

1. Unit vector along \overrightarrow{PQ} , where coordinates of P and Q respectively are (2, 1, -1) and (4, 4, -7) is
 - (a) $2\hat{i} + 3\hat{j} - 6\hat{k}$
 - (b) $-2\hat{i} - 3\hat{j} + 6\hat{k}$
 - (c) $\frac{-2\hat{i}}{7} - \frac{3\hat{j}}{7} + \frac{6\hat{k}}{7}$
 - (d) $\frac{2\hat{i}}{7} + \frac{3\hat{j}}{7} - \frac{6\hat{k}}{7}$
2. If in $\triangle ABC$, $\overrightarrow{BA} = 2\vec{a}$ and $\overrightarrow{BC} = 3\vec{b}$, then \overrightarrow{AC} is
 - (a) $2\vec{a} + 3\vec{b}$
 - (b) $2\vec{a} - 3\vec{b}$
 - (c) $3\vec{b} - 2\vec{a}$
 - (d) $-2\vec{a} - 3\vec{b}$
3. Equation of line passing through origin and making 30° , 60° and 90° with x, y, z axes respectively is
 - (a) $\frac{2x}{\sqrt{3}} = \frac{y}{2} = \frac{z}{0}$
 - (b) $\frac{2x}{\sqrt{3}} = \frac{2y}{1} = \frac{z}{0}$
 - (c) $2x = \frac{2y}{\sqrt{3}} = \frac{z}{1}$
 - (d) $\frac{2x}{\sqrt{3}} = \frac{2y}{1} = \frac{z}{1}$
4. If $\vec{a}, \vec{b}, \vec{c}$ are three non-zero unequal vectors such that $\vec{a} \cdot \vec{b} = \vec{a} \cdot \vec{c}$, then find the angle between \vec{a} and $\vec{b} - \vec{c}$.
5. If the equation of a line is $x = ay + b, z = cy + d$, then find the direction ratios of the line and a point on the line.
6. Using Integration, find the area of triangle whose vertices are (-1, 1), (0, 5) and (3, 2).