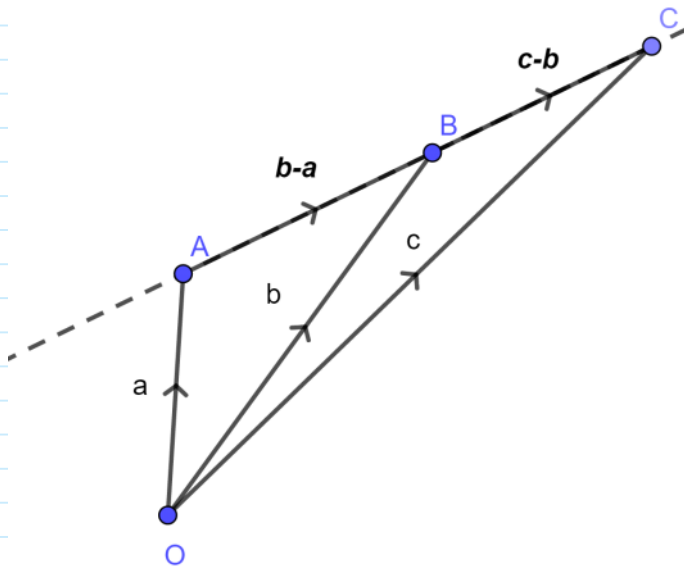


The points A, B and C are given by the position vectors \mathbf{a} , \mathbf{b} and \mathbf{c} .

If A, B and C are collinear, show that

$$\mathbf{b} \times \mathbf{c} = \mathbf{a} \times (\mathbf{c} - \mathbf{b})$$



If A, B and C are collinear, then
 $\vec{AB} \times \vec{BC} = \mathbf{0}$

$$\vec{AB} = \underline{\underline{\mathbf{b} - \mathbf{a}}}$$

$$\vec{BC} = \underline{\underline{\mathbf{c} - \mathbf{b}}}$$

$$(\underline{\underline{\mathbf{b} - \mathbf{a}}}) \times (\underline{\underline{\mathbf{c} - \mathbf{b}}}) = \mathbf{0}$$

$$\underline{\underline{\mathbf{b}}} \times (\underline{\underline{\mathbf{c} - \mathbf{b}}}) - \underline{\underline{\mathbf{a}}} \times (\underline{\underline{\mathbf{c} - \mathbf{b}}}) = \mathbf{0}$$

$$\underline{\underline{\mathbf{b}}} \times \underline{\underline{\mathbf{c}}} + \underline{\underline{\mathbf{b}}} \times (-\underline{\underline{\mathbf{b}}}) - \underline{\underline{\mathbf{a}}} \times \underline{\underline{\mathbf{c}}} - \underline{\underline{\mathbf{a}}} \times (-\underline{\underline{\mathbf{b}}}) = \mathbf{0}$$

$$\underline{\underline{\mathbf{b}}} \times \underline{\underline{\mathbf{c}}} + \mathbf{0} - \underline{\underline{\mathbf{a}}} \times \underline{\underline{\mathbf{c}}} + \underline{\underline{\mathbf{a}}} \times \underline{\underline{\mathbf{b}}} = \mathbf{0}$$

$$\underline{\underline{\mathbf{b}}} \times \underline{\underline{\mathbf{c}}} = \underline{\underline{\mathbf{a}}} \times \underline{\underline{\mathbf{c}}} - \underline{\underline{\mathbf{a}}} \times \underline{\underline{\mathbf{b}}}$$

$$\underline{\underline{\mathbf{b}}} \times \underline{\underline{\mathbf{c}}} = \underline{\underline{\mathbf{a}}} \times (\underline{\underline{\mathbf{c} - \mathbf{b}}})$$