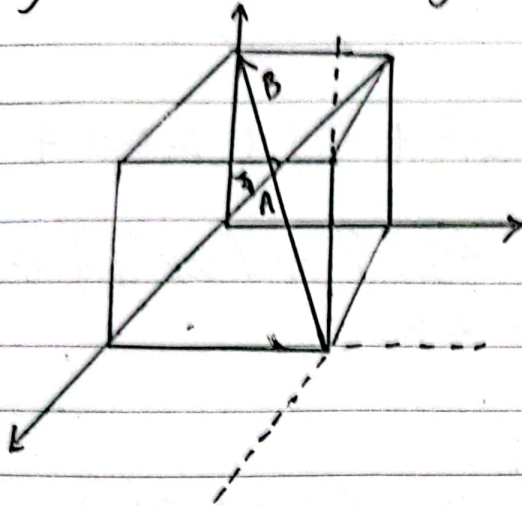


①. Hitung sudut antara diagonal



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

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

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

$$2 = \sqrt{6} \cdot \sqrt{6} \cos \theta$$

$$\cos \theta = \frac{2}{\sqrt{6} \cdot \sqrt{6}} = \frac{2}{6} = \frac{1}{3}$$

②. $\vec{A} = 3x^2y\hat{i} + 2yz\hat{j} + xyz\hat{k}$
 $\vec{B} = yz\hat{i} + 3xy^2\hat{j} + 3xz\hat{k}$

$\vec{A} \times \vec{B} =$	$\hat{i}$	$\hat{j}$	$\hat{k}$
	$3x^2y$	$2yz$	xyz
	yz	$3xy^2$	$3xz$

$$\vec{A} \times \vec{B} = \hat{i} (3x^2yz^2 - 3x^2y^3z) - \hat{j} (9x^3yz - xyz^2z^2) - \hat{k} (2y^2z^2 - 9x^2y^3)$$

$$\textcircled{2} \quad T = x^2 + 2xy + 3z + 4$$

$$\textcircled{3} \quad a) \quad \nabla^2 T$$

$$\nabla T = \hat{i} \frac{\partial}{\partial x} (x^2 + 2xy + 3z + 4)$$

$$\nabla T = (2x + 2y) \hat{i} + (2x) \hat{j} + (3) \hat{k}$$

$$\nabla^2 T = 2y + 2x$$

$$\textcircled{4} \quad b) \quad \nabla \times (\nabla T)$$

$$= \hat{i} \left(\frac{\partial}{\partial y} 3 - \frac{\partial}{\partial z} (2x + 2y) \right) - \hat{j} \left(\frac{\partial}{\partial x} 2x - \frac{\partial}{\partial z} (2x + 2y) \right) - \hat{k} \left(\frac{\partial}{\partial x} (2x + 2y) - \frac{\partial}{\partial y} 2x \right)$$

$$\begin{vmatrix} \hat{i} & \hat{j} & \hat{k} \\ \frac{\partial}{\partial x} & \frac{\partial}{\partial y} & \frac{\partial}{\partial z} \\ 2x+2y & 2x & 3 \end{vmatrix}$$