

Latihan Soal 3

Diketahui vektor $C = (1, -8)$, $D = (0, 6)$, dan $E = (-7, -12)$

Hitunglah nilai dari:

a. $\vec{c} \cdot \vec{f}$

b. $\frac{1}{2} \vec{c} \cdot (\vec{d} + \vec{e})$

Jawab: Ubah dahulu vektor C , D , dan E menjadi vektor kolom

$$C = (1, -8) = \begin{pmatrix} 1 \\ -8 \end{pmatrix}$$

$$D = (0, 6) = \begin{pmatrix} 0 \\ 6 \end{pmatrix}$$

$$E = (-7, -12) = \begin{pmatrix} -7 \\ -12 \end{pmatrix}$$

a. Jadi $\vec{c} \cdot \vec{f} = \begin{pmatrix} 1 \\ -8 \end{pmatrix} \cdot \begin{pmatrix} -7 \\ -12 \end{pmatrix} = 1 \cdot (\text{ }) + (\text{ }) \cdot (\text{ }) = -7 + \text{ } = \text{ }$

b. Jadi $\frac{1}{2} \vec{d} \cdot (\vec{c} + \vec{e}) = \frac{1}{2} \begin{pmatrix} 0 \\ 6 \end{pmatrix} \cdot \left[\begin{pmatrix} 1 \\ -8 \end{pmatrix} + \begin{pmatrix} -7 \\ -12 \end{pmatrix} \right]$
 $= \begin{pmatrix} \text{ } \\ 3 \end{pmatrix} \cdot \begin{pmatrix} -6 \\ \text{ } \end{pmatrix}$
 $= 0 \cdot (-6) + \text{ } \cdot (\text{ })$
 $= \text{ } - \text{ }$
 $= \text{ }$

Besar / Panjang / Modulus Vektor

5. Modulus/Panjang/Besar/Nilai Vektor

Vektor di R-2 : $|\vec{a}| = \sqrt{x_a^2 + y_a^2}$

Vektor di R-3 : $|\vec{c}| = \sqrt{x_c^2 + y_c^2 + z_c^2}$

Latihan Soal 4

Example: Diketahui vektor $\vec{u} = 3i + 4j - 12k$

$$\vec{v} = 2i - 7k$$

$$\vec{w} = -12i + 6j - 3k$$

Hitunglah nilai dari:

a. $|\vec{u}|$

b. $\left| 2\vec{v} + \frac{1}{3}\vec{w} \right|$

Jawab: Ubah dahulu vektor $\vec{u}$, $\vec{v}$, dan $\vec{w}$ menjadi vektor kolom

$$\vec{u} = 3i + 4j - 12k = \begin{pmatrix} \square \\ \square \\ \square \end{pmatrix}$$

$$\vec{v} = 2i - 7k = \begin{pmatrix} \square \\ \square \\ \square \end{pmatrix}$$

$$\vec{w} = -12i + 6j - 3k = \begin{pmatrix} \square \\ \square \\ \square \end{pmatrix}$$

a. Jadi $|\vec{u}| = \sqrt{(\square)^2 + (\square)^2 + (-12)^2}$
 $= \sqrt{\square + \square + 144}$
 $= \sqrt{\square}$
 $= \square$

b. Jadi $\left| 2\vec{v} + \frac{1}{3}\vec{w} \right|$

Kerjakan dahulu untuk $2\vec{v} + \frac{1}{3}\vec{w} = 2 \cdot \begin{pmatrix} 2 \\ 0 \\ \square \end{pmatrix} + \frac{1}{3} \cdot \begin{pmatrix} -12 \\ \square \\ \square \end{pmatrix}$
 $= \begin{pmatrix} 4 \\ \square \\ \square \end{pmatrix} + \begin{pmatrix} -4 \\ \square \\ 2 \end{pmatrix}$
 $= \begin{pmatrix} \square \\ \square \\ 2 \end{pmatrix}$

Bisa dihitung $\left| 2\vec{v} + \frac{1}{3}\vec{w} \right| = \sqrt{0^2 + 2^2 + (-15)^2}$
 $= \sqrt{\square + \square + 225}$
 $= \sqrt{\square}$