

$$AB = \begin{bmatrix} -1 & -1 & 0 \\ -1 & 1 & 2 \end{bmatrix} \begin{bmatrix} -1 & x \\ 1 & y \\ 0 & z \end{bmatrix} = \begin{bmatrix} 1-1+0 & -x-y+0 \\ 1+1+0 & -x+y+2z \end{bmatrix}$$

$$= \begin{bmatrix} 0 & -x-y \\ 2 & -x+y+2z \end{bmatrix} = \begin{bmatrix} 0 & 2 \\ 2 & 4 \end{bmatrix}$$

$$\begin{aligned} &= -x + y + 2z = 4 \dots \\ &\quad -x - y = 2 \dots + \\ \hline &\quad -2x + 2z = 6 \\ &\quad -x + z = 3 \\ &\quad 2 - x = 3 // \end{aligned}$$

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Penyelesaian

1. Di ketahui, Matriks $A = \begin{pmatrix} 3 & 0 \\ 2 & 0 \end{pmatrix}$ $B = \begin{pmatrix} 1 & 1 \\ 3 & 2 \end{pmatrix}$; dan $A+B = C$. Jaures
C. Misal...

2. Jika $A = \begin{pmatrix} a & 1 \\ b & 2 \end{pmatrix}$ $B = \begin{pmatrix} a & 1 \\ 1 & 0 \end{pmatrix}$ dan $AB = \begin{pmatrix} 10 & a \\ 4 & b \end{pmatrix}$ adikan...

3. Jika $A = \begin{pmatrix} -1 & -1 & 0 \\ -1 & 1 & b \end{pmatrix}$ $B = \begin{pmatrix} 1 & x \\ 0 & y \end{pmatrix}$ dan $AB = \begin{pmatrix} 0 & 2 \\ 2 & 4 \end{pmatrix}$. Berapa nilai $x-y$ adikan...

Penyelesaian

1. $A+B = C$, $\begin{pmatrix} 3 & 1 \\ 2 & 2 \end{pmatrix}$ dan $C = \begin{pmatrix} 5 & 1 \\ 5 & 2 \end{pmatrix}$ $\begin{vmatrix} 5 & 1 \\ 5 & 2 \end{vmatrix} = 10 - 5$

det $C = 5$
 $\frac{1}{\det C} = \frac{1}{5}$ adj C

$C^{-1} = \frac{1}{5} \begin{bmatrix} 2 & -1 \\ -5 & 5 \end{bmatrix} = \begin{bmatrix} \frac{2}{5} & -\frac{1}{5} \\ -1 & 1 \end{bmatrix}$

2. $\begin{bmatrix} a & 1 \\ b & 2 \end{bmatrix} \times \begin{bmatrix} a & 0 \\ 1 & 0 \end{bmatrix} = \begin{bmatrix} a^2 + 1 & a \\ 4a + 2 & 0 \end{bmatrix}$ $\begin{vmatrix} a^2 + 1 & a \\ 4a + 2 & 0 \end{vmatrix} = 10 - 5$
 $10 - a^2 + 4a = 5$
 $5 - a^2 + 4a = 0$
 $a^2 - 4a + 5 = 0$
 $a = \frac{4 \pm \sqrt{16 - 20}}{2} = \frac{4 \pm 2i}{2} = 2 \pm i$
 $b = 4$

3. $\begin{bmatrix} -1 & -1 & 0 \\ -1 & 1 & b \end{bmatrix} \times \begin{bmatrix} 1 & x \\ 0 & y \end{bmatrix} = \begin{bmatrix} 0 & 2 \\ 2 & 4 \end{bmatrix}$
 $\begin{vmatrix} 0 & 2 \\ 2 & 4 \end{vmatrix} = 0 - 4 = -4$
 $\frac{1}{\det C} = \frac{1}{-4}$ adj C
 $C^{-1} = \frac{1}{-4} \begin{bmatrix} 4 & -2 \\ -2 & 0 \end{bmatrix} = \begin{bmatrix} -1 & \frac{1}{2} \\ \frac{1}{2} & 0 \end{bmatrix}$
 $\begin{bmatrix} -1 & \frac{1}{2} \\ \frac{1}{2} & 0 \end{bmatrix} \times \begin{bmatrix} 0 & 2 \\ 2 & 4 \end{bmatrix} = \begin{bmatrix} 1 & 2 \\ 1 & 2 \end{bmatrix}$
 $1 = 0$
 $2 = 2$
 $1 = 2$
 $2 = 4$
 $x = 2$
 $y = 4$
 $x - y = 2 - 4 = -2$