(27)

(I) $D_a(ab + aab) =$

$D_a(ab) + D_a(aab) =$

$= b + ab$

$D_a(abaab) = baab$

But also

$D_a(abaab) = D_a(ab \cdot aab)$

$= D_a(ab) \cdot aab + \delta(ab) \cdot D_a(aab)$

$= baab + \emptyset \cdot ab = baab$

(II) $D_{ab}(a \cdot a^* \cdot b \cdot b^*) =$

$= D_b(D_a(a \cdot a^* \cdot b \cdot b^*)) =$

$D_b(a^* b b^*) = D_b(a^* \cdot bb^*)$

$= D_b(a^*) \cdot bb^* + \delta(a^*) D_b(bb^*) =$

$= \emptyset \cdot bb^* + \lambda \cdot b^* = b^*$

Note that $D_b(a^*) = D_b(a) a^* =$

$= \emptyset a^* = \emptyset$

(28)

$a + b = R$

$D_a(a+b) = D_a(a) + D_a(b) =$

$= \lambda + \emptyset = \lambda$

$D_b(a+b) = D_b(a) + D_b(b) =$

$\emptyset + \lambda = \lambda$

$D_{aa}(R) = D_a(D_a(R)) =$

$= D_a(\lambda) = \emptyset$

$\Rightarrow$ We don't need considering $D_{aa\ldots}(R)$ anymore

$D_{ab}(R) = D_b(D_a(R)) = D_b(\lambda) = \emptyset$

$\Rightarrow$ no need to consider $D_{ab\ldots}(R)$

$D_{ba}(R) = D_a(D_b(R)) = D_a(\lambda) = \emptyset$

$\Rightarrow$ no need to consider $D_{ba\ldots}(R)$

$D_{bb}(R) = D_b(D_b(R)) = D_b(\lambda) = \emptyset$

We have finished

We have $R_0 = (a+b)$, $R_1 = \lambda$] only two expressions (different)

Now

$D_a(R_0) = \lambda$ $D_b(R_0) = \lambda$

$D_a(R_1) = \emptyset$ $D_b(R_1) = \emptyset$

$\delta(D_a(R_0)) = \lambda$ $\delta(D_b(R_0)) = \lambda$

$R_0 \to a\lambda$ $R_0 \to b\lambda$

$S \to a \mid b$