$$g_{ij} = \left[\begin{array}{ccc} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{array} \right]$$

$$a = a^{x}\boldsymbol{e}_{x} + a^{y}\boldsymbol{e}_{y} + a^{z}\boldsymbol{e}_{z}$$

$$b = b^{x}\boldsymbol{e}_{x} + b^{y}\boldsymbol{e}_{y} + b^{z}\boldsymbol{e}_{z}$$

$$a\bar{\times}b = a^{x}b^{x} + a^{y}b^{y} + a^{z}b^{z}$$

$$a\times b = \left (a^{x}b^{y} - a^{y}b^{x}\right) \boldsymbol{e}_{x}\wedge \boldsymbol{e}_{y} + \left (a^{x}b^{z} - a^{z}b^{x}\right) \boldsymbol{e}_{x}\wedge \boldsymbol{e}_{z} + \left (a^{y}b^{z} - a^{z}b^{y}\right) \boldsymbol{e}_{y}\wedge \boldsymbol{e}_{z}$$

$$A = A^{xy}\boldsymbol{e}_{x}\wedge \boldsymbol{e}_{y} + A^{xz}\boldsymbol{e}_{x}\wedge \boldsymbol{e}_{z} + A^{yz}\boldsymbol{e}_{y}\wedge \boldsymbol{e}_{z}$$

$$B = B^{xy}\boldsymbol{e}_{x}\wedge \boldsymbol{e}_{y} + B^{xz}\boldsymbol{e}_{x}\wedge \boldsymbol{e}_{z} + B^{yz}\boldsymbol{e}_{y}\wedge \boldsymbol{e}_{z}$$

$$A\bar{\times}B = - A^{xy}B^{xy} - A^{xz}B^{xz} - A^{yz}B^{yz}$$

$$A\times B = \left (- A^{xz}B^{yz} + A^{yz}B^{xz}\right) \boldsymbol{e}_{x}\wedge \boldsymbol{e}_{y} + \left (A^{xy}B^{yz} - A^{yz}B^{xy}\right) \boldsymbol{e}_{x}\wedge \boldsymbol{e}_{z} + \left (- A^{xy}B^{xz} + A^{xz}B^{xy}\right) \boldsymbol{e}_{y}\wedge \boldsymbol{e}_{z}$$