

$$\mathbf{A} \times \mathbf{B} = \begin{vmatrix} \mathbf{i} & \mathbf{j} & \mathbf{k} & \mathbf{i} & \mathbf{j} \\ A_x & A_y & A_z & A_x & A_y \\ B_x & B_y & B_z & B_x & B_y \end{vmatrix}$$

The diagram illustrates the calculation of the vector cross product $\mathbf{A} \times \mathbf{B}$ using a determinant. The determinant is a 3x5 matrix. The first three columns are associated with the unit vectors \mathbf{i} , \mathbf{j} , and \mathbf{k} in the first row. The second three columns are associated with the unit vectors \mathbf{i} , \mathbf{j} , and \mathbf{k} in the first row. The first row contains the unit vectors \mathbf{i} , \mathbf{j} , \mathbf{k} , \mathbf{i} , and \mathbf{j} . The second row contains the components A_x , A_y , A_z , A_x , and A_y . The third row contains the components B_x , B_y , B_z , B_x , and B_y . A vertical line is drawn between the third and fourth columns. The first three columns are highlighted with a light red background, and the last two columns are highlighted with a light blue background. The intersection of these highlights creates a purple color in the middle columns.