :##
serenop3:= [renop[3] = 9/4, renop[1,2] = -7/4, renop[2,1] = -7/4, renop[1,1,1] = 3/2] :##
serenop4:= [renop[4] = -251/30, renop[1,3] = 97/15, renop[2,2] = 94/15, renop[3,1] = 32/5, renop[1,1,2] = -82/15,
renop[1,2,1] = -53/10, renop[2,1,1] = -163/30, renop[1,1,1,1] = 24/5] :##
serenop5:= [renop[5] = 475/12, renop[1,4] = -367/12, renop[2,3] = -88/3, renop[3,2] = -29, renop[4,1] = -359/12,
renop[1,1,3] = 155/6, renop[1,2,2] = 49/2, renop[1,3,1] = 293/12, renop[2,1,2] = 151/6, renop[2,2,1] = 73/3,
renop[3,1,1] = 101/4, renop[1,1,1,2] = -45/2, renop[1,1,2,1] = -65/3, renop[1,2,1,1] = -259/12,
renop[2,1,1,1] = -89/4, renop[1,1,1,1,1] = 20] :##

serenop6:=
[renop[6] = -19087/84, renop[1,5] = 1231/7, renop[2,4] = 4703/28, renop[3,3] = 3449/21, renop[4,2] = 13763/84,
renop[5,1] = 7145/42, renop[1,1,4] = -1042/7, renop[1,2,3] = -1965/14, renop[1,3,2] = -1909/14, renop[1,4,1] = -965/7,
renop[2,1,3] = -2019/14, renop[2,2,2] = -957/7, renop[2,3,1] = -11393/84, renop[3,1,2] = -5953/42,
renop[3,2,1] = -11507/84, renop[4,1,1] = -2001/14, renop[1,1,1,3] = 909/7, renop[1,1,2,2] = 860/7,
renop[1,1,3,1] = 1699/14, renop[1,2,1,2] = 860/7, renop[1,2,2,1] = 1657/14, renop[1,3,1,1] = 2524/21,
renop[2,1,1,2] = 887/7, renop[2,1,2,1] = 5119/42, renop[2,2,1,1] = 2542/21, renop[3,1,1,1] = 5281/42,
renop[1,1,1,1,2] = -804/7, renop[1,1,1,2,1] = -1545/14, renop[1,1,2,1,1] = -2293/21,
renop[1,2,1,1,1] = -3069/28, renop[2,1,1,1,1] = -9503/84, renop[1,1,1,1,1,1] = 720/7] :##

serenop7:=
[renop[7] = 36799/24, renop[1,6] = -28549/24, renop[2,5] = -9073/8, renop[3,4] = -26489/24, renop[4,3] = -26123/24, renop[5,2] = -8735/8,
renop[6,1] = -27337/24, renop[1,1,5] = 4039/4, renop[1,2,4] = 7605/8, renop[1,3,3] = 10999/12, renop[1,4,2] = 21629/24,
renop[1,5,1] = 2759/3, renop[2,1,4] = 7813/8, renop[2,2,3] = 1843/2, renop[2,3,2] = 10715/12, renop[2,4,1] = 21563/24,
renop[3,1,3] = 11449/12, renop[3,2,2] = 10861/12, renop[3,3,1] = 2689/3, renop[4,1,2] = 22609/24, renop[4,2,1] = 21853/24,
renop[5,1,1] = 2860/3, renop[1,1,1,4] = -3535/4, renop[1,1,2,3] = -833, renop[1,1,3,2] = -805, renop[1,1,4,1] = -3227/4,
renop[1,2,1,3] = -3337/4, renop[1,2,2,2] = -1581/2, renop[1,2,3,1] = -18713/24, renop[1,3,1,2] = -9641/12, renop[1,3,2,1] = -18589/24,
renop[1,4,1,1] = -4765/6, renop[2,1,1,3] = -3441/4, renop[2,1,2,2] = -4885/6, renop[2,1,3,1] = -19253/24, renop[2,2,1,2] = -4871/6,
renop[2,2,2,1] = -1563/2, renop[2,3,1,1] = -3161/4, renop[3,1,1,2] = -10105/12, renop[3,1,2,1] = -19433/24, renop[3,2,1,1] = -9643/12,
renop[4,1,1,1] = -2512/3, renop[1,1,1,1,3] = 784, renop[1,1,1,2,2] = 742, renop[1,1,1,3,1] = 2919/4, renop[1,1,2,1,2] = 2212/3,
renop[1,1,2,2,1] = 2128/3, renop[1,1,3,1,1] = 8575/12, renop[1,2,1,1,2] = 1483/2, renop[1,2,1,2,1] = 2137/3, renop[1,2,2,1,1] = 2819/4,
renop[1,3,1,1,1] = 17231/24, renop[2,1,1,1,2] = 4591/6, renop[2,1,1,2,1] = 4409/6, renop[2,1,2,1,1] = 8713/12, renop[2,2,1,1,1] = 2180/3,
renop[3,1,1,1,1] = 18089/24, renop[1,1,1,1,2] = -700, renop[1,1,1,2,1] = -672, renop[1,1,1,2,1,1] = -2653/4, renop[1,1,2,1,1,1] = -1323/2,
renop[1,2,1,1,1,1] = -15983/24, renop[2,1,1,1,1,1] = -16495/24, renop[1,1,1,1,1,1,1] = 630] :##

serenop8:=
[renop[8] = -1070017/90, renop[1,7] = 416173/45, renop[2,6] = 79303/9, renop[3,5] = 385006/45, renop[4,4] = 377756/45,
renop[5,3] = 74888/9, renop[6,2] = 377081/45, renop[7,1] = 394828/45, renop[1,1,6] = -354298/45, renop[1,2,5] = -74119/10,
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3719844400/91, renop[2,1,1,1,1,2,1,1,1] = 55390901642/1365, renop[2,1,1,1,2,1,1,1,1] = 18395019144/455, renop[2,1,1,1,2,1,1,1,1] = 55097208242/1365, renop[2,1,1,2,1,1,1,1,1] = 18368027036/455, renop[2,1,2,1,1,1,1,1,1] = 110448485299/2730, renop[2,2,1,1,1,1,1,1,1] = 55567796542/1365, renop[3,1,1,1,1,1,1,1,1] = 57175511663/1365, renop[1,1,1,1,1,1,1,1,1,1,2] = -526176000/13, renop[1,1,1,1,1,1,1,1,2,1] = -504947520/13, renop[1,1,1,1,1,1,1,2,1,1] = -497259840/13, renop[1,1,1,1,1,1,2,1,1,1] = -493596180/13, renop[1,1,1,1,1,2,1,1,1,1] = -3441865680/91, renop[1,1,1,1,2,1,1,1,1,1] = -490799100/13, renop[1,1,1,2,1,1,1,1,1,1] = -2453271348/65, renop[1,1,1,2,1,1,1,1,1,1] = -982576749/26, renop[1,1,2,1,1,1,1,1,1,1] = -1479260429/39, renop[1,2,1,1,1,1,1,1,1,1] = -1989784845/52, renop[2,1,1,1,1,1,1,1,1,1] = -214876451093/5460, renop[1,1,1,1,1,1,1,1,1,1] = 479001600/13] : ####
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