

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

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

$$a \times b = \begin{vmatrix} \hat{i} & \hat{j} & \hat{k} \\ 4 & -5 & 1 \\ 2 & 3 & -2 \end{vmatrix}$$

$$= \hat{i} \cdot ((-5) \cdot (-2) - 1 \cdot 3) + \hat{j} (1 \cdot 2 - 4 \cdot (-2)) + \hat{k} (4 \cdot 3 - (-5) \cdot 2)$$

$$= \hat{i}(-10) - \hat{j}(-3) + \hat{k}(12 - (-10))$$

$$= (-10)\hat{i} + (-8)\hat{j} + 22\hat{k}$$

$$v_1 = 9\hat{i} + 2\hat{j} + \hat{k}$$

$$v_2 = 2\hat{i} + 3\hat{k}$$

$$v_1 \cdot v_2 = (9\hat{i} + 2\hat{j} + \hat{k}) \cdot (2\hat{i} + 3\hat{k})$$

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

$$= 11$$

$$\vec{a} = 3\hat{i} + 4\hat{j} - 3\hat{k}$$

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

$$\vec{a} \cdot \vec{b} = (3\hat{i} + 4\hat{j} - 3\hat{k}) \cdot (2\hat{i} - 3\hat{j} + 2\hat{k})$$

$$= 6\hat{i} - 12\hat{j} - 6\hat{k}$$

$$= -12$$

$$\vec{a} \times \vec{b} = \begin{vmatrix} \hat{i} & \hat{j} & \hat{k} \\ 3 & 4 & -3 \\ 2 & -3 & 2 \end{vmatrix}$$

$$= \hat{i}(4 \cdot 2 + (-3) \cdot (-3)) + \hat{j}(3 \cdot 2 + (-3) \cdot 2) + \hat{k}(3 \cdot (-3) + 4 \cdot 2)$$

$$= \hat{i}(8 + 9) + \hat{j}(6 + (-6)) + \hat{k}((-9) + 8)$$

$$= 17\hat{i} + 0\hat{j} - 1\hat{k}$$

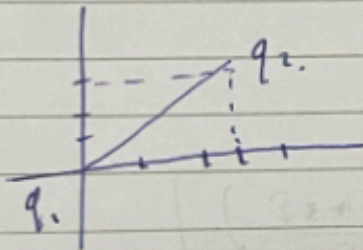
$$= 17\hat{i} - \hat{k}$$

KALISMA

Vclass : KALISMAPasword : KALISMAZSA

Analisis vektor

$$\hat{r} = \frac{\vec{r}}{|\vec{r}|} = \frac{x\hat{i} + y\hat{j} + z\hat{k}}{\sqrt{x^2 + y^2 + z^2}}$$



$$\vec{F}_{q_1} = k \frac{q_1 q_2}{r^2} (\hat{r})$$

$$= k \frac{q_1 q_2}{\sqrt{3^2 + 4^2}} \left(\frac{3\hat{i} + 4\hat{j}}{5} \right)$$

$$\vec{F}_{q_2} = k \frac{q_1 q_2}{r^2} (\hat{r})$$

$$= k \frac{q_1 + q_2}{\sqrt{3^2 + 4^2}} (3\hat{i} + 4\hat{j})$$

$$= k \frac{q_1 q_2}{5} (3\hat{i} + 4\hat{j})$$