

SCHOOL SUBJECT : MATRIKS

Kerjakan soal berikut!

Jawaban tertulis di buku catatan

1. Diketahui matriks $A = \begin{pmatrix} 5 & 2 & 3 \\ -3 & 4 & -1 \\ 0 & 1 & -2 \end{pmatrix}$.

Tentukan:

a) Nilai $a_{21} = \dots$

b) Nilai $a_{32} = \dots$

c) Nilai $a_{21} \times a_{32} = \dots$

2. Jika $\begin{pmatrix} 2x-1 & 6 \\ -12 & 3x-2y \end{pmatrix} = \begin{pmatrix} 9 & 6 \\ -12 & 11 \end{pmatrix}$, maka tentukan nilai x, y ,
dan nilai $2x + 3y$!

Penyelesaian:

$$2x - 1 = \dots$$

$$x = \dots$$

$$3x - 2y = \dots$$

$$3(\dots) - 2y = \dots$$

$$\dots - 2y = \dots$$

$$-2y = \dots$$

$$y = \dots$$

$$2x + 3y = 2(\dots) + 3(\dots)$$

$$= \dots + \dots$$

$$= \dots$$

3. Diketahui $A = \begin{pmatrix} 1 & -5 & 7 \\ 3 & -8 & 2 \end{pmatrix}$, $B = \begin{pmatrix} 0 & 4 \\ -1 & 2 \\ 3 & 5 \end{pmatrix}$, dan $C = \begin{pmatrix} 3 & -3 \\ 4 & 1 \end{pmatrix}$. Tentukan:

a) Matriks $3A = \begin{pmatrix} \boxed{\dots} & \boxed{\dots} & \boxed{\dots} \\ \boxed{\dots} & \boxed{\dots} & \boxed{\dots} \end{pmatrix}$

b) Matriks $B^T = \begin{pmatrix} \boxed{\dots} & \boxed{\dots} & \boxed{\dots} \\ \boxed{\dots} & \boxed{\dots} & \boxed{\dots} \end{pmatrix}$

c) Matriks $CA = \begin{pmatrix} \boxed{\dots} & \boxed{\dots} \\ \boxed{\dots} & \boxed{\dots} \end{pmatrix} \begin{pmatrix} \boxed{\dots} & \boxed{\dots} & \boxed{\dots} \\ \boxed{\dots} & \boxed{\dots} & \boxed{\dots} \end{pmatrix}$
 $= \begin{pmatrix} \boxed{\dots} & \boxed{\dots} & \boxed{\dots} \\ \boxed{\dots} & \boxed{\dots} & \boxed{\dots} \end{pmatrix}$

d) Nilai dari $3A + B^T - CA$

$$= \begin{pmatrix} \boxed{\dots} & \boxed{\dots} & \boxed{\dots} \\ \boxed{\dots} & \boxed{\dots} & \boxed{\dots} \end{pmatrix} + \begin{pmatrix} \boxed{\dots} & \boxed{\dots} & \boxed{\dots} \\ \boxed{\dots} & \boxed{\dots} & \boxed{\dots} \end{pmatrix} - \begin{pmatrix} \boxed{\dots} & \boxed{\dots} & \boxed{\dots} \\ \boxed{\dots} & \boxed{\dots} & \boxed{\dots} \end{pmatrix}$$

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

4. Diketahui matriks P adalah matriks persegi berordo 2×2 yang memenuhi

$$P \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix} = \begin{pmatrix} 4 & 8 \\ 5 & 8 \end{pmatrix}.$$

Tentukan matriks P yang memenuhi persamaan tersebut!

Penyelesaian:

$$P \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix} = \begin{pmatrix} 4 & 8 \\ 5 & 8 \end{pmatrix}$$

$$P \cdot A = B \quad (\text{permisalan})$$

Sehingga:

$$P = A^{-1} \times B$$

$$A^{-1} = \frac{1}{\begin{array}{|c|} \hline \dots \\ \hline \end{array} - \begin{array}{|c|} \hline \dots \\ \hline \end{array}} \times \left(\begin{array}{|c|} \hline \dots \\ \hline \end{array} \begin{array}{|c|} \hline \dots \\ \hline \end{array} \right)$$

$$A^{-1} = \frac{1}{\begin{array}{|c|} \hline \dots \\ \hline \end{array}} \times \left(\begin{array}{|c|} \hline \dots \\ \hline \end{array} \begin{array}{|c|} \hline \dots \\ \hline \end{array} \right)$$

$$A^{-1} = \left(\begin{array}{|c|} \hline \dots \\ \hline \end{array} \begin{array}{|c|} \hline \dots \\ \hline \end{array} \right)$$

Jadi matriks P yang memenuhi persamaan tersebut adalah:

$$P = A^{-1} \times B$$

$$P = \left(\begin{array}{|c|} \hline \dots \\ \hline \end{array} \begin{array}{|c|} \hline \dots \\ \hline \end{array} \right) \times \left(\begin{array}{|c|} \hline \dots \\ \hline \end{array} \begin{array}{|c|} \hline \dots \\ \hline \end{array} \right)$$

$$P = \left(\begin{array}{|c|} \hline \dots \\ \hline \end{array} \begin{array}{|c|} \hline \dots \\ \hline \end{array} \right)$$

5. Diketahui sistem persamaan linier berikut.

$$\begin{cases} 2x + 3y = 12 \\ 3x + y = 11 \end{cases}$$

Dengan **metode invers matriks** atau **metode determinan matriks**, tentukan nilai x dan y yang memenuhi SPLDV tersebut!

Jadi, nilai $x = \begin{array}{|c|} \hline \dots \\ \hline \end{array}$ dan nilai $y = \begin{array}{|c|} \hline \dots \\ \hline \end{array}$