

DIMOSTRAZIONE 1.

$$\lim_{n \rightarrow +\infty} (a_n + b_n) = l + m \quad (1)$$

$$\lim_{n \rightarrow +\infty} a_n = l \quad \& \quad \lim_{n \rightarrow +\infty} b_n = m \quad (2)$$

$$\Downarrow$$

$$|a_n - l| < \frac{\epsilon}{2} \quad \text{se} \quad n > \overline{n}_1 \quad (3)$$

$$|b_n - m| < \frac{\epsilon}{2} \quad \text{se} \quad n > \overline{n}_2 \quad (4)$$

$$n > \max\{\overline{n}_1, \overline{n}_2\}$$

$$|a_n + b_n - l - m| \leq |a_n - l| + |b_n - m| < \frac{\epsilon}{2} + \frac{\epsilon}{2} = \epsilon \quad (5)$$

$$\Downarrow$$

$$\forall \epsilon > 0, \exists \overline{n} \equiv \max\{\overline{n}_1, \overline{n}_2\} : n > \overline{n} \Rightarrow \underbrace{|(a_n + b_n) - (l + m)|}_0 < \epsilon \quad (6)$$

$$(a_n + b_n) - (l + m) = 0 \quad (7)$$

$$a_n + b_n = l + m \quad (8)$$