

$$1. \quad \forall n \in \mathbb{N}, \quad u_n = \left( \sum_{k=0}^n \frac{1}{2^k} \right) - n$$

$$2. \quad \forall n \in \mathbb{N}, \quad u_n = \frac{n!}{2^{n+1}}$$

$$3. \quad \forall n \in \mathbb{N}^*, \quad u_n = \frac{\ln(n)}{n}$$

$$4. \quad \forall n \in \mathbb{N}, \quad u_n = \sum_{k=0}^{2n} \frac{(-1)^k}{k+1}$$

$$5. \quad \forall n \in \mathbb{N}, \quad u_n = n + 2(-1)^n$$

$$6. \quad \forall n \in \mathbb{N}, \quad u_n = \sum_{k=2}^n \frac{1}{k \ln(k)}$$