

In the proof of Theorem 3.55, we wanted to take N large enough that $\{1, 2, \dots, q\} \subseteq \{k_1, \dots, k_N\}$. As we claimed in class, this can be achieved by taking $N = \max\{\sigma^{-1}(1), \dots, \sigma^{-1}(q)\}$, where σ defines the rearrangement by $k_n = \sigma(n)$.

To see this, observe that when $1 \leq i \leq q$, one has

$$k_{\sigma^{-1}(i)} = \sigma(\sigma^{-1}(i)) = i,$$

so that since $1 \leq \sigma^{-1}(i) \leq N$; we have

$$i = k_{\sigma^{-1}(i)} \in \{k_1, \dots, k_N\}.$$

Thus $\{1, 2, \dots, q\} \subseteq \{k_1, \dots, k_N\}$ as claimed. So all OK after all!