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Stevo Stević

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Let $\varphi(x_1, x_2, \dots, x_k)$ be a continuous real function on \mathbf{R}^k where

- (a) $\varphi(x, x, \dots, x) \leq x$ for every $x \in \mathbf{R}$;
- (b) $\varphi \in C(\mathbf{R}^k, \mathbf{R})$ is nondecreasing in each of its arguments;
- (c) $\varphi(x_1, x_2, \dots, x_k)$ is strictly increasing in at least two of its arguments x_i and x_j , where i and j are relatively prime.

If (a_n) is a sequence which satisfies the inequality

$$a_{n+k} \leq \varphi(a_{n+k-1}, a_{n+k-2}, \dots, a_n) \text{ for } n \in \mathbf{N} \cup \{0\},$$

then it converges or tends to minus infinity.

P. Sundaram and E. Thandapani

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