

9.4 - Messing around with the cross product

One problem per group, and eventually we'll share answers...

1. Consider the vector $\vec{c} = \vec{a} \times (\vec{a} \times \vec{b})$. Is $\vec{c} \perp \vec{a}$? Is $\vec{c} \perp \vec{b}$? Either give a reason justifying the truth of the statement, or a counterexample.

2. Suppose that $\hat{j} \times \vec{a} = \hat{i}$. Give two possible solutions, and discuss others.

3. Given that $\vec{a} = \langle 1, 2, 3 \rangle$ and $\vec{b} = \langle 1, -1, -1 \rangle$ sketch the collection of all position vectors \vec{c} satisfying $\vec{a} \times \vec{b} = \vec{a} \times \vec{c}$.

4. Show that \vec{a} is perpendicular to $(\vec{a} - \vec{b}) \times (\vec{a} + \vec{b})$.