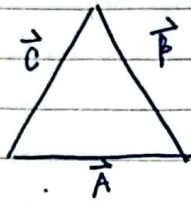


221022080

Bella Wahyuni

Soal no 1



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

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

$$\vec{C} =$$

a) hitung Vektor C

b) hitung sudut $\vec{A}$ $\vec{B}$

$$1) \vec{A} + \vec{B} = \vec{C}$$

$$(\hat{i} + 2\hat{j} + 0\hat{k}) + (-\hat{i} - 2\hat{j} + 3\hat{k})$$

$$(0\hat{i} + 0\hat{j} + 3\hat{k})$$

$$b) \vec{A} \cdot \vec{B} = (\hat{i} + 2\hat{j} + 0\hat{k}) \cdot (-\hat{i} - 2\hat{j} + 3\hat{k})$$

$$= (-1 - 4 + 0) = -5$$

$$|\vec{A}| = \sqrt{1 + 4 + 0}$$

$$|\vec{B}| = \sqrt{1 + 4 + 9}$$

$$\vec{A} \cdot \vec{B} = |\vec{A}| |\vec{B}| \cos \theta$$

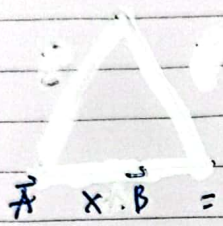
$$= \sqrt{5} \sqrt{14}$$

$$\vec{A} \cdot \vec{B} = |\vec{A}| |\vec{B}| \cos \theta$$

$$-5 = \sqrt{5} \sqrt{14} \cos \theta$$

$$\theta = \arccos \frac{-5}{\sqrt{5} \sqrt{14}}$$

Soal no 2



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

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

$$\vec{A} \times \vec{B} =$$

$$\vec{A} \cdot \vec{B} = \begin{vmatrix} \hat{i} & \hat{j} & \hat{k} \\ 2x & 3x^2 & 4xy \\ xy & 2x & 3x \end{vmatrix} = \hat{i}(9x^3 - 8x^2y) - \hat{j}(6x + 4x^2y^2) - \hat{k}(4x^2 + 3x^3)$$

Jawab

Soal no 3

hitung divergensi 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 :

a) $\nabla \cdot V_1 = 2x + 0 - 2x$

b) $\nabla \cdot V_2 = y + 2z + 3x$

c) $\nabla \cdot V_3 = 0 + (2x + z) + 2y$