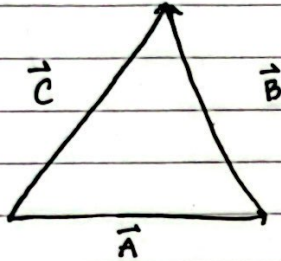


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Soal 1.



$$\vec{A} + \vec{B} = \vec{C}$$

$$\vec{A} = \hat{i} + 2\hat{j} + 0\hat{k}$$

$$\vec{B} = -\hat{i} - 2\hat{j} + 3\hat{k}$$

- Hitung vektor $\vec{C}$
- Hitung sudut $\vec{AB}$

$$\begin{aligned} \vec{A} + \vec{B} &= |\vec{A}| + |\vec{B}| \cos \theta \\ &= (\hat{i} + 2\hat{j} + 0\hat{k}) + (-\hat{i} - 2\hat{j} + 3\hat{k}) \cos \theta \\ &= -1 - 4 \\ &= -5 \end{aligned}$$

$$\begin{aligned} b. -5 &= \sqrt{5} \cdot \sqrt{14} \cos \theta \\ \theta &= \arccos \frac{-5}{\sqrt{5} \cdot \sqrt{14}} \end{aligned}$$

Soal 2

$$\vec{A} = 2x\hat{i} + 3x\hat{j} + 4xy\hat{k}$$

$$\vec{B} = xy\hat{i} + 2x\hat{j} + 3x\hat{k}$$

$$\vec{A} \times \vec{B} = \begin{vmatrix} \hat{i} & \hat{j} & \hat{k} \\ 2x & 3x^2 & 4xy \\ xy & 2x & 3x \end{vmatrix}$$

$$= \hat{i} (12x^3 - 8x^2y) - \hat{j} (6x^2 - 4x^2y^2) - \hat{k} (3x^3y - 4x^2)$$

Soal 3

Hitung diverensi vektor berikut.

a) $V_1 = x^2 \hat{i} + 3xz^2 \hat{j} - 2xz \hat{k}$

b) $V_2 = xy \hat{i} + 2yz \hat{j} + 3xz \hat{k}$

c) $V_3 = y^2 \hat{i} + (2xy + z^2) \hat{j} - 2yz \hat{k}$

Jawab

$$\begin{aligned} \nabla \cdot V_1 &= x^2 \hat{j} + 3xz^2 \hat{j} - 2xz \hat{k} \\ &= 2x \hat{i} + 0 \hat{j} - 2x \hat{k} \end{aligned}$$

$$\nabla \cdot V_2 = y \hat{i} + 2xz \hat{j} + 3x \hat{k}$$

$$\nabla \cdot V_3 = 0 \hat{i} + 2x \hat{j} - 2yz \hat{k}$$