INVERS
Matriks

Sifat-sifat invers matriks

Tujuan pembelajaran

1. Peserta didik menemukan sifat-sifat invers matriks dan persamaan matriks
2. Peserta didik mampu memecahkan masalah dengan menerapkan invers matriks

LIVEWORKSHEETS

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Diketahui $A = \begin{pmatrix} 3 & 2 \\ 5 & 4 \end{pmatrix}$

A^{-1}

Invers matriks A

$$A^{-1} = \frac{1}{(3)(4) - (\quad)(\quad)} \begin{pmatrix} & \\ & \end{pmatrix}$$

$$= \frac{1}{\quad} \begin{pmatrix} & \\ & \end{pmatrix} = \begin{pmatrix} & \\ & 1{,}5 \end{pmatrix}$$

$$A^{-1}A = \begin{pmatrix} & \\ & 1{,}5 \end{pmatrix} \begin{pmatrix} 3 & 2 \\ 5 & 4 \end{pmatrix}$$

$$= \begin{pmatrix} (\quad)(\quad) + (\quad)(\quad) & (\quad)(\quad) + (\quad)(\quad) \\ (\quad)(\quad) + (\quad)(\quad) & (\quad)(\quad) + (\quad)(\quad) \end{pmatrix}$$

$$= \begin{pmatrix} & \\ & \end{pmatrix}$$

$$AA^{-1} = \begin{pmatrix} 3 & 2 \\ 5 & 4 \end{pmatrix} \begin{pmatrix} & \\ & 1{,}5 \end{pmatrix}$$

$$= \begin{pmatrix} (\quad)(\quad) + (\quad)(\quad) & (\quad)(\quad) + (\quad)(\quad) \\ (\quad)(\quad) + (\quad)(\quad) & (\quad)(\quad) + (\quad)(\quad) \end{pmatrix}$$

$$= \begin{pmatrix} & \\ & \end{pmatrix}$$

$Jadi, A^{-1}A \qquad AA^{-1}$

LIVEWORKSHEETS

DIKETAHUI

$$A = \begin{pmatrix} 3 & 2 \\ 5 & 4 \end{pmatrix}$$

Dihalaman sebelumnya sudah ditemukan, Invers A

$$A^{-1} = \begin{pmatrix} & \\ & 1{,}5 \end{pmatrix}$$

Tentukan $(A^{-1})^{-1}$

$$(A^{-1})^{-1} = \begin{pmatrix} & \\ & 1{,}5 \end{pmatrix}^{-1}$$

$$= \frac{1}{(\ \ )(\ \ ) - (\ \ )(\ \ )} \begin{pmatrix} 1{,}5 & \\ & \end{pmatrix}$$

$$= \frac{1}{\ \ } \begin{pmatrix} 1{,}5 & \\ & \end{pmatrix} = \begin{pmatrix} 1{,}5 & \\ & \end{pmatrix}$$

$$= \begin{pmatrix} & \\ & \end{pmatrix}$$

$Jadi, (A^{-1})^{-1} =$

LIVEWORKSHEETS

DIKETAHUI $A = \begin{pmatrix} 3 & 2 \\ 5 & 4 \end{pmatrix}$

DETERMINAN A

|A| = ( )( ) - ( )( )

= -

=

DETERMINAN A^{-1}

Dihalaman sebelumnya sudah ditemukan, Invers A

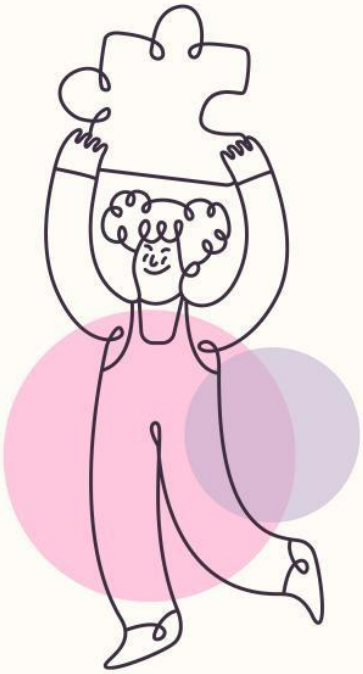
$$A^{-1} = \begin{pmatrix} & \\ & 1{,}5 \end{pmatrix}$$

Maka determinan A^{-1}, sebagai berikut:

$|A^{-1}|$ = ( )( ) - ( )( )

= -

=



Jadi, det $A^{-1} = \dfrac{1}{\quad}$

LIVEWORKSHEETS

Diketahui $A = \begin{pmatrix} 3 & 2 \\ 5 & 4 \end{pmatrix}$ dan $B = \begin{pmatrix} 5 & 9 \\ 4 & 7 \end{pmatrix}$

Tentukan $(AB)^{-1}$

Cari dulu AB

$$AB = \begin{pmatrix} 3 & 2 \\ 5 & 4 \end{pmatrix} \begin{pmatrix} 5 & 9 \\ 4 & 7 \end{pmatrix}$$

$$= \begin{pmatrix} (\quad)(\quad)+(\quad)(\quad) & (\quad)(\quad)+(\quad)(\quad) \\ (\quad)(\quad)+(\quad)(\quad) & (\quad)(\quad)+(\quad)(\quad) \end{pmatrix} = \begin{pmatrix} & \\ & \end{pmatrix}$$

Lalu cari

$$(AB)^{-1} = \frac{1}{(\quad)(\quad)-(\quad)(\quad)} \begin{pmatrix} & \\ & \end{pmatrix}$$

$$= \frac{1}{\quad} \begin{pmatrix} & \\ & \end{pmatrix} = \begin{pmatrix} & \\ & \end{pmatrix}$$

Tentukan $B^{-1}\ A^{-1}$

DIHALAMAN 2 SUDAH DICARI NILAI INVERS MATRIKS A YAITU

$$A^{-1} = \begin{pmatrix} & \\ & 1{,}5 \end{pmatrix}$$

CARI INVERS MATRIKS B

$$B^{-1} = \frac{1}{(\quad)(\quad)-(\quad)(\quad)} \begin{pmatrix} & \\ & \end{pmatrix} = \begin{pmatrix} & \\ & \end{pmatrix}$$

$$B^{-1}\ A^{-1} = \begin{pmatrix} & \\ & \end{pmatrix} \begin{pmatrix} & \\ & 1{,}5 \end{pmatrix}$$

$$= \begin{pmatrix} (\quad)(\quad)+(\quad)(\quad) & (\quad)(\quad)+(\quad)(\quad) \\ (\quad)(\quad)+(\quad)(\quad) & (\quad)(\quad)+(\quad)(\quad) \end{pmatrix} = \begin{pmatrix} & \\ & \end{pmatrix}$$

Jadi, $(AB)^{-1}$ $\qquad$ $B^{-1}\ A^{-1}$

LIVEWORKSHEETS

SEMANGAT

Lanjut ya...

Persamaan matriks

LIVEWORKSHEETS

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PERSAMAAN MATRIKS

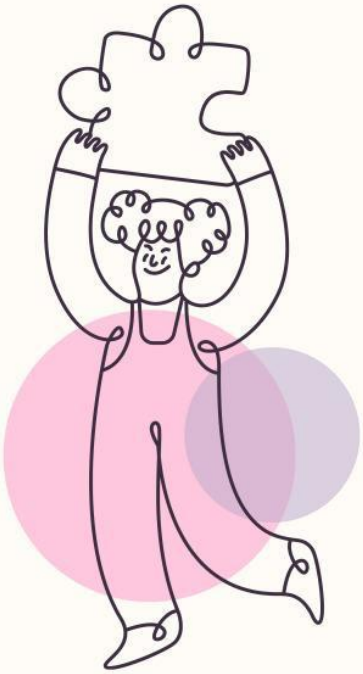
Jika $AX = B$

Maka $A^{-1}AX = A^{-1}B$

$X = A^{-1}B$

$X = A^{-1}B$

Jadi, Jika Maka $X = A^{-1}B$



Jika $XA = B$

Maka $XA\,A^{-1} = B\,A^{-1}$

$X = B\,A^{-1}$

$X = B\,A^{-1}$

Jadi, Jika Maka $X = BA^{-1}$

LIVEWORKSHEETS

CONTOH SOAL

Tentukan X supaya $\begin{pmatrix} 2 & 3 \\ 3 & 5 \end{pmatrix} X = \begin{pmatrix} 6 \\ 4 \end{pmatrix}$

Ingat $\boxed{AX = B}$ *Maka* $\boxed{X = A^{-1}B}$

$$\begin{pmatrix} 2 & 3 \\ 3 & 5 \end{pmatrix} X = \begin{pmatrix} 6 \\ 4 \end{pmatrix}$$

$$X = \begin{pmatrix} 2 & 3 \\ 3 & 5 \end{pmatrix}^{-1} \begin{pmatrix} 6 \\ 4 \end{pmatrix}$$

$$X = \frac{1}{(\quad)(\quad) - (\quad)(\quad)} \begin{pmatrix} & \\ & \end{pmatrix} \begin{pmatrix} 6 \\ 4 \end{pmatrix}$$

$$X = \begin{pmatrix} & \\ & \end{pmatrix} \begin{pmatrix} 6 \\ 4 \end{pmatrix} = \begin{pmatrix} (\quad)(\quad) + (\quad)(\quad) \\ (\quad)(\quad) + (\quad)(\quad) \end{pmatrix}$$

$$X = \begin{pmatrix} & \\ & \end{pmatrix}$$

Bukti

$$\begin{pmatrix} 2 & 3 \\ 3 & 5 \end{pmatrix} X = \begin{pmatrix} 6 \\ 4 \end{pmatrix}$$

$$\begin{pmatrix} 2 & 3 \\ 3 & 5 \end{pmatrix} \begin{pmatrix} & \\ & \end{pmatrix} = \begin{pmatrix} 6 \\ 4 \end{pmatrix}$$

$$\begin{pmatrix} (\quad)(\quad) + (\quad)(\quad) \\ (\quad)(\quad) + (\quad)(\quad) \end{pmatrix} = \begin{pmatrix} 6 \\ 4 \end{pmatrix}$$

$$\begin{pmatrix} & \\ & \end{pmatrix} = \begin{pmatrix} 6 \\ 4 \end{pmatrix}$$

LIVEWORKSHEETS