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a) $\epsilon_{kji} = -\epsilon_{jki} = \epsilon_{jik} = -\epsilon_{ijk}$

b) $\epsilon_{123} = \epsilon_{231} = \epsilon_{312} = 1$

$\epsilon_{213} = \epsilon_{321} = \epsilon_{132} = -1$

d) $\hat{e}_1 \times \hat{e}_2 = \hat{e}_3 = \epsilon_{123}\,\hat{e}_3 = \sum_k \epsilon_{12k}\,\hat{e}_k$

$\hat{e}_2 \times \hat{e}_1 = -\hat{e}_3 = \sum_k \epsilon_{21k}\,\hat{e}_k$, etc.

c) $\vec{a} = \sum a_i \hat{e}_i$, $\vec{b} = \sum b_j \hat{e}_j$

$$\vec{a} \times \vec{b} = \sum_{ij} a_i b_j \, \hat{e}_i \times \hat{e}_j$$

$$= \sum_{ij} a_i b_j \sum_k \epsilon_{ijk} \hat{e}_k$$

$$= \sum_{ijk} \epsilon_{ijk} a_i b_j \hat{e}_k$$