	No Date
MAT 1211 kalleulus 2 - Responsi 3	
* Tugas Madiri	
o> Palet 1	
(a) Tulis rumus elisplisit barisan berillet dan tentulian he	limvergenannya:
1 -1 1 -1 1 -1	,
Jawab:	
I humus Flesdist:	
$a_n = (-1)^{n+1} \cdot \underline{1} = (-1)^{n+1}$	
n n	
J Keligivergenan:	
-1 2 (-1) 1 2 1	
- n < (-1) m < 1/n => n-200 (-1) = 11m	$o\left(\frac{1}{n}\right) = 0$
Berdasarhan teorema apit maha dapat disimpo sehingga an = (-1) ⁿ⁺¹ Lonvergen he O	han n-200 () = 0,
sehingga an = (-1)" honvergen he 0	
N and the state of the	
(b) Dengan definisi limit, buliplian barisan fang berilu	it honvergen:
$a_n = 3 - 8 \cdot 2^n$	The Appendix
5+4.2	
Paurals:	
· lim 3-8.2" = 300 lim 2n-8	
• $\lim_{n\to\infty} \frac{3-8\cdot 2^n}{5+4\cdot 2^n} = 2 + 4$	
$=\frac{0-8}{0+9}=-\frac{2}{9}=-2$ (honverge	en)
	B 1 1 7 1 1723
- Operoleh L=-2	
· Pilih 2" = = 5	
· Pilih 2" = = =	
· Untile n > N > 0 diperoleh:	
	2 12
$ a_n - L = 3 - \theta - 2^n + 2 $	5+4.(13-5)
= 3-8-2-+ 10+8-2-	= E
5+9.2°	C
* 13	
5+4.2"	
< 13 5+4.2 ^N	

JOYKO 36 Lines, 6 mm

Ualam Analisis Kendahulvan diperetin
$$\frac{13}{5+4\cdot 2^{N}} = \varepsilon \iff \frac{13}{\varepsilon} = \frac{5+4\cdot 2^{N}}{2^{N}} = \frac{13}{\varepsilon} = \frac{5}{2^{N}} = \frac{13}{\varepsilon} = \frac{5}{2^{N}}$$

(c) Tenthan hemonotonan, heterbatasan, dan (imit (jiha ada) barisan berilut:

Jawal :

I kemonotonan:

$$a(x) = \ln x \iff a'(x) = \frac{1}{x} \cdot x - \ln x = 1 - \ln x$$

$$x^{2} \qquad x^{2}$$

Dipervieh

a'(x) foco 1-lnx20 => lne2lnx => ezx: from pada (e,00)

d'(x) 20=> 1-1nx>0 <=> Ine>Inx=>e>x: nail pada (o,e)

Schingga dapat deasimsilian bulian barisan monoton.

o> Paliet 3

(a) Tulis rumus elisplisit barisan berillut dan tentulian he honvergenannup:

0.9, 0.99, 0.999, 0.999, ...

Taurab:

I homos theplisit
$$a_n = 1 - 10^{-n} = 1 - \frac{1}{10^n}$$

1 kelionvergenan:

$$lim$$
 $1-\frac{1}{10^n}$ = $1-\frac{1}{10^\infty}$ -> honvergen he O

(b) Dengan definisi limit, bultilian bansan han berilit konvergen:

$$a_n : \frac{n+3}{3n-2}$$

Towals:

· lum
$$\frac{n+3}{3n-2}$$
 = $\frac{1}{n-\infty}$ = $\frac{1+0}{n-2}$ = $\frac{1}{3}$ (honvergen)

	<u>No</u>
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Diperaleh L= 13	
· Misallian E > O diberlian	
· Pilih N = # +6	
9	
· Untile n>N>0 diperoleh:	
$ an-L = \frac{n+3}{3n-2} \frac{1}{3} $	
= 3M+9-3M+2 9M-6	
9M-6	
: 11	
9 n -6	
< _11	
gn -6	
= 11	e
$9(\frac{1}{2}+6)-6$	
= E	
· Dalam analisis pendahilvan diperoleh:	w a,
$\frac{11}{9M-6} = E \iff \frac{11}{E} = 9M-6$	2112 611
9N-6 C = 1	who have you in the
N = E+6	
g	Angel galage
Tentilian liemonotonon, lieterbatason, dan limit (Gilea ada) barican bentit.
$\alpha n = n$.	The same of the sa
10"	
Jaurals:	
5 Kemonotonan	
anti = (n+1)! (0" = n+1	
an 10 ⁿ⁺¹ . n! 10	
Sehinoga	
anti e 1: fant tak-naik untik n: 1:	2,,9
an+1 > 1 : fan } track ontole n = 10.11	
an [an]	
I kelerbatasan	
· Karena I do I tale-raile untile n= 1.2 9	00 ml
menpalan batas bawah bersamaan denga	mana ag = 109 = 3.628 × 10
menparan batas bawan tersamaan denga	n alo havena 9: 10!

No
(n-1) M
$\lim_{N \to 200} \frac{n!}{10^N} = \lim_{N \to 200} \frac{1.2 \cdot 3 \cdot \dots \cdot (N-1) \cdot N}{(0 \cdot (0 \cdot 10 \cdot \dots \cdot 10^N))}$
· dim 1 2 3
= +00
· Disimpulhan fan) tidah terbatas di atas
22/11/
0> Paket 1
(a) Tulis rumus elisplisit barisan berillut don tentulian belien vergenannya: cos r, cos 27, cos 37, cos 47,
COS R , 4 / 9 / (6 / - 2 /
hawab:
Plumus Elesphisit:
Almos Elesphisit: $an = \cos(n \Re) \cdot \frac{1}{n^2} = \frac{\cos(n \Re)}{n^2}$
l'celionvergenair:
-1 < cos (n 7) < 1
$\frac{1}{n^2} \left\langle \frac{1}{n^2} \right\rangle = \frac{1}{n^2} \left\langle \frac{1}{n^2} \right\rangle = $
$\frac{-1 < \cos(n\pi) < 1}{n^2} < \frac{1}{n^2} \Rightarrow \lim_{n \to \infty} \frac{1}{n^2} = 0$ Berdasarban teorema apit malia dapat disimpullian $\frac{1}{n-200} = 0$, sehnggi
an = cos (nr) honvergen he o
12 2 1 1 1 1 1 2 1 2 2 40 B Bulletham (demander)
(b) Dilletaher fant honvergen he Adam Ebn3 honvergen he B. Bulkhan (dengan
définisi limit) fan + bn) honvergen he A + B.
· Karena fant linvergen he A malan n-200 an = A. Until setiap 6 >0
· Karena jan l'envergon Le A malaro n-200 art - M. Unite servair et
selate dapat defenution 10120 sedemitian serringgo 112 111 seriale
an-A <\frac{1}{2}\epsilon \text{lim by = B \ \langle \text{1.1 \text{lim by = C > 0 \ \text{solar}}}
* karena fbn i hønvergen he B malia n-soo bn = B. Until setiap & >0 sela
dapat ditenulian N2>0 sedemilian sehingga n>N2 ber lalu
1 bn - B1 < \frac{1}{2} \in \f
- Pilih N= max & N1, N2 3. Diperoleh:
an+bn-(A+B) = (an-A)+(bn-B)
≤ [an-A]+[bn-B]
< \(\frac{1}{2}\varepsilon + \frac{1}{2}\varepsilon
· E
· Terbult, bahura n-200 (an+bn) = A+B (knivergen)

0) =				No Date	
C) Tenthan (uemonotonan, heter	batasan, da	n limit Cpl	a ada) barisan	berilut:
an:	Sin nor				
	4				
Dawas:					
& keemono	tonan:	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	od st		
n-> as 5	in a -> +idal	ada (dive	rgen)		
Dapat	disimpullian sin	To bulian	barisan n	nonotan	
		1000		<u> </u>	
					The state of
				177-17	
				721 -1	
					1
				1 15 V 7 V 2	
	C : :			2 - ,	
	Treffice or the	1 21 1 10	1.16	and the Toronto	36
			100 to 100 hours		
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