Question 1. *Let* $(z_n)_n$ *be a sequence of complex numbers such that* $\sum_{n=1}^{\infty} z_n$ *converges absolutely. Prove that for any bijection* $\sigma : \mathbb{N} \to \mathbb{N}$ *the series* $\sum_{n=1}^{\infty} z_{\sigma(n)}$ *converges absolutely to the same limit.*

Question 2. *Let* $(z_n)_n$ *be a sequence of complex numbers such that* $\sum_{n=1}^{\infty} z_n$ *converges conditionally. Prove that for any* $\alpha \in \mathbb{C}$*, there exists a bijection* $\sigma : \mathbb{N} \to \mathbb{N}$ *such that* $\sum_{n=1}^{\infty} z_{\sigma(n)} = \alpha$*.*

Question 3. *Let* $(z_n)_n$ *be a sequence of complex numbers such that* $\sum_{n=1}^{\infty} |z_n| = \infty$*. Prove that for any bijection* $\sigma : \mathbb{N} \to \mathbb{N}$ *there exists a rearrangement* $(w_n)_n$ *of* $(z_n) - n$ *such that* $\sum_{n=1}^{\infty} w_n = \infty$*.*