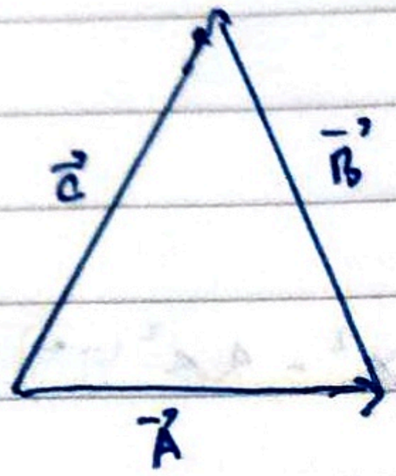
No. 19-02-2024

Date

Lutfiah Maridah
2213022086

Soal 1



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

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

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

Hitung vektor C

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

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

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

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

$= -\hat{i} - 4 + 0$

$= -5$

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

$= \sqrt{5}$

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

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

$= \sqrt{14}$

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

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

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

No.

Date . .

2). $\vec{A} = 2xi + 3x^2 j + 4xyk$

$\vec{B} - xyi + 2xj + 3xk$

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

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

3). Hitung devergensi vektor berikut.

a). $V_1 = x^2 i + 3xz^2 j - 2xzk$

b). $V_2 = xyi + 2yzj + 3xzk$

c). $V_3 = y^2 i + (2xy + z^2) j - 2yzk$

Jawab

$\nabla . V_1 = 2x + 0j - 2x$

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

$\nabla . V_3 = 0i + (2x + z^2) - 2y$