MATRIX INVERTED

Presented by Mewing Team

Our Team

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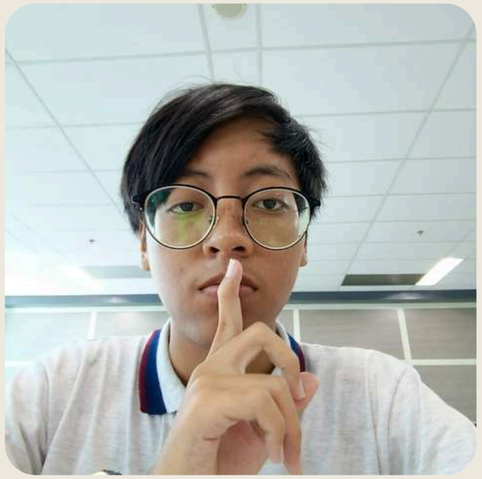

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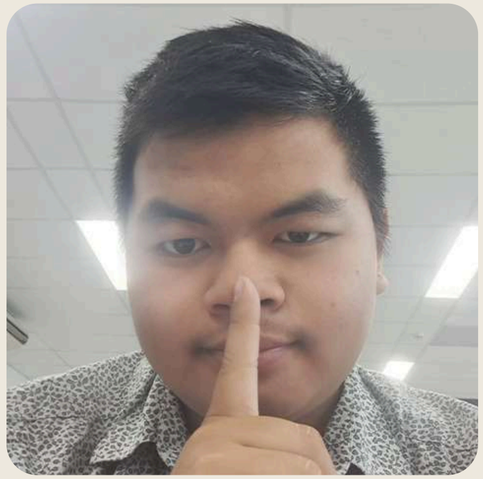

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SPL

$$-1X_1 + 5X_2 + 8X_3 = 2$$

$$-4X_1 - 4X_2 + 4X_3 = 5$$

$$2X1 + 7X_2 - 6X_3 = 8$$

Matriks

MATRIKS A :

$$\begin{bmatrix} -1 & 5 & 8 \\ -4 & -4 & 4 \\ 2 & 7 & -6 \end{bmatrix}$$

B:

$$\begin{bmatrix} 2 \\ 5 \\ 8 \end{bmatrix}$$

INVERS MATRIKS A

Matriks A dengan Matriks Identitas					
-1	5	8	1	0	0
-4	-4	4	0	1	0
2	7	-6	0	0	1

Iterasi 1		b1 = b1 * (-1)			
1	-5	-8	-1	0	0
-4	-4	4	0	1	0
2	7	-6	0	0	1

ITERASI 1 :

$$B1 = B1 * (-1)$$

$$B1 = \begin{bmatrix} -1 \\ 5 \\ 8 \\ 1 \\ 0 \\ 0 \end{bmatrix} * (-1) = \begin{bmatrix} 1 \\ -5 \\ -8 \\ -1 \\ 0 \\ 0 \end{bmatrix}$$

Iterasi 2		b2 = b1 * (4) + b2			
1	-5	-8	-1	0	0
0	-24	-28	-4	1	0
2	7	-6	0	0	1

ITERASI 2 :

$$B2 = B1 * (4) + B2$$

$$B2 = \begin{bmatrix} 1 \\ -5 \\ -8 \\ -1 \\ 0 \\ 0 \end{bmatrix} * (4) + \begin{bmatrix} -4 \\ -4 \\ 4 \\ 0 \\ 1 \\ 0 \end{bmatrix} = \begin{bmatrix} 0 \\ -24 \\ -28 \\ -4 \\ 1 \\ 0 \end{bmatrix}$$

Iterasi 3		b3 = b1 * (-2) + b3			
1	-5	-8	-1	0	0
0	-24	-28	-4	1	0
0	17	10	2	0	1

ITERASI 3 :

$$B3 = B1 * (-2) + B3$$

$$B3 = \begin{bmatrix} 1 \\ -5 \\ -8 \\ -1 \\ 0 \\ 0 \end{bmatrix} * (-2) + \begin{bmatrix} 2 \\ 7 \\ -6 \\ 0 \\ 0 \\ 1 \end{bmatrix} = \begin{bmatrix} 0 \\ 17 \\ 10 \\ 2 \\ 0 \\ 1 \end{bmatrix}$$

Iterasi 4		b2 = b2 * (-1/24)			
1	-5	-8	-1	0	0
0	1	1.17	0.17	-0.04	0
0	17	10	2	0	1

ITERASI 4 :

$$B2 = B2 * (-\frac{1}{24})$$

$$B2 = \begin{bmatrix} 0 \\ -24 \\ -28 \\ -4 \\ 1 \\ 0 \end{bmatrix} * (-\frac{1}{24}) = \begin{bmatrix} 0 \\ 1 \\ 1{,}17 \\ 0{,}17 \\ -0{,}04 \\ 0 \end{bmatrix}$$

Iterasi 5		b3 = b2 * (-17) + b3			
1	-5	-8	-1	0	0
0	1	1.17	0.17	-0.04	0
0	0	-9.89	-0.89	0.68	1

ITERASI 5 :

$$B3 = B2 * (-17) + B3$$

$$B3 = \begin{bmatrix} 0 \\ 1 \\ 1{,}17 \\ 0{,}17 \\ -0{,}04 \\ 0 \end{bmatrix} * (-17) + \begin{bmatrix} 0 \\ 17 \\ 10 \\ 2 \\ 0 \\ 1 \end{bmatrix}$$

$$= \begin{bmatrix} 0 \\ 0 \\ -9{,}89 \\ -0{,}89 \\ 0{,}68 \\ 1 \end{bmatrix}$$

Iterasi 6		b3 = b3 * (-1/9.89)			
1	-5	-8	-1	0	0
0	1	1.17	0.17	-0.04	0
0	0	1	0.09	-0.07	-0.10

ITERASI 6:

$$B3 = B3 * \left(-\frac{1}{9.89}\right)$$

$$B3 = \begin{bmatrix} 0 \\ 0 \\ -9.89 \\ -0.89 \\ 0.68 \\ 1 \end{bmatrix} * \left(-\frac{1}{9.89}\right) = \begin{bmatrix} 0 \\ 0 \\ 1 \\ 0.09 \\ -0.07 \\ -0.10 \end{bmatrix}$$

Iterasi 7		b2 = b3 * (-1.17) + b2			
1	-5	-8	-1	0	0
0	1	0	0.06	0.04	0.12
0	0	1	0.09	-0.07	-0.10

ITERASI 7:

$$B2 = B3 * (-1.17) + B2$$

$$B2 = \begin{bmatrix} 0 \\ 0 \\ 1 \\ 0.09 \\ -0.07 \\ -0.10 \end{bmatrix} * (-1.17) + \begin{bmatrix} 0 \\ 1 \\ 1.17 \\ 0.17 \\ -0.04 \\ 0 \end{bmatrix}$$

$$B2 = \begin{bmatrix} 0 \\ 0 \\ -1.17 \\ -0.11 \\ 0.08 \\ 0.12 \end{bmatrix} + \begin{bmatrix} 0 \\ 1 \\ 1.17 \\ 0.17 \\ -0.04 \\ 0 \end{bmatrix} = \begin{bmatrix} 0 \\ 1 \\ 0 \\ 0.06 \\ 0.04 \\ 0.12 \end{bmatrix}$$

Iterasi 8		b1 = b3 * (8) + b1			
1	-5	0	-0.28	-0.56	-0.80
0	1	0	0.06	0.04	0.12
0	0	1	0.09	-0.07	-0.10

ITERASI 8:

$$B1 = B3 * (8) + B1$$

$$B1 = \begin{bmatrix} 0 \\ 0 \\ 1 \\ 0.09 \\ -0.07 \\ -0.10 \end{bmatrix} * (8) + \begin{bmatrix} 1 \\ -5 \\ -8 \\ -1 \\ 0 \\ 0 \end{bmatrix}$$

$$B1 = \begin{bmatrix} 0 \\ 0 \\ 8 \\ 0.72 \\ -0.56 \\ -0.80 \end{bmatrix} + \begin{bmatrix} 1 \\ -5 \\ -8 \\ -1 \\ 0 \\ 0 \end{bmatrix} = \begin{bmatrix} 1 \\ -5 \\ 0 \\ -0.28 \\ -0.56 \\ -0.80 \end{bmatrix}$$

Iterasi 9			b1 = b2 * (5) + b1		
1	0	0	0.02	-0.36	-0.20
0	1	0	0.06	0.04	0.12
0	0	1	0.09	-0.07	-0.10

ITERASI 9:

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

$$B1 = \begin{bmatrix} 0 \\ 1 \\ 0 \\ 0.06 \\ 0.04 \\ 0.12 \end{bmatrix} * (5) + \begin{bmatrix} 1 \\ -5 \\ 0 \\ -0.28 \\ -0.56 \\ -0.80 \end{bmatrix}$$

$$B1 = \begin{bmatrix} 0 \\ 5 \\ 0 \\ 0.30 \\ 0.20 \\ 0.60 \end{bmatrix} + \begin{bmatrix} 1 \\ -5 \\ 0 \\ -0.28 \\ -0.56 \\ -0.80 \end{bmatrix} = \begin{bmatrix} 1 \\ 0 \\ 0 \\ 0.02 \\ -0.36 \\ -0.20 \end{bmatrix}$$

HASIL INVERS

MATRIKS A^{-1} :

$$\begin{bmatrix} 0{,}02 & -0{,}36 & -0{,}20 \\ 0{,}06 & 0{,}04 & -0{,}12 \\ 0{,}09 & -0{,}07 & -0{,}10 \end{bmatrix}$$

PENYELESAIAN SPL

$x = A^{-1} . B$			
0.02	-0.36	-0.20	2
0.06	0.04	0.12	5
0.09	-0.07	-0.10	8

PENYELESAIAN SPL

$$x = \begin{bmatrix} 0.02 & -0.36 & -0.20 \\ 0.06 & 0.04 & 0.12 \\ 0.09 & -0.07 & -0.10 \end{bmatrix} \begin{bmatrix} 2 \\ 5 \\ 8 \end{bmatrix}$$

$$x = \begin{bmatrix} (0.02 \times 2) + (-0.36 \times 5) + (-0.20 \times 8) \\ (0.06 \times 2) + (0.04 \times 5) + (0.12 \times 8) \\ (0.09 \times 2) + (-0.07 \times 5) + (-0.10 \times 8) \end{bmatrix} = \begin{bmatrix} -3.36 \\ 1.28 \\ -0.97 \end{bmatrix}$$

PENYELESAIAN SPL

x
-3.36
1.28
-0.97

$X_1 = -3,36$

$X_2 = 1,28$

$X_3 = -0.97$

Thank You