

$$\begin{aligned}
 \vec{v}_1 \times \vec{v}_2 &= \begin{pmatrix} x_1 \\ y_1 \\ z_1 \end{pmatrix} \times \begin{pmatrix} x_2 \\ y_2 \\ z_2 \end{pmatrix} = \begin{pmatrix} y_1 z_2 & -z_1 y_2 \\ z_1 x_2 & -x_1 z_2 \\ x_1 y_2 & -y_1 x_2 \end{pmatrix}
 \end{aligned}$$

Diagram illustrating the cross product of two vectors \vec{v}_1 (purple) and \vec{v}_2 (orange). The result is a vector whose components are shown in a blue box (positive terms) and a red box (negative terms).

Diagram illustrating the cross product of two vectors \vec{v}_1 (purple) and \vec{v}_2 (orange). The result is a vector whose components are shown in a blue box (positive terms) and a red box (negative terms).