

Question

Find the relative velocity of particle A to particle B when the velocities of each particle is given by:

(i) $\mathbf{v}_A = \mathbf{i} + \mathbf{j}$ and $\mathbf{v}_B = 5\mathbf{i} + 2\mathbf{j}$

(ii) $\mathbf{v}_A = \mathbf{i} - \mathbf{j} + \mathbf{k}$ and $\mathbf{v}_B = -\mathbf{i} + 6\mathbf{j} - 7\mathbf{k}$

Answer

(i) $\mathbf{v}_{AB} = \mathbf{v}_A - \mathbf{v}_B = \mathbf{i} + \mathbf{j} - (5\mathbf{i} + 2\mathbf{j}) = -4\mathbf{i} - \mathbf{j}$

(ii) $\mathbf{v}_{AB} = \mathbf{i} - \mathbf{j} + \mathbf{k} - (-\mathbf{i} + 6\mathbf{j} - 7\mathbf{k}) = 2\mathbf{i} - 7\mathbf{j} + 8\mathbf{k}$