2206028932
ALDEN LUTHFI

2. a. ~~Limit~~ Limit comparison test

misal $a_n = \dfrac{2n-1}{2+3n-n^2}$ , $b_n = -\dfrac{1}{n}$

$\lim\limits_{n\to\infty} \dfrac{a_n}{b_n} = \lim\limits_{n\to\infty} \dfrac{n-2n^2}{2+3n-n} = 2$ , karena $0<L<\infty$

$\Sigma a_n$ dan $\Sigma b_n$ sama² divergen atau sama² konvergen

karena $\Sigma b_n$ divergen (harmonic series), maka $\Sigma a_n$ divergen

3. a. Limit test , $a_n = \dfrac{n^2}{e^{n^3}}$

$\lim\limits_{n\to\infty} a_n$ , let $f(x)\ \dfrac{x^2}{e^{x^3}}$

$\lim\limits_{x\to\infty} \dfrac{x^2}{e^{x^3}} = \dfrac{\infty}{\infty} \to \lim\limits_{x\to\infty} f(x) \overset{L}{=} \lim\limits_{x\to\infty}\dfrac{2x}{3x^2e^{x^3}} \overset{L}{=} \lim\limits_{x\to\infty} \dfrac{2}{6xe^{x^3}+(3x^2)e^{x^3}}$

$=0$

~~Ratio test~~ Comparison test

~~let $b_n = \frac{1}{e^{n^3}}$~~

let $b_n = \dfrac{n^2}{n^4} = \dfrac{1}{n^2} \to 0 \le a_n < b_n$
karena $e^{n^3} > n^4$ untuk $n\geq 1$

karena $\Sigma b_n$ konvergen (p series) ,$\Sigma a_n$ konvergen

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4. b. $a_n = (-1)^{n+1} \dfrac{(3)^{n+1}}{(n+2)!}$

~~Limit test~~ absolute konvergen test

~~$\lim\limits_{n\to\infty} \frac{3^{n+1}}{(n+2)!}$~~

misal $|U_n| = \dfrac{3^{n+1}}{(n+2)!}$

~~Limit Comparison test~~

~~misal $b_n$ ... $(n+1)!$~~

~~$\lim\limits_{n\to\infty} \frac{a_n}{b_n} = \lim \frac{3^{n+1}}{n+2}$ L~~

Ratio test

$\lim\limits_{n\to\infty} \dfrac{a_{n+1}}{a_n} = \lim\limits_{n\to\infty} \dfrac{3^{n+2}(n+2)!}{3^{n+1}(n+3)!} = \dfrac{3.3^n}{3.3^n}\cdot\dfrac{1}{n+3}$

$= \lim\limits_{n\to\infty} \dfrac{3}{n+3} = 0$

karena $\lim\limits_{n\to\infty} \dfrac{a_{n+1}}{a_n} = 0$ , $\Sigma U_n$ konvergen

karena itu $\Sigma \dfrac{(-1)^{n+1}(3)^{n+1}}{(n+2)!}$ konvergen

No.

Date

2206028937
ALDEN LUTHFI

1. a. $a_n = \frac{n+1}{n^2}$

tes 1 : Limit

$\lim_{n\to\infty} a_n = \lim_{n\to\infty} \frac{n+1}{n^2} = 0$

tes 2 : Ratio test

$\lim_{n\to\infty} \frac{a_{n+1}}{a_n} = \frac{\cancel{(n+2)(n+1)^2}}{\cancel{n^2+}} \quad \frac{\frac{(n+2)}{(n+1)^2}}{\frac{n+1}{n^2}}$

$= \lim_{n\to\infty} = \frac{(n+2)n^2}{(n+1)^3} = 1$ (inkonklusif)

~~tes 3 : Ordinary Comparison test~~

$\cancel{0 \le a_n < b_n}$

$\cancel{\text{let } b_n = \frac{n+1}{n^2}}$

tes 4 : Limit Comparison test

let $b_n = \frac{1}{n}$

$\lim_{n\to\infty} \frac{a_n}{b_n} \quad \lim_{n\to\infty} \frac{n+1}{n} = 1$, karena $0 < L < \infty$ $\Sigma a_n$ dan $\Sigma b_n$ sama sama divergen atau sama² konvergen

karena $\Sigma b_n$ divergen, $\Sigma a_n$ divergen

$\downarrow$

harmonic series