UAS ALJABAR LINIER

NPM : 1G2002015
Nama : Desi komalasari
Prodi : Sistem Informasi (SI)
Kelas : MI Sore

Jawab

① Diketahui $W = k_1 V_1 + k_2 V_2 + \dots + k_r V_r$
Dimanan k_1 $k_2 \dots k_r$ adalah skalar

$V_1 = (2, 10, 15)$
$V_2 = (4, 6, 3)$

Dit : apakah vektor tersebut kombinasi linier dengan vektor
$W = (16, 26, 21)$

Diketahui :

$$V_1 = \begin{bmatrix} 2 \\ 10 \\ 15 \end{bmatrix} \qquad V_2 = \begin{bmatrix} 4 \\ 6 \\ 3 \end{bmatrix} \qquad W = \begin{bmatrix} 16 \\ 26 \\ 21 \end{bmatrix}$$

$W = k_1 V_1 + k_2 V_2 + \dots + k_r V_r$

(Step I)

$$= \left[\begin{array}{cc|c} 2 & 4 & 16 \\ 10 & 6 & 26 \\ 15 & 3 & 21 \end{array}\right], \; k_2 - 2k_1$$

maka :

$$\left[\begin{array}{cc|c} 2 & 4 & 16 \\ 10-(2\times 2) & 6-(4\times 2) & 26-(16\times 2) \\ 15 & 3 & 21 \end{array}\right]$$

$$= \left[\begin{array}{cc|c} 2 & 4 & 16 \\ 10-4 & 6-8 & 26-32 \\ 15 & 3 & 21 \end{array}\right] = \left[\begin{array}{cc|c} 2 & 4 & 16 \\ 6 & -2 & -6 \\ 15 & 3 & 21 \end{array}\right]$$

Step 2

Dimana : $\left[\begin{array}{cc|c} 2 & 4 & 16 \\ -6 & -2 & -6 \\ 15 & 3 & 21 \end{array}\right]$, $3b_1 + b_2$

$= \left[\begin{array}{cc|c} (3\times 2)+6 & (3\times 4)\ 2 & (3\times 16)-6 \\ -6 & -2 & -6 \\ 15 & 3 & 21 \end{array}\right]$

$= \left[\begin{array}{cc|c} 6+6 & 12-2 & 48-6 \\ -2 & -2 & -6 \\ 15 & 3 & 21 \end{array}\right]$

$= \left[\begin{array}{cc|c} 12 & 10 & 42 \\ -2 & -2 & -6 \\ 15 & 3 & 21 \end{array}\right]$

Step 3

maka : $\left[\begin{array}{cc|c} 12 & 10 & 42 \\ 6 & -2 & -6 \\ 15 & 3 & 21 \end{array}\right]$, $b_3 + b_2$

$= \left[\begin{array}{cc|c} 4 & 10 & 42 \\ 6 & -2 & -6 \\ 15+6 & 3+(-2) & 21+(-6) \end{array}\right]$

$= \left[\begin{array}{cc|c} 12 & 10 & 42 \\ 6 & -2 & -6 \\ 21 & 1 & 15 \end{array}\right]$

Persamaan :

$$= \begin{bmatrix} 12 & 10 \\ 6 & -2 \\ 21 & 1 \end{bmatrix} \quad \begin{bmatrix} k1 \\ k2 \end{bmatrix} = \begin{bmatrix} 42 \\ -6 \\ 15 \end{bmatrix}$$

mencari nilai k_1, k_2

Persamaan 1	Persamaan 2
$12k_1 = 42$	$-2k_2 = -6$
$k_1 = \frac{42}{12}$	$k_2 = \frac{-6}{-2}$
$k_1 = 3,5$	$k_2 = 3$

(2)

Diketahui : $\begin{bmatrix} 5x & 10y \\ 10 & 2z \\ 5 & 5 \end{bmatrix}$ $\begin{bmatrix} 5y & 5z \\ 17 & 20 \\ 10 & 5 \end{bmatrix}$

Tentukan x dan y .

$2z = 20$

$\frac{2z}{2} = \frac{20}{2}$

$z = 10$ //

$10y = 5(10)$

$\frac{10y}{10} = \frac{50}{10}$

$y = 5$ //

$5x = 5(5)$

$\frac{5x}{5} = \frac{25}{5}$

$x = 5$ //

Jadi $x = 5$ dan $y = 5$ //