the first reduction formula with $\alpha = 1$ and $\beta = \gamma = k$, we have

$$\begin{aligned}\delta(a,b;c) &= \#(\sigma_a \cdot \sigma_b \cdot \sigma_{c_1-c_k, \ldots c_1-c_2, 0}) \text{ in } G(k, k+c_1) \\ &= \#(\sigma_b \cdot \sigma_{c_1-c_k, \ldots c_1-c_2}) \text{ in } G(k-1, k+c_1-1) \\ &= \#(\sigma_b \cdot \sigma_{c_1-b_{k-1}, \ldots c_1-b_1}) \\ &= 1\end{aligned}$$

⊏ By I(case), $c_i = b_{i-1}$ for all $i$ since $c_i \le b_{i-1}$ for all $i$. if $c_i < b_{i-1}$ for some $i$. contradiction to the assumption $c_i \ge b_{i-1}$ for all $i$.
$\Rightarrow$ $a = c_1$, $b_k = 0$ since $\Sigma c_i = a + \Sigma b_i$.
By the first reduction formula, with $\alpha = 1$, $\beta = \gamma = k$,

$$\begin{aligned}\delta(a,b;c) &= \#(\sigma_a \cdot \sigma_b \cdot \sigma_{c_1-c_2, \ldots c_1-c_2, 0}) \text{ in } G(k, k+c_1) \\ &= \#(\sigma_{a-a_1} \cdot \sigma_{b-b_k} \cdot \sigma_{c_1-c_k \cdots c_1-c_2, 0-0}) \text{ in } G(k-1, k+c_1-1) \\ &= \#(\sigma_0 \cdot \sigma_b \cdot \sigma_{c_1-c_k, \cdots c_1-c_2})\end{aligned}$$

$\Rightarrow$ Since $\sigma_0 = \{ \Lambda \in G(k,n) : \dim(\Lambda \cap V_{n-k+0-a_0}) \ge 0 \}$
$= G(k,n)$, $\#(\sigma_0 \cdot \sigma_b \cdot \sigma_{c_1-c_k, \cdots c_1-c_2}) =$
$\#(\sigma_b \cdot \sigma_{c_1-c_k, \cdots c_1-c_2}) = \#(\sigma_b \cdot \sigma_{c_1-b_{k-1}, \cdots c_1-b_1}) = 1$
by P198.
in $G(k-1, k+c_1-1)$ since $c_1 - b_{k-1} = k+c_1-1-(k-1)-b_{k-1}$
$c_1 - b_{k-2} = k+c_1-1-(k-1)-b_{k-2} \cdots$ $c_1 - b_1 = k+c_1-1-(k-1)-b_1$ ⌟

" Comment on Reduction Formulas I & II.

As in the page 201, consider a triple of indices