## Tugas Responsi Pertemuan 5 Kalkulus 2

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Periksa kekonvergenan deret yang diberikan dan sebutkan jenis uji yang digunakan:

1.

$$\sum_{n=1}^{\infty} \frac{3n+1}{n^2-4}$$

1) 
$$\sum_{n=1}^{\infty} \frac{3n+1}{n^2-4}$$

• Uji Banding Limit

bn =  $\frac{3}{n}$  (Divergen)  $\rightarrow$  Deret harmonik

L=  $\lim_{n\to\infty} \frac{a_n}{b_n} = \lim_{n\to\infty} \frac{3n+1}{n^2-4} \cdot \frac{n}{3} = \lim_{n\to\infty} \frac{3n^2+n}{3n^2-12} = 1 \rightarrow 0 < L < \infty$ 

Menorut teori Uji Banding Limit, Karena  $\Sigma$  bn divergen maka  $\Sigma$  an divergen.

Deret  $\sum_{n=1}^{\infty} \frac{3n+1}{n^2-4}$  divergen.

2.

$$\sum_{n=1}^{\infty} \frac{n}{n^2 + 2n - 3}$$

$$2 \sum_{n=1}^{\infty} \frac{1}{n + 2} = 0$$

$$2 \sum_{n=1}^{\infty} \frac{1}{n + 2} = korverger$$

$$2 \sum_{n=1}^{\infty} \frac{1}{n^2 + 2n - 3}$$

$$\sum\nolimits_{n=1}^{\infty}\frac{n!}{n^{100}}$$

-∞
3. 2 nl
U <sub>leo</sub>
⇒ menggunakan Uži Hasil Bagi / Uži Rasio:
P= Lim ann
n→∞ an
= lim (nH)! . n100
$u \to \infty$ $(\nu \vdash 1)_{100}$ $\nu \mid$
$\lim_{n\to\infty} \left(n+1\right) \left(\frac{n}{n+1}\right)^{100}$
$= \lim_{n \to \infty} (n+1) \cdot \lim_{n \to \infty} \left(\frac{n}{n+1}\right)^{100}$
= \infty \cdot \( \( \) \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\

4.

$$\sum_{n=1}^{\infty} \frac{3^k + k}{k!}$$

4. 
$$\sum_{k=1}^{\infty} \frac{3^{k} + k}{k!}$$

UTI HASIL BAGI (RASIO)

$$P = \lim_{k \to \infty} \frac{a_{k+1}}{a_{1k}}$$

$$= \lim_{k \to \infty} \frac{3^{k+1} + (k+1)}{(k+1)!} \cdot \frac{k!}{3^{k} + k}$$

$$= \lim_{k \to \infty} \frac{3 \cdot 3^{k} + (k+1)}{(k+1)!} \cdot \frac{3^{k} + k}{3^{k} + k}$$

$$= \lim_{k \to \infty} \frac{3 \cdot 3^{k}}{k+1} + \frac{1}{3^{k}}$$

$$= \lim_{k \to \infty} \frac{3 \cdot 3^{k}}{k+1} + \frac{1}{3^{k}}$$

$$= \lim_{k \to \infty} \frac{3^{k} + k}{k!} + \lim_{k \to \infty} \frac{3^{k$$

$$\sum_{n=1}^{\infty} \frac{3n+1}{n^2-4}$$

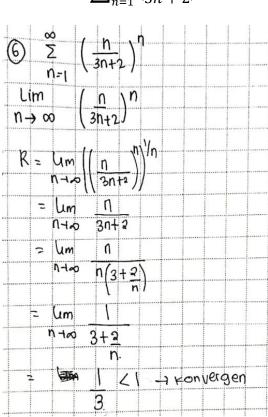
$$5) \sum_{n=1}^{\infty} \frac{3n+1}{n^2-4}$$

· Uji Banding Limit

$$b_n = \frac{3}{n}$$
 (Divergen) -> Deret harmonik

Menurut teori Uji Banding Limit, Karena  $\Sigma$ bn divergen maka  $\Sigma$ an divergen  $\sum_{n=1}^{8n-1} \frac{3n+1}{n^2-4}$  divergen.

$$\sum_{n=1}^{\infty} \left(\frac{n}{3n+2}\right)^n$$



$$\sum_{n=2}^{\infty} \left(\frac{n}{\ln n}\right)^n$$

""2 ( In n )	PLB): PLA) PLBIA) + PLAS P
→ menggunakan Uj	akar lim (an) has a consta
	0. + 1(49) = 1(4)(4)
$a_n: \left(\frac{1}{\ln n}\right)^n$	PLAS
(Inn)	(8)9.('+)9 1
er lim ( (Inn))	1 PCA () P(B)
	13 de de den benkan algun 5-15
Uago IUU	(NIS) 9 (N) 8
	MIR (BIA)+Orn) P(MA)
R=0, 041	maka Z (Inn) konvergen
	not consider

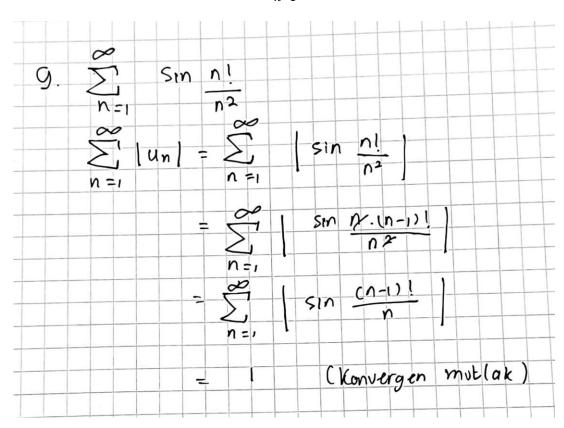
Tentukan apakah deret yang diberikan adalah konvergen mutlak, konvergen bersyarat, atau divergen.

8.

$$\sum_{n=1}^{\infty} (-1)^{n+1} \frac{n}{n+1}$$

8). Z (-1) 1. n n=1 n+1	V, 12	
Jawab:	1 1	
Uji Ganti Tanda uhtuk E Un	Uji kedivergenan pada Slunl	
$a_n = n$	lim   Unl	
741	n-12	
• Cek apakah ∑an turun:	= \im (1-1)n+1. n	
anti Lan	n-400 n+1	
(n+i) L n	= lim h	
N+2 N+1	n-0-0 n+1	
(n2+2n+1) L n2+2n (salah)	= 1 # 0	
	: Zlunt divergen menurut wi	
Cek mlai limitnya:	kedivergenan.	
lim an = lim n = 1 =0		
nos nos not	Karena Zlunl divergen dan Zun	
: Zun divergen menurut	divorgen, maka \( \frac{1}{2} \) (-1)\( \frac{1}{2} \) \( \frac{1}	

$$\sum\nolimits_{n=1}^{\infty} sin\frac{n!}{n^2}$$



$$\sum_{n=1}^{\infty} \left( -\frac{4}{3} \right)^n$$