

Class Test n°3

Name :

First Name :

Class :

Question from the lesson

Let (u_n) be a numerical sequence and $\ell \in \mathbb{R}$. Give the accurate definition, using the mathematical quantifiers, of : « (u_n) is bounded », « (u_n) tends to $+\infty$ » and « (u_n) does not converge to ℓ ».

Question from the lesson

Give an example of a numerical sequence (u_n) that is both increasing and bounded (and prove these two properties).

Exercise 1

Let (u_n) be defined by $u_0 = 3$ and for every $n \in \mathbb{N}$, $u_{n+1} = 5 - 4u_n$. Determine, for every $n \in \mathbb{N}$, u_n as a function of n .

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Exercise 2

Let $(u_n)_{n \in \mathbb{N}^*}$ be defined for every $n \in \mathbb{N}^*$ by $u_n = \left(\sum_{k=1}^n \frac{1}{k!} \right) + \frac{1}{n!}$.

1. Study the monotonicity of (u_n) .

2. Is (u_n) convergent? Justify your answer.