Let $\sum_{n=1}^{\infty} a_n$ and $\sum_{n=1}^{\infty} b_n$ be given **convergent** series and let $c \neq 0$ be a constant.

1. Prove that $\sum_{n=1}^{\infty} (a_n + b_n)$ converges and

$$\sum_{n=1}^{\infty} (a_n + b_n) = \sum_{n=1}^{\infty} a_n + \sum_{n=1}^{\infty} b_n.$$

2. Prove that $\sum_{n=1}^{\infty} c a_n$ converges and

$$\sum_{n=1}^{\infty} c a_n = c \sum_{n=1}^{\infty} a_n.$$