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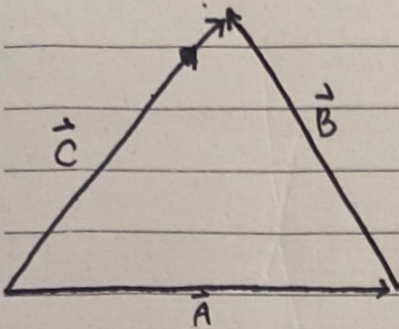
No

Date

Senin

19-2-2024

Soal 1



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

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

a). Hitung vektor C

b). Hitung Sudut $\vec{A}\vec{B}$

a). Hitung vektor C

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

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

b). Hitung Sudut $\vec{A}\vec{B}$

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

$$= -1 - 4 + 0$$

$$= -5$$

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

$$|\vec{B}| = \sqrt{(-1)^2 + (-2)^2 + 3^2}$$

$$= \sqrt{1 + 4 + 9}$$

$$= \sqrt{14}$$

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

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

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

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Soal 2.

Perkalian Cross

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

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

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

$$= \hat{i}(9x^3 - 8x^2y) - \hat{j}(6x^2 - 4x^2y^2) - \hat{k}(3x^3y - 4x^2)$$

Soal 3

Hitung divergensi Vektor tersebut

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

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

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

Jawab

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

$$\nabla \cdot \vec{V}_2 = y + 2z + 3x$$

$$\nabla \cdot \vec{V}_3 = 0\hat{i} + 2x + 2z - 2y$$