

习题 1.10.4

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题目. 证明 $(\mathbf{a} \times \mathbf{b}, \mathbf{c} \times \mathbf{d}, \mathbf{e} \times \mathbf{f}) = (\mathbf{abd})(\mathbf{cef}) - (\mathbf{abc})(\mathbf{def})$.

证明.

$$\begin{aligned}(\mathbf{a} \times \mathbf{b}, \mathbf{c} \times \mathbf{d}, \mathbf{e} \times \mathbf{f}) &= [(\mathbf{c} \times \mathbf{d}) \times (\mathbf{e} \times \mathbf{f})] \cdot (\mathbf{a} \times \mathbf{b}) \\&= [(\mathbf{cef})\mathbf{d} - (\mathbf{def})\mathbf{c}] \cdot (\mathbf{a} \times \mathbf{b}) \\&= (\mathbf{cef})(\mathbf{dab}) - (\mathbf{def})(\mathbf{cab}).\end{aligned}$$

□

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