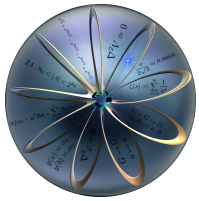

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determinants of some matrices of special form

Canonical name	DeterminantsOfSomeMatricesOfSpecialForm
Date of creation	2013-03-22 14:03:41
Last modified on	2013-03-22 14:03:41
Owner	bwebste (988)
Last modified by	bwebste (988)
Numerical id	5
Author	bwebste (988)
Entry type	Result
Classification	msc 15A15
Related topic	BlockDeterminants

Suppose A is $n \times n$ square matrix, u, v are two column n-vectors, and α is a scalar. Then

$$\begin{aligned} \det(A + uv^{\mathrm{T}}) &= \det A + v^{\mathrm{T}} \operatorname{adj} A \; u, \\ \det \begin{pmatrix} A & u \\ v^{\mathrm{T}} & \alpha \end{pmatrix} &= \alpha \det A - v^{\mathrm{T}} \operatorname{adj} A \; u, \end{aligned}$$

where $\operatorname{adj} A$ is the adjugate of A.

References

[1] V.V. Prasolov, *Problems and Theorems in Linear Algebra*, American Mathematical Society, 1994.