NO

ALJABAR LINEAR #4 DATE MUHAMMAD HAIKAL ZK

(1) Dik :

$$A = \begin{pmatrix} 2 & 6 & 8 \\ 2 & 3 & 6 \\ 1 & 3 & 5 \end{pmatrix}$$

$$B = \begin{pmatrix} 3 & 1 & 0 \\ 1 & 2 & 2 \\ 0 & 1 & 0 \end{pmatrix}$$

d. C^T

$$\begin{pmatrix} 1 & 2 & 4 & 1 \\ 1 & 5 & 6 & 0 \\ 7 & 0 & 8 & 2 \\ 3 & 2 & 3 & 7 \end{pmatrix}$$

$$C = \begin{pmatrix} 1 & 1 & 7 & 3 \\ 2 & 5 & 0 & 2 \\ 4 & 6 & 8 & 3 \\ 1 & 0 & 2 & 7 \end{pmatrix}$$

Tentukan :

a. A+B

$$\begin{pmatrix} 2 & 6 & 8 \\ 2 & 3 & 6 \\ 1 & 3 & 5 \end{pmatrix} + \begin{pmatrix} 3 & 1 & 0 \\ 1 & 2 & 2 \\ 0 & 1 & 0 \end{pmatrix} = \begin{pmatrix} 5 & 7 & 8 \\ 3 & 5 & 8 \\ 1 & 4 & 5 \end{pmatrix}$$

b. Trace A.B.C

Trace A = $\begin{pmatrix} \boxed{2} & 6 & 8 \\ 2 & \boxed{3} & 6 \\ 1 & 3 & \boxed{5} \end{pmatrix} = 10$

Trace B = $\begin{pmatrix} \boxed{3} & 1 & 0 \\ 1 & \boxed{2} & 2 \\ 0 & 1 & \boxed{0} \end{pmatrix} = 5$

Trace C = $\begin{pmatrix} \boxed{1} & 1 & 7 & 3 \\ 2 & \boxed{5} & 0 & 2 \\ 4 & 6 & \boxed{8} & 3 \\ 1 & 0 & 2 & \boxed{7} \end{pmatrix} = 21$

c. A x B

$$\begin{pmatrix} 2 & 6 & 8 \\ 2 & 3 & 6 \\ 1 & 3 & 5 \end{pmatrix} \begin{pmatrix} 3 & 1 & 0 \\ 1 & 2 & 2 \\ 0 & 1 & 0 \end{pmatrix}$$

$$\begin{pmatrix} (2\cdot3+6\cdot1+8\cdot0) & (2\cdot1+6\cdot2+8\cdot1) & (2\cdot0+6\cdot2+8\cdot0) \\ (2\cdot3+3\cdot1+6\cdot0) & (2\cdot1+3\cdot2+6\cdot1) & (2\cdot0+3\cdot2+6\cdot0) \\ (1\cdot3+3\cdot1+5\cdot0) & (1\cdot1+3\cdot2+5\cdot1) & (1\cdot0+3\cdot2+5\cdot0) \end{pmatrix}$$

$$\begin{pmatrix} 12 & 22 & 12 \\ 9 & 14 & 6 \\ 6 & 12 & 6 \end{pmatrix}$$

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1. Dik :

$$X = \begin{pmatrix} 2 & 2 & 1 & 0 \\ 4 & 1 & 3 & 2 \\ -1 & 2 & 0 & 2 \end{pmatrix} \qquad Y = \begin{pmatrix} -7 & 2 & 1 & 0 \\ 3 & 4 & 6 & 2 \\ 5 & 2 & 1 & 5 \end{pmatrix}$$

Tentukan :

a. $3X = \begin{pmatrix} 6 & 6 & 3 & 0 \\ 12 & 3 & 9 & 6 \\ -3 & 6 & 0 & 6 \end{pmatrix}$

b. $3X - Y = \begin{pmatrix} 6 & 6 & 3 & 0 \\ 12 & 3 & 9 & 6 \\ -3 & 6 & 0 & 6 \end{pmatrix} - \begin{pmatrix} -7 & 2 & 1 & 0 \\ 3 & 4 & 0 & 2 \\ 5 & 2 & 1 & 5 \end{pmatrix} = \begin{pmatrix} 13 & 4 & 2 & 0 \\ 9 & -1 & 9 & 4 \\ -6 & 4 & -1 & 1 \end{pmatrix}$

c. $X + 2Y = \begin{pmatrix} 2 & 2 & 1 & 0 \\ 4 & 1 & 3 & 2 \\ -1 & 2 & 0 & 2 \end{pmatrix} + \begin{pmatrix} -14 & 4 & 2 & 0 \\ 6 & 8 & 0 & 4 \\ 10 & 4 & 2 & 10 \end{pmatrix} = \begin{pmatrix} -12 & 6 & 3 & 0 \\ 10 & 9 & 3 & 6 \\ 9 & 6 & 2 & 12 \end{pmatrix}$

d. $3X - 2Y = \begin{pmatrix} 6 & 6 & 3 & 0 \\ 12 & 3 & 9 & 6 \\ -3 & 6 & 0 & 6 \end{pmatrix} - \begin{pmatrix} -14 & 4 & 2 & 0 \\ 6 & 8 & 0 & 4 \\ 10 & 4 & 2 & 10 \end{pmatrix} = \begin{pmatrix} 20 & 2 & 1 & 0 \\ 6 & -5 & 9 & 2 \\ -13 & 2 & -2 & -4 \end{pmatrix}$

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③. Jika p, q, r, s memenuhi persamaan

$$\begin{pmatrix} p & q \\ 2r & s \end{pmatrix} - \begin{pmatrix} 2s & r \\ q & 2p \end{pmatrix} = \begin{pmatrix} 1 & -1 \\ -1 & 1 \end{pmatrix}$$

Tentukan : $p+q+r+s$

$p - 2s = 1 \quad -P_1$

$q - r = -1 \quad -P_2$

$2r - q = -1 \quad -P_3$

$s - 2p = 1 \quad -P_4$

$P_1 > P$

$p - 2s = 1 \mid \cdot 2$

$s - 2p = 1 \mid \cdot$

$2p - 4s = 2$

$s - 2p = 1$ +

$-3s = 3$

$s = 1$

Subs -1 ke $p-2 = 1$

$p - (2-1) = 1$

$p + 2 = 1$

$p = -1$

$P_2 > P_3$

$q - r = -1$

$2r - q = -1$ +

$r = -2$

Subs -2 ke $q - r = -1$

$q - (-2) = -1$

$q = 1 - 2$

$q = -3$

Maka $p+q+r+s = -1 + (-3) + (-2) + (-1) = -7$

④. $A = \begin{pmatrix} 5 & a \\ 3b & 5b \end{pmatrix} = \begin{pmatrix} 10 & 2a \\ 6b & 10c \end{pmatrix}$

Dengan $2A = B^T$ Tentukan nilai c!

Jawab : $2\begin{pmatrix} 5 & a \\ 3b & 5b \end{pmatrix} = \begin{pmatrix} 10 & 2a \\ 6b & 10c \end{pmatrix}$

$B^T = \begin{pmatrix} 2a+2 & a+a \\ a+8 & 3a-5 \end{pmatrix}$

$10 = 2a+2 \quad 2a = a+a \quad 6b =$

$10 - 2 = 2a \quad 2(a) = a+a \quad 6b =$

$10c = 3 = 3(a)$

$(= 1$

∴ Jadi nilai c adalah 1

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) Dik Matrix $A = \begin{pmatrix} x & 1 \\ -1 & y \end{pmatrix}$ $B = \begin{pmatrix} 3 & 2 \\ -1 & 0 \end{pmatrix}$ $C = \begin{pmatrix} 1 & 0 \\ -1 & -2 \end{pmatrix}$

Tentukan nilai $x+y$ jika $AB - 2AB = C$

$$\begin{pmatrix} 3x-1 & 2x \\ -3-y & -2 \end{pmatrix} - \begin{pmatrix} 6x-2 & 4x \\ -6-2y & -4 \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ -1 & -2 \end{pmatrix}$$

$(3x-1) - (6x-2) = 1$

$3x - 1 - 6x + 2 = 1$

$3x - 6x - 1 + 2 = 1$

$-3x = 1 + 1 - 2$

$x = -0/3 = 0$

\# $-3-y\ (-6-2y) = -1$

$-3 - y + 6 + 2y = -1$

$-3 + 6 - y + 2y = -1$

$3 + y = -1$

$y = -1 - 3$

$y = -4$

$x + y = 0 + (-4)$

$= -4$ //