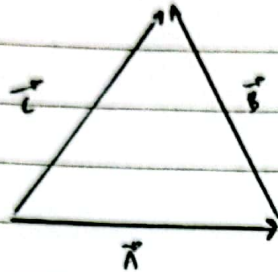


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No. _____

Date . . .

Soal 1



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

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

$$\vec{B} = -1\hat{i} - 2\hat{j} + 3\hat{k}$$

A. Hitung Vektor c

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

Jawab.

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

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

$$B. |\vec{A}| = \sqrt{1+4+0} = \sqrt{5}$$

$$|\vec{B}| = \sqrt{1+4+9} = \sqrt{14}$$

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

$$\theta = \cos^{-1} \frac{-5}{\sqrt{5} \cdot \sqrt{14}}$$

Soal 2

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

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

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

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

Soal 3

Hitung divergensi vektor

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

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

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

Jawab.

$$1). \nabla \cdot \vec{U} = 2x + 0 + 0 = 2x$$

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

$$c). \nabla \cdot \vec{V}_3 = 0 + (2x + z^2) - 2y$$