

Exercices

exercice 1 : Étudier le sens de variation de la suite (u_n) dans chacun des cas suivants :

1. $u_n = \frac{-n+1}{1+n}, n > 0$

2. $u_n = \frac{4n+2}{2n}, n > 0$

3. $u_n = n + 2n^2, n \in \mathbb{N}$

4. $u_n = \frac{3n-2}{n+1}, n \in \mathbb{N}$

5. $u_n = 3 \times 2^n, n \in \mathbb{N}$

6. $u_n = (n-5)^2, n \in \mathbb{N}$

7. $u_n = \frac{n^2+1}{2n}, n \geq 1$

8. $u_n = (-1)^n + n, n \in \mathbb{N}$

9. $u_0 = 2$ et, $\forall n \in \mathbb{N}, u_{n+1} = u_n - n$

10. $u_n = -\frac{1}{3}n + 3, n \in \mathbb{N}$

11. $u_n = 5n + 1, n \in \mathbb{N}$

12. $u_n = -\left(\frac{1}{2}\right)^n, n \in \mathbb{N}$

exercice 2 : Étudier la limite éventuelle des suites (u_n) suivantes :

1. $u_n = 2 - \frac{1}{\sqrt{n}}, \forall n \in \mathbb{N}^*$

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

3. $u_n = \frac{6}{\sqrt{2n+1}}, \forall n \in \mathbb{N}$

4. $u_n = \frac{5}{n^4}, \forall n \in \mathbb{N}^*$

5. $u_n = \frac{1}{n\sqrt{n}}, \forall n \in \mathbb{N}^*$

6. $u_n = \frac{1}{n} - \frac{2}{n^2} + 3, \forall n \in \mathbb{N}^*$

7. $u_n = \frac{4n-1}{n+5}, \forall n \in \mathbb{N}$

8. $u_n = \left(2 - \frac{1}{\sqrt{n}}\right)\left(3 + \frac{2}{n^2}\right), \forall n \in \mathbb{N}^*$

9. $u_n = (-1)^n, \forall n \in \mathbb{N}$