1. If $\vec{a}, \vec{b}$ and $\vec{c}$ are the position vectors of the points $A(2, 3, -4), B(3, -4, 5)$ and $C(3, 2, -3)$ respectively then $|\vec{a} + \vec{b} + \vec{c}|$ 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. (a) 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
   $$\frac{projection\,of\,vector\,\vec{a}\,on\,vector\,\vec{b}}{projection\,of\,vector\,\vec{b}\,on\,vector\,\vec{a}}$$

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

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

5. If $A(-2, 1), B(2, 3)$ and $C(-2, -4)$ are three points and Θ is the angle between the lines BC and BA, then $\tan \Theta$ is equal to

   (A) $\frac{1}{2}$

   (B) $\frac{1}{3}$

   (C) $\frac{2}{3}$

   (D) $\frac{3}{4}$