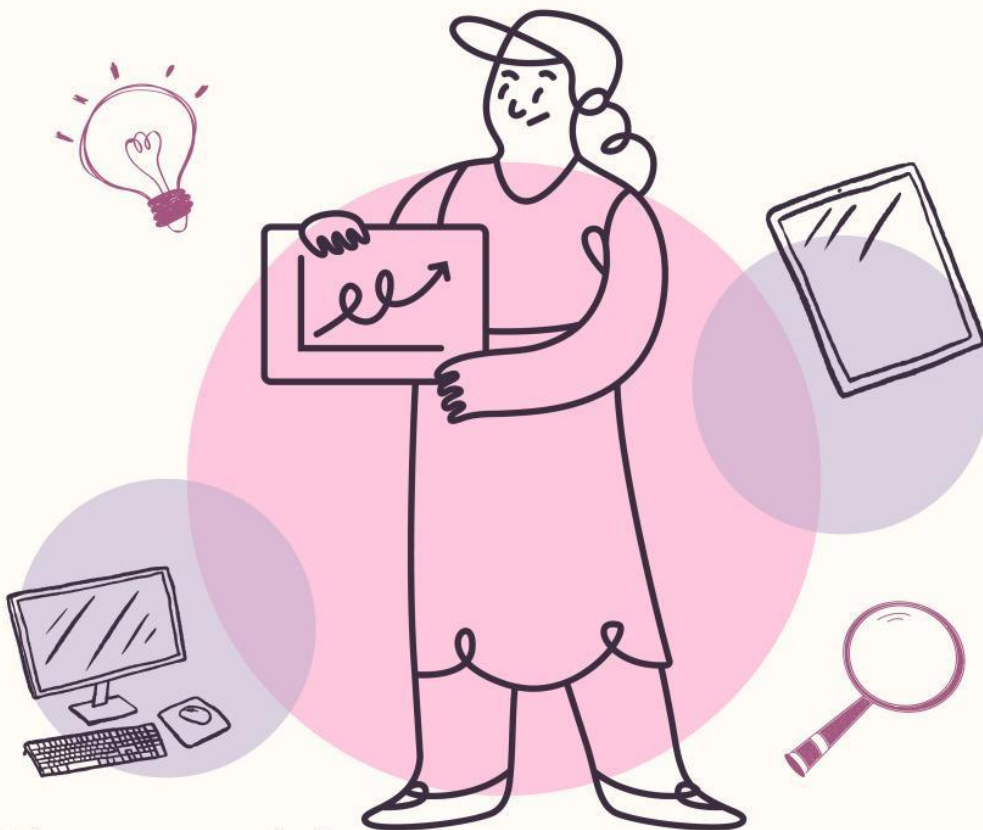


INVERS

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

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


 A^{-1}

Invers matriks A

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

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

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

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

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

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

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

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

Jadi, $A^{-1}A$

AA^{-1}

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

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

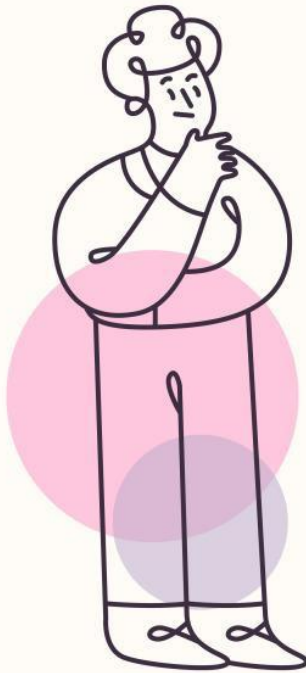
Jadi, $(A^{-1})^{-1} =$



DIKETAHUI

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

DETERMINAN A



$$|A| = (\quad)(\quad) - (\quad)(\quad)$$

$$= \quad - \quad$$

$$=$$

DETERMINAN A^{-1}

Dihalaman sebelumnya sudah ditemukan,
Invers A

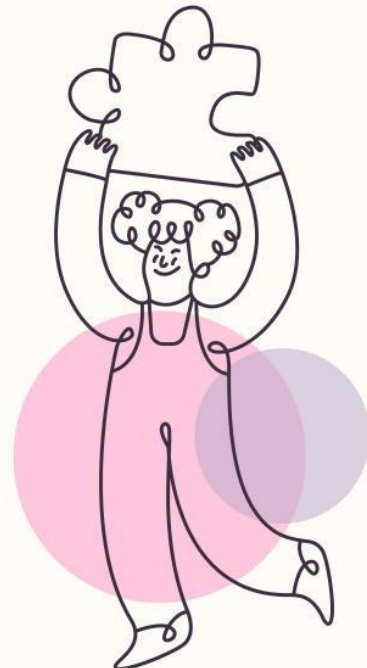
$$A^{-1} = \begin{pmatrix} \quad & \quad \\ \quad & 1,5 \end{pmatrix}$$

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

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

$$= \quad - \quad$$

$$=$$



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

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

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

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

Lalu cari

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

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

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

DIHALAMAN 2 SUDAH DICARI NILAI
INVERS MATRIKS A YAITU

CARI INVERS MATRIKS B

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

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

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

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

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

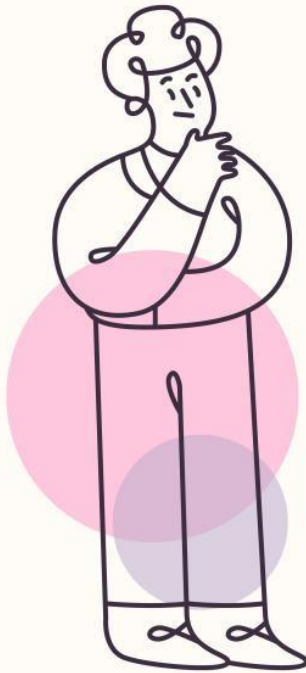
SEMANGAT

Lanjut ya...

Persamaan matriks



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 $XA=B$

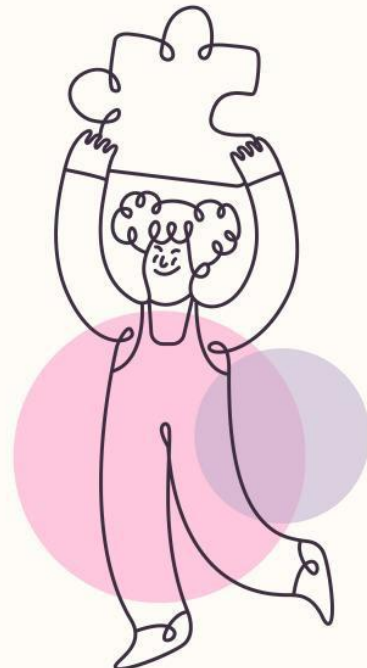
Maka $XA A^{-1} = B A^{-1}$

$X = B A^{-1}$

$X = B A^{-1}$

Jadi, Jika

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



CONTOH SOAL



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

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

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

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

$$X = \frac{1}{\begin{pmatrix} \end{pmatrix} \begin{pmatrix} \end{pmatrix} - \begin{pmatrix} \end{pmatrix} \begin{pmatrix} \end{pmatrix}} \begin{pmatrix} \end{pmatrix} \begin{pmatrix} 6 \\ 4 \end{pmatrix}$$

$$X = \begin{pmatrix} \end{pmatrix} \begin{pmatrix} 6 \\ 4 \end{pmatrix} = \begin{pmatrix} \begin{pmatrix} \end{pmatrix} \begin{pmatrix} \end{pmatrix} + \begin{pmatrix} \end{pmatrix} \begin{pmatrix} \end{pmatrix} \\ \begin{pmatrix} \end{pmatrix} \begin{pmatrix} \end{pmatrix} + \begin{pmatrix} \end{pmatrix} \begin{pmatrix} \end{pmatrix} \end{pmatrix}$$

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

Bukti

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

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

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

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