

Kmatrix() — Commutation matrix

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Syntax

real matrix `Kmatrix(real scalar m , real scalar n)`

Description

`Kmatrix(m , n)` returns the $mn \times mn$ commutation matrix K for which $K * \text{vec}(X) = \text{vec}(X')$, where X is an $m \times n$ matrix.

Remarks and examples

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Commutation matrices are frequently used in computing derivatives of functions of matrices. Section 9.2 of [Lütkepohl \(1996\)](#) lists many useful properties of commutation matrices.

Conformability

`Kmatrix(m , n):`
 m : 1×1
 n : 1×1
result: $mn \times mn$

Diagnostics

`Kmatrix(m , n)` aborts with error if either m or n is less than 0 or is missing. m and n are interpreted as `trunc(m)` and `trunc(n)`.

Reference

Lütkepohl, H. 1996. *Handbook of Matrices*. New York: Wiley.

Also see

[M-5] [Dmatrix\(\)](#) — Duplication matrix

[M-5] [Lmatrix\(\)](#) — Elimination matrix

[M-5] [vec\(\)](#) — Stack matrix columns

[M-4] [standard](#) — Functions to create standard matrices