Vector multiplication in Matrix form

① Dot Product 点乘

$$\vec{a} \cdot \vec{b} = \vec{a}^T \vec{b}$$

$$= (x_a \ y_a \ z_a) \begin{pmatrix} x_b \\ y_b \\ z_b \end{pmatrix} = (x_a x_b + y_a y_b + z_a z_b)$$

② Cross Product 叉乘

$$\vec{a} \times \vec{b} = A * b = \begin{pmatrix} 0 & -z_a & y_a \\ z_a & 0 & -x_a \\ -y_a & x_a & 0 \end{pmatrix} \begin{pmatrix} x_b \\ y_b \\ z_b \end{pmatrix}$$

dual matrix of
Vector a