

Nama : Isma Salswa

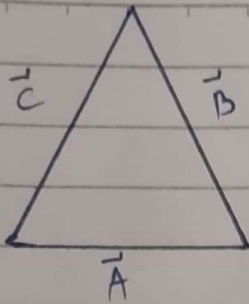
NPM : 2213022096

Kelas : C

No. Senin

Date 19/2/24

Soal 1



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

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

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

Hitung vektor C

Hitung sudut AB

Jawab:

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

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

$$\begin{aligned}\vec{A} \cdot \vec{B} &= (\hat{i} + 2\hat{j} + 0\hat{k}) \cdot (-\hat{i} - 2\hat{j} + 3\hat{k}) \\ &= -\hat{i} - 4\hat{j} + 0\hat{k} = -5\end{aligned}$$

$$\vec{A} \cdot \vec{B} = -5$$

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

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

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

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

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

Soal 2

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

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

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

Soal 3

Hitung divergensi Vektor berikut

a. $U_1 = x^2\hat{i} + 3xz^2\hat{j} - 2xz\hat{k}$

b. $U_2 = xy\hat{i} + xyz\hat{j} + 3xz\hat{k}$

c. $U_3 = y^2\hat{i} + (2xy + z^2)\hat{j} - 2yz\hat{k}$

Jawab

$$\nabla \cdot U_1 = 2x + 0\hat{j} - 2x$$

$$\nabla \cdot U_2 = y\hat{i} + 2z + 2x$$

$$\nabla \cdot U_3 = 2y + (2x + z^2) - 2y$$