Selected Problems Chapter 3
Linear Algebra Done Wrong, Sergei Treil, 1st Edition

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Problem Uniqueness of Determinant. Let $C \in \mathbb{R}^n$ be a column vector, i.e. $C = (c_i)_{i=1,\dots,n}$.

Show that if $D : (\mathbb{R}^n)^n \to \mathbb{R}$ satisfies

$$\textbf{multi-linearity.} \tag{1}$$
$$\textbf{anti-symmetry.} \tag{2}$$
$$\textbf{normalization.} \tag{3}$$

then

$$D(C_1, \dots, C_n) =$$

Proof. □