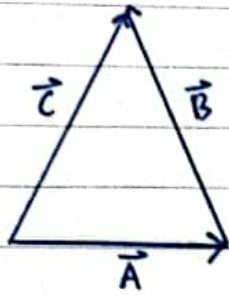


Soal 5



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

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

Hitung Vektor C

Hitung Sudut $\vec{A}$ $\vec{B}$

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

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

$$= \hat{i} - 4\hat{j} + 0\hat{k} = -5$$

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

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

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

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

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

Soal 2

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

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

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

Soal 3

Hitung divergensi vektor berikut

$$a) \vec{v}_1 = x^2\hat{i} + 3xz^2\hat{j} - 2xz\hat{k}$$

$$b) \vec{v}_2 = xy\hat{i} + 2yz\hat{j} + 3xz\hat{k}$$

$$c) \vec{v}_3 = y^2\hat{i} + (2xy + z^2)\hat{j} - 2yz\hat{k}$$

Jawab

$$\ast \nabla \cdot \vec{v}_1 = 2x + 0j - 2x$$

$$\ast \nabla \cdot \vec{v}_2 = y\hat{i} + 2z + 3x$$

$$\ast \nabla \cdot \vec{v}_3 = 0\hat{i} + (2 + z^2) - 2y$$