National Institute of Open Schooling
Senior Secondary Course : Mathematics
Lesson 34 : Vectors
Worksheet - 34

1. List out Scalar and Vector quantities in our nearby. Differentiate between Scalars and Vectors with examples.

2. Identify any five types of vectors and distinguish between Collinear and Coplanar vectors with examples.

3. Find a unit vector in the direction of $\vec{a} + \vec{b}$ where $\vec{a} = 3\hat{i} + 2\hat{j} - 4\hat{k}$ and $\vec{b} = \hat{i} + \hat{j} + 2\hat{k}$.

4. If $\vec{a} = \hat{i} + \hat{j} + \hat{k}$ and $\vec{b} = 2\hat{i} + 4\hat{j} + -3\hat{k}$, find the angle between $\vec{a} + \vec{b}$ and $\vec{a} - \vec{b}$

5. If $(2\hat{i} - \hat{j} + \hat{k}), (\hat{i} + 2\hat{j} - 3\hat{k})$ and $(3\hat{i} - 4\hat{j} + 5\hat{k})$ are the position vectors of the point A, B and C respectively, find $|\overrightarrow{AB} \times \overrightarrow{AC}|$.

6. If $\vec{a} = 2\hat{i} + 2\hat{j} + 3\hat{k}, \vec{b} = -\hat{i} + 2\hat{j} + \hat{k}$ and $\vec{c} = 3\hat{i} + \hat{j}$ are such that $\vec{a} + \lambda \vec{b}$ perpendicular to $\vec{c}$, then find the value of λ

7. If $\hat{i} + \hat{j} + \hat{k}, 2\hat{i} + 5\hat{j}, 3\hat{i} + 2\hat{j} - 3\hat{k}$ and $\hat{i} - 6\hat{j} - \hat{k}$ are the position vectors of the points A, B, C and D respectively, Find the angle between $\overrightarrow{AB}$ and $\overrightarrow{CD}$.

8. Using cross product between two vectors, find the angle between $\vec{a} = 3\hat{i} + 2\hat{j} + 2\hat{k}$ and $\vec{b} = \hat{i} + 2\hat{j} - 2\hat{k}$.

9. In a triangle XYZ the vertices are X (1, 2, 3) , Y (2, 3, 1) and Z (1, ,1, 1) . Find the area of the triangle XYZ.

10. If $\hat{i} + 2\hat{j} + 3\hat{k}, 2\hat{i} + 3\hat{j} + \hat{k}$ and $3\hat{i} + \hat{j} + 2\hat{k}$ are the position vectors of the vertices A, B and C respectively of a △ ABC, then show that the triangle is equilateral