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1

Definition

Let $A \in \mathbf{R}^{l \times m}$ and $B \in \mathbf{R}^{m \times n}$. In this case we call A and B *conformable*. The *matrix-matrix product* of A and B is the matrix $C \in \mathbf{R}^{l \times n}$ whose i th row c_i (for $i = 1, \dots, n$) is defined $c_i = Ab_i$ where b_i is the i th row of B .

Notation

We denote the matrix product of A and B by AB .

Properties

Future editions will contain accounts of the following basic properties.

Proposition 1. *Matrix multiplication is associative.*

Proposition 2. *Matrix multiplication is not commutative.*

Indeed, the matrix-matrix product of B and A may not even be defined, if B and A are not conformable.

¹Future editions will include.

