bac-cab rule

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The **bac-cab rule** states that for vectors $\mathbf{A}$, $\mathbf{B}$, and $\mathbf{C}$ (that can be either real or complex) in $\mathbb{R}^3$, we have

$$\mathbf{A} \times (\mathbf{B} \times \mathbf{C}) = \mathbf{B}(\mathbf{A} \cdot \mathbf{C}) - \mathbf{C}(\mathbf{A} \cdot \mathbf{B}).$$

Here $\times$ is the cross product, and $\cdot$ is the real inner product.