17 Intersection of kernels of downward shift operators (principal series)

17a. Weyl group action

Subsitution rules for (j_+, v_+), (j_r, v_r), and (j_l, v_l) that are related by (4.2).

```
Clear[jl, jp, jr, nul, nup, nur]
sub2p = {jl → 1/2 (-jp - 3 nup), nul → 1/2 (-jp + nup), jr → 1/2 (-jp + 3 nup), nur → (jp + nup)/2};
sub2r = {jp → (1 / 2) (-jr + 3 nur), nup → (1 / 2) (jr + nur)};
sub2l = {jp → (1 / 2) (-jl - 3 nul), nup → (1 / 2) (-jl + nul)};
```

In computations in the later sections of this chapter these subtitution rules are often useful .
Warning : direct transition between (j_l, v_l) and (j_r, v_r) does not work.

```
In[•]:= S2[{jp, nup}] == {jl, nul} //. sub2p // Simplify
       S2[{jr, nur}] == {jl, -nul} //. sub2p // Simplify
       S2[{jp, - nup}] == {jr, -nur} //. sub2p // Simplify
```

Out[•]= True

Out[•]= True

Out[•]= True

```
In[•]:=

       S1[{jp, nup}] == {jr, nur} //. sub2p // Simplify
       S1[{jl, nul}] == {jr, -nur} //. sub2p // Simplify
       S1[{jp, - nup}] == {jl, -nul} //. sub2p // Simplify
```

Out[•]= True

Out[•]= True

Out[•]= True

17b. Computations for Lemma 4.5

17c. Logarithmic elements