Thm Let $a_j \geq 0$ and $F_1 \subseteq F_2 \subseteq \cdots$ with $\bigcup_{n=1}^{\infty} F_n = \mathbb{N}$ and F_n finite.

Then $\sum_{j=1}^{\infty} a_j = \lim_{n\to\infty} \sum_{j\in F_n} a_j$

Pf: Take any $A < A_\infty \equiv \sum_{j=1}^{\infty} a_j$.

$\exists N < \infty$ s.t. for all $n \geq N$, $a_1 + \cdots + a_n > A$