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### File "Flex(Pa)_standard_basis"
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kat:=n->(2\*n)!/n!/(n+1)!

```
faa:=proc(p,q): proc(X): subs( seq(ull(q+1-k)=ull(q+1-k+p),k=1..q), X) end: end:  
gaa:=proc(p,q): proc(X): X end: end:  
kaa:=proc(p,q): P(add(ullk,k=1..p+q)) end:
```

```
Faa:=proc(p,q): proc(S): [seq(faa(p,q)(op(s,S)),s=1..nops(S))] end: end:  
Gaa:=proc(p,q): proc(S): [seq(gaa(p,q)(op(s,S)),s=1..nops(S))] end: end:
```

Gluu:=proc(S1,S2,S3): seq(seq( op(s1,S1)\*op(s2,S2)\*S3, s1=1..nops(S1)),s2=1..nops(S2)) end:

```
sekatal:=proc(r) option remember; if r=0 then [1] elif r=1 then [P(u1)]  
else [seq( Gluu(Gaa(r-k,k)(sekatal(r-1-k)),Faa(r-k,k)(sekatal(k)),kaa(r-k,k)), k=0..r-1)] fi end:
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```
sekatal_1:= ## lprint(sekatal(1));  
[P(u1)]: ##
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```
sekatal_2:= ## lprint(sekatal(2));  
[P(u1)*P(u1+u2),  
P(u2)*P(u1+u2)]: ##
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```
sekatal_3:= ## lprint(sekatal(3));  
[P(u1)*P(u1+u2)*P(u1+u2+u3),  
P(u2)*P(u1+u2)*P(u1+u2+u3),  
P(u1)*P(u3)*P(u1+u2+u3),  
P(u2)*P(u2+u3)*P(u1+u2+u3),  
P(u3)*P(u2+u3)*P(u1+u2+u3)]: ##
```

```
sekatal_4:= ## lprint(sekatal(4));  
[P(u1)*P(u1+u2)*P(u1+u2+u3)*P(u1+u2+u3+u4), P(u2)*P(u1+u2)*P(u1+u2+u3)*P(u1+u2+u3+u4),  
P(u1)*P(u3)*P(u1+u2+u3)*P(u1+u2+u3+u4), P(u2)*P(u2+u3)*P(u1+u2+u3)*P(u1+u2+u3+u4),  
P(u3)*P(u2+u3)*P(u1+u2+u3)*P(u1+u2+u3+u4), P(u1)*P(u1+u2)*P(u4)*P(u1+u2+u3+u4),  
P(u2)*P(u1+u2)*P(u4)*P(u1+u2+u3+u4), P(u1)*P(u3)*P(u3+u4)*P(u1+u2+u3+u4),  
P(u1)*P(u4)*P(u3+u4)*P(u1+u2+u3+u4), P(u2)*P(u2+u3)*P(u2+u3+u4)*P(u1+u2+u3+u4),  
P(u3)*P(u2+u3)*P(u2+u3+u4)*P(u1+u2+u3+u4), P(u2)*P(u4)*P(u2+u3+u4)*P(u1+u2+u3+u4),  
P(u3)*P(u3+u4)*P(u2+u3+u4)*P(u1+u2+u3+u4), P(u4)*P(u3+u4)*P(u2+u3+u4)*P(u1+u2+u3+u4)]: ##
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```
sekatal_5:= ## lprint(sekatal(5));  
[P(u1)*P(u1+u2)*P(u1+u2+u3)*P(u1+u2+u3+u4)*P(u1+u2+u3+u4+u5),  
P(u2)*P(u1+u2)*P(u1+u2+u3)*P(u1+u2+u3+u4)*P(u1+u2+u3+u4+u5),  
P(u1)*P(u3)*P(u1+u2+u3)*P(u1+u2+u3+u4)*P(u1+u2+u3+u4+u5),  
P(u2)*P(u2+u3)*P(u1+u2+u3)*P(u1+u2+u3+u4)*P(u1+u2+u3+u4+u5),  
P(u3)*P(u2+u3)*P(u1+u2+u3)*P(u1+u2+u3+u4)*P(u1+u2+u3+u4+u5),  
P(u1)*P(u1+u2)*P(u4)*P(u1+u2+u3+u4)*P(u1+u2+u3+u4+u5),  
P(u2)*P(u1+u2)*P(u4)*P(u1+u2+u3+u4)*P(u1+u2+u3+u4+u5),  
P(u1)*P(u3)*P(u3+u4)*P(u1+u2+u3+u4)*P(u1+u2+u3+u4+u5),  
P(u1)*P(u4)*P(u3+u4)*P(u1+u2+u3+u4)*P(u1+u2+u3+u4+u5),  
P(u2)*P(u2+u3)*P(u2+u3+u4)*P(u1+u2+u3+u4)*P(u1+u2+u3+u4+u5),  
P(u3)*P(u2+u3)*P(u2+u3+u4)*P(u1+u2+u3+u4)*P(u1+u2+u3+u4+u5),  
P(u2)*P(u4)*P(u2+u3+u4)*P(u1+u2+u3+u4)*P(u1+u2+u3+u4+u5),  
P(u3)*P(u3+u4)*P(u2+u3+u4)*P(u1+u2+u3+u4)*P(u1+u2+u3+u4+u5),  
P(u4)*P(u3+u4)*P(u2+u3+u4)*P(u1+u2+u3+u4)*P(u1+u2+u3+u4+u5),  
P(u1)*P(u1+u2)*P(u1+u2+u3)*P(u5)*P(u1+u2+u3+u4+u5),  
P(u2)*P(u1+u2)*P(u1+u2+u3)*P(u5)*P(u1+u2+u3+u4+u5),  
P(u1)*P(u3)*P(u1+u2+u3)*P(u5)*P(u1+u2+u3+u4+u5),  
P(u2)*P(u2+u3)*P(u1+u2+u3)*P(u5)*P(u1+u2+u3+u4+u5),  
P(u3)*P(u2+u3)*P(u1+u2+u3)*P(u5)*P(u1+u2+u3+u4+u5),  
P(u1)*P(u1+u2)*P(u4)*P(u4+u5)*P(u1+u2+u3+u4+u5),  
P(u2)*P(u1+u2)*P(u4)*P(u4+u5)*P(u1+u2+u3+u4+u5),  
P(u1)*P(u1+u2)*P(u5)*P(u4+u5)*P(u1+u2+u3+u4+u5),  
P(u2)*P(u1+u2)*P(u5)*P(u4+u5)*P(u1+u2+u3+u4+u5),
```



















