

Kmatrix() — Commutation matrix

Description	Syntax	Remarks and examples	Conformability
Diagnostics	Reference	Also see	

Description

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

Syntax

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

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)`:

<i>m</i> :	1×1
<i>n</i> :	1×1
<i>result</i> :	$mn \times mn$

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