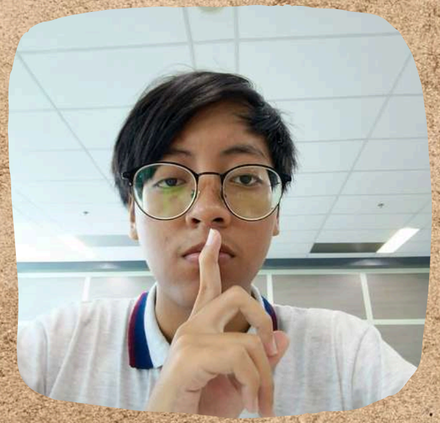
ALJABAR LINEAR 4

Kelompok Mewing

OUR TEAM

I Made Ryan Darmajaya (5025241158)



Muhammad Zaky Zein (5025241148)

Rennard Filbert Tanjaya (5025241122)

William Hans Chandra (5025241138)

Yoseph Kevin Hendrata (5025241146)

SOAL

Cari determinan dengan cara mengubah matriks menjadi bentuk segitiga atas

Matriks Awal			
-1	3	6	2
-5	6	-4	5
6	0	8	-3
8	-5	-3	9

PENYELESAIAN

Iterasi 1	b2 = b1 * (-5) + b2		
-1	3	6	2
0	-9	-34	-5
6	0	8	-3
8	-5	-3	9

ITERASI 1 :

$$B2 = B1 * (-5) + B2$$

$$B2 = \begin{bmatrix} -1 \\ 3 \\ 6 \\ 2 \end{bmatrix} * (-5) = \begin{bmatrix} 5 \\ -15 \\ -30 \\ -10 \end{bmatrix}$$

$$B2 = \begin{bmatrix} 5 \\ -15 \\ -30 \\ -10 \end{bmatrix} + \begin{bmatrix} -5 \\ 6 \\ -4 \\ 5 \end{bmatrix} = \begin{bmatrix} 0 \\ -9 \\ -34 \\ -5 \end{bmatrix}$$

Iterasi 2	b3 = b1 * (6) + b3		
-1	3	6	2
0	-9	-34	-5
0	18	44	9
8	-5	-3	9

ITERASI 2 :

$$B3 = B1 * (6) + B3$$

$$B3 = \begin{bmatrix} -1 \\ 3 \\ 6 \\ 2 \end{bmatrix} * (6) = \begin{bmatrix} -6 \\ 18 \\ 36 \\ 12 \end{bmatrix}$$

$$B3 = \begin{bmatrix} -6 \\ 18 \\ 36 \\ 12 \end{bmatrix} + \begin{bmatrix} 6 \\ 0 \\ 8 \\ -3 \end{bmatrix} = \begin{bmatrix} 0 \\ 18 \\ 44 \\ 9 \end{bmatrix}$$

PENYELESAIAN

Iterasi 3	b4 = b1 * (8) + b4		
-1	3	6	2
0	-9	-34	-5
0	18	44	9
0	19	45	25

ITERASI 3 :

$$B4 = B1 * (8) + B4$$

$$B4 = \begin{bmatrix} -1 \\ 3 \\ 6 \\ 2 \end{bmatrix} * (8) = \begin{bmatrix} -8 \\ 24 \\ 48 \\ 16 \end{bmatrix}$$

$$B4 = \begin{bmatrix} -8 \\ 24 \\ 48 \\ 16 \end{bmatrix} + \begin{bmatrix} 8 \\ -5 \\ -3 \\ 9 \end{bmatrix} = \begin{bmatrix} 0 \\ 19 \\ 45 \\ 25 \end{bmatrix}$$

Iterasi 4	b3 = b2 * (2) + b3		
-1	3	6	2
0	-9	-34	-5
0	0	-24	-1
0	19	45	25

ITERASI 4:

B3 = B2 * (2) + B3

$$B3 = \begin{bmatrix} 0 \\ -9 \\ -34 \\ -5 \end{bmatrix} * (2) + \begin{bmatrix} 0 \\ 18 \\ 44 \\ 9 \end{bmatrix}$$

$$B3 = \begin{bmatrix} 0 \\ -18 \\ -68 \\ -10 \end{bmatrix} + \begin{bmatrix} 0 \\ 18 \\ 44 \\ 9 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ -24 \\ -1 \end{bmatrix}$$

PENYELESAIAN

Iterasi 5	b4 = b2 * (19/9) + b4		
-1	3	6	2
0	-9	-34	-5
0	0	-24	-1
0	0	-26.78	14.44

ITERASI 5:

$$B4 = B2 * \left(\frac{19}{9}\right) + B4$$

$$B4 = \begin{bmatrix} 0 \\ -9 \\ -34 \\ -5 \end{bmatrix} * \left(\frac{19}{9}\right) + \begin{bmatrix} 0 \\ 19 \\ 45 \\ 25 \end{bmatrix}$$

$$B4 = \begin{bmatrix} 0 \\ -19 \\ -71{,}78 \\ -10.56 \end{bmatrix} + \begin{bmatrix} 0 \\ 19 \\ 45 \\ 25 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ -26.78 \\ 14.44 \end{bmatrix}$$

Iterasi 6	b4 = b3 * (-26.78/24) + b4		
-1	3	6	2
0	-9	-34	-5
0	0	-24	-1
0	0	0	15.56

ITERASI 6:

$$B4 = B3 * \left(\frac{-26.78}{24}\right) + B4$$

$$B4 = \begin{bmatrix} 0 \\ 0 \\ -24 \\ -1 \end{bmatrix} * \left(\frac{-26.78}{24}\right) + \begin{bmatrix} 0 \\ 0 \\ -26.78 \\ 14.44 \end{bmatrix}$$

$$B4 = \begin{bmatrix} 0 \\ 0 \\ 26{,}78 \\ 1.12 \end{bmatrix} + \begin{bmatrix} 0 \\ 0 \\ -26.78 \\ 14.44 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 0 \\ 15.56 \end{bmatrix}$$

HASIL DETERMINAN

Iterasi 6	b4 = b3 * (-26.78/24) + b4		
-1	3	6	2
0	-9	-34	-5
0	0	-24	-1
0	0	0	15.56

$$det = (-1) \times (-9) \times (-24) \times (15.56)$$

$$det = -3360.96$$


THANK
YOU