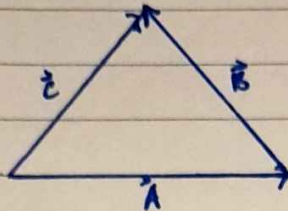


Soal

①



Nama = ALOSILA

NPM = 2213012082

Kelas = 22C

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

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

Hitung Vektor C

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

Jawab

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

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

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

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

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

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

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

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

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

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

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

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

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

| $\vec{A} \times \vec{B}$ | $\hat{i}$ | $\hat{j}$ | $\hat{k}$ |
|--------------------------|-----------|-----------|-----------|
|                          | $2x$      | $3x^2$    | $4xy$     |
|                          | $xy$      | $2x$      | $3x$      |

$$\hat{i} = 9x^2 + 8xy$$

$$\hat{j} = 6x^2 + 4x^2y^2$$

$$\hat{k} = 3x^2y + 4x$$

③ Hitung divergensi vektor berikut

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

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

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

Jawab.

$$a. \nabla \cdot V_1 = 2x + 0 - 2x$$

$$b. \nabla \cdot V_2 = y + 2z + 3x$$

$$c. \nabla \cdot V_3 = 0 + (2x + 2z) - 2y$$