CBSE question paper

Risu

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1. If $\vec{a}, \vec{b}, \vec{c}$ are position vectors of the points A(2,3,-4), B(3,-4,-5) and C(3,2,-3) respectively, then $\left|\vec{a} + \vec{b} + \vec{c}\right|$ is equal to

   (a) $\sqrt{113}$
   (b) $\sqrt{185}$
   (c) $\sqrt{203}$
   (d) $\sqrt{209}$

2. Find the distance of the point (a,b,c) from the x-axis

3. If $\vec{a} = 2\hat{i}-\hat{j}+2\hat{k}$ and $\vec{b} = 5\hat{i}-3\hat{j}-4\hat{k}$, then find the ratio $\frac{projection\,of\,vector\,\vec{a}\,on\,\vec{b}}{projection\,of\,vector\,\vec{b}\,on\,vector\,\vec{a}}$.

$$OR$$

   Let $\hat{a}$ and $\hat{b}$ be two unit vectors. If the vectors $\vec{c} = \hat{a}+2\hat{b}$ and $\vec{d} = 5\hat{a}-4\hat{b}$ are perpendicular to each other, then find the angle between the vectors $\hat{a}$ and $\hat{b}$.

4. Show that $|\vec{a}|\vec{b} + \left|\vec{b}\right|\vec{a}$ is perpendicular to $|\vec{a}|\vec{b}$- $\left|\vec{b}\right|\vec{a}$, for any two non-zero vectors $\vec{a}$ and $\vec{b}$.

5. Prove that three points A,B and C with position vectors $\vec{a}, \vec{b}$ and $\vec{c}$ respectively are collinear if and only if ($\vec{b}$ x $\vec{c}$)+($\vec{c}$ x $\vec{a}$)+($\vec{a}$ x $\vec{b}$) = $\vec{0}$.