10b. Shift operators in the non-abelian case

Table 3.9

We temporarily clear the function dtt.

Should be restored afterwards by evaluating the initialization cells.

```
In[ ]:= Clear[dtt]

In[ ]:= Clear[F, h, p, r]
        F = tht[m] × f[r, t] × Phi[h, p, r, p]
Out[ ]= f[r, t] × Phi[h, p, r, p] × tht[m]

In[ ]:= s31 = 8 (p + 1) sh[3, 1, F, subnab];
        Coefficient[s31, Phi[h + 3, p + 1, r + 1, p + 1]] // Simplify
        Coefficient[s31, Phi[h + 3, p + 1, r - 1, p + 1]] // Simplify

Out[ ]= (2 + p + r) tht[m] ((h + 2 p - r + 4 ell π t^2) f[r, t] + 2 t f^(0,1)[r, t])

Out[ ]= 4 i eps √(2 π) (2 + p - r) t √(Abs[ell]) √(m + dtt[-eps]) f[r, t] × tht[-eps + m]

In[ ]:= sm31 = 8 (p + 1) sh[-3, 1, F, subnab];
        Coefficient[sm31, Phi[h - 3, p + 1, r + 1, p + 1]] // Simplify
        Coefficient[sm31, Phi[h - 3, p + 1, r - 1, p + 1]] // Simplify
Out[ ]= -4 i eps √(2 π) (2 + p + r) t √(Abs[ell]) √(m + dtt[eps]) f[r, t] × tht[eps + m]

Out[ ]= -((2 + p - r) tht[m] ((h - 2 p - r + 4 ell π t^2) f[r, t] - 2 t f^(0,1)[r, t]))

In[ ]:= s3m1 = 4 p^(-1) (p + 1) sh[3, -1, F, subnab];
        Coefficient[s3m1, Phi[h + 3, p - 1, r + 1, p - 1]] // Simplify
        Coefficient[s3m1, Phi[h + 3, p - 1, r - 1, p - 1]] // Simplify
Out[ ]= -tht[m] ((4 - h + 2 p + r - 4 ell π t^2) f[r, t] - 2 t f^(0,1)[r, t])

Out[ ]= -4 i eps √(2 π) t √(Abs[ell]) √(m + dtt[-eps]) f[r, t] × tht[-eps + m]

In[ ]:= sm3m1 = 4 p^(-1) (p + 1) sh[-3, -1, F, subnab];
        Coefficient[sm3m1, Phi[h - 3, p - 1, r + 1, p - 1]] // Simplify
        Coefficient[sm3m1, Phi[h - 3, p - 1, r - 1, p - 1]] // Simplify
Out[ ]= 4 i eps √(2 π) t √(Abs[ell]) √(m + dtt[eps]) f[r, t] × tht[eps + m]

Out[ ]= -tht[m] ((4 + h + 2 p - r + 4 ell π t^2) f[r, t] - 2 t f^(0,1)[r, t])
```