Given $F \in \{\mathbb{R}, \mathbb{C}\}$ and a positive integer $n$, denote by $P_n(F)$ the set of all $n \times n$ matrices with entries from $F$ which are positive definite. The main result of this paper states that if $\phi : P_n(F) \to \mathbb{R}$ satisfies
\[ \phi(YXY) = \phi(X) + 2\phi(Y), \quad X, Y \in P_n(F), \]
then there exists a function $l : (0, \infty) \to \mathbb{R}$ such that
\[ l(xy) = l(x) + l(y), \quad x, y \in (0, \infty), \]
and
\[ \phi(X) = l(\det X), \quad X \in P_n(F). \]

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MSC:
- 39B42 Matrix and operator functional equations
- 15A15 Determinants, permanents, traces, other special matrix functions

Keywords:
- Jordan triple mapping
- determinant
- logarithmic mapping
- positive definite matrix

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References:
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