

3 - $\lim_{x \rightarrow 0} (v_n - u_n) = 0$; $v_n = u_n$

4 - $\forall n \in \mathbb{N}, u_n v_n = ab$; $\lim u_n = a$; $\lim v_n = b$

5 - $\lim u_n = a$; $\lim v_n = b$; $\lim (u_n v_n) = ab$

تصريح

$f_n(x) = x^3 + nx - 1$; $\lim_{x \rightarrow 0} f_n(x) = -1$

1) $\lim_{x \rightarrow 0} f_n(x) = -1$; $\forall \epsilon > 0$; $\exists \delta > 0$; $\forall x \in]-\delta, \delta[$; $|f_n(x) + 1| < \epsilon$

2) حدد رتبة (f_n) في المجال $]-\delta, \delta[$

3) $\lim_{x \rightarrow 0} f_n(x) = -1$; $\forall \epsilon > 0$; $\exists \delta > 0$; $\forall x \in]-\delta, \delta[$; $|f_n(x) + 1| < \epsilon$

تصريح 3

$\forall n \in \mathbb{N}, u_{n+1} = 1 + \frac{1}{2} u_n$; $u_0 = 1$; $\lim_{n \rightarrow +\infty} u_n = 2$

و نعتبر المتكاملين (u_n) و (v_n) ; $\lim_{n \rightarrow +\infty} u_n = 2$; $\lim_{n \rightarrow +\infty} v_n = 1$

1 - $\lim_{n \rightarrow +\infty} (u_n + v_n) = 3$; $\lim_{n \rightarrow +\infty} (u_n v_n) = 2$

2 - $\lim_{n \rightarrow +\infty} (u_n - v_n) = 1$; $\lim_{n \rightarrow +\infty} (u_n^2 - v_n^2) = 3$

3 - $\lim_{n \rightarrow +\infty} (u_n - v_n) = 1$; $\lim_{n \rightarrow +\infty} (u_n^2 - v_n^2) = 3$

4 - $\lim_{n \rightarrow +\infty} (u_n - v_n) = 1$; $\lim_{n \rightarrow +\infty} (u_n^2 - v_n^2) = 3$; $\lim_{n \rightarrow +\infty} (u_n^3 - v_n^3) = 7$

1+1

1

1

1

1

2+1

1+1

1

1

4+1

تصريح

1) $\lim_{n \rightarrow +\infty} \left(\frac{1}{\sqrt{n^2+1}} + \frac{1}{\sqrt{n^2+2}} + \dots + \frac{1}{\sqrt{n^2+n}} \right) = 1$

$u_n = \frac{1}{\sqrt{n^2+1}} + \frac{1}{\sqrt{n^2+2}} + \dots + \frac{1}{\sqrt{n^2+n}}$

$v_n = \frac{1}{1 \times 2} + \frac{1}{2 \times 3} + \dots + \frac{1}{n(n+1)}$

$u_{n+1} = \frac{2u_n+3}{u_n+2}$; $u_0 = 1$; $\lim_{n \rightarrow +\infty} u_n = 2$

بين أن $(u_n)_{n \geq 0}$ متزايدة و متقاربة

و احسب $\lim_{n \rightarrow +\infty} u_n$

تصريح 1

$u_0 = a$; $\lim_{n \rightarrow +\infty} u_n = 2$

$v_{n+1} = \frac{u_n + v_n}{2}$; $v_0 = b$; $\lim_{n \rightarrow +\infty} v_n = 2$

حيث $0 < a < b$

$\forall n \in \mathbb{N}, u_n < v_n < 2$; $\lim_{n \rightarrow +\infty} u_n = 2$; $\lim_{n \rightarrow +\infty} v_n = 2$

2 - $\lim_{n \rightarrow +\infty} (u_n - v_n) = 0$; $\lim_{n \rightarrow +\infty} (u_n^2 - v_n^2) = 0$

تناقصية

1

1+5