Theorem 7.29. [238] *Let b_n be a sequence for which*

$$b_n \geq b_{n+1} > 0 \quad , \quad \lim_{n\to\infty} b_n = 0 \quad ,$$

then the series

$$\sum_{n=0}^{+\infty} (-1)^n b_n$$

is convergent; also, called ℓ the value of the series, letting

$$B_N = \sum_{n=0}^{N} (-1)^n b_n$$

the partial sums, we have that the sequence B_{2N} is decreasing , the sequence B_{2N+1} is increasing, and both converge to ℓ.