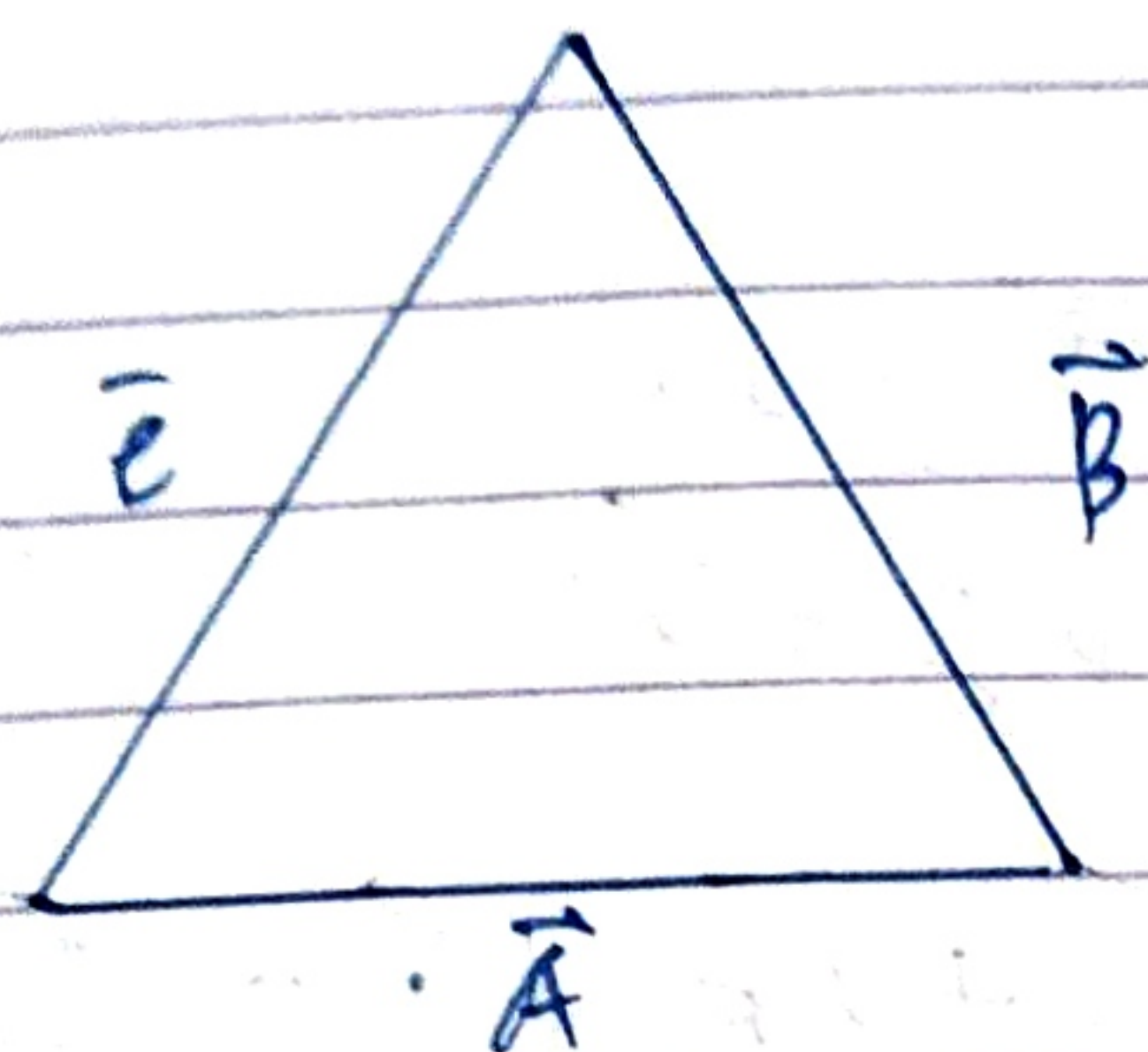


Soal :



jika : $\vec{A} + \vec{B} = \vec{c}$

Dimana :

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

$$\vec{c} = 0\hat{i} + 0\hat{j} + 3\hat{k}$$

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

Hitung Vektor c

Hitung Sudut AP

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

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

$$= (\hat{i} + 2\hat{j} + 0\hat{k}) \cdot (-\hat{i} - 2\hat{j} + 3\hat{k}) \cos \theta$$

$$= -1 - 4 + 0$$

$$= -5$$

2.

$$\vec{A} = 1\hat{i} + 2\hat{j} + 0\hat{k}$$

$$|\vec{A}| = \sqrt{1^2 + 2^2 + 0^2}$$

$$\hat{A} = \frac{\vec{A}}{|\vec{A}|} = \frac{1\hat{i} + 2\hat{j} + 0\hat{k}}{\sqrt{1^2 + 2^2 + 0^2}}$$

$$\vec{A} \cdot \vec{B} = 1(-1) + 2(-2) + 0(3) = -1 - 4 + 0 = -5$$

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

$$|\vec{A}| = \sqrt{1^2 + 2^2 + 0^2} = \sqrt{5}$$

Hitung divergensi vektor berikut.

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

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

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

jawaban:

$$a. \nabla \cdot V = \hat{i} \left(\frac{\partial}{\partial x} \right) + \hat{j} \left(\frac{\partial}{\partial y} \right) + \hat{k} \left(\frac{\partial}{\partial z} \right) (x^2 \hat{i} + 3xz^2 \hat{j} - 2xz \hat{k})$$

$$= 2x \hat{i} + 0 \hat{j} - 2x \hat{k}$$

$$= 2x \hat{i} + 0 \hat{j} - 2x \hat{k}$$

$$b. V_2 = \nabla \cdot V = \hat{i} \frac{\partial}{\partial x} (xy \hat{i} + 2yz \hat{j} + 3xz \hat{k})$$

Jawaban no. 3

$$a.) V_1 = \nabla \vec{V} = \hat{i} \frac{\partial}{\partial x} (x^2 \hat{i} + 3xz^2 \hat{j} - 2xz \hat{k})$$

$$= 2x + 0\hat{j} - 2z\hat{k}$$

$$b.) V_2 = \nabla \vec{V} = \hat{i} \frac{\partial}{\partial x} (xy \hat{i} + 2yz \hat{j} + 3xz \hat{k})$$

$$= y\hat{i} + 2z\hat{j} + 3z\hat{k}$$

$$c.) V_3 = \nabla \vec{V} = \hat{i} \frac{\partial}{\partial x} (y^2 \hat{i} + (2xy + z^2) \hat{j} - 2yz \hat{k})$$

$$= 0\hat{i} + (2y + 2z^2) \hat{j} - 2y\hat{k}$$