What are the names of the three definitions of matrix-vector multiplication and vector-matrix multiplication?

What is the linear-combination definition of matrix-vector multiplication?

What is the dot-product definition of matrix-vector multiplication?

What is the linear-combination definition of vector-matrix multiplication?

What is the dot-product definition of vector-matrix multiplication?

What are the three definitions of matrix-matrix multiplication?

What is the matrix-vector definition of matrix-matrix multiplication?

What is the vector-matrix definition of matrix-matrix multiplication?

What is the dot-product definition of matrix-matrix multiplication?

What is the definition of a linear function?

$M * \boldsymbol{v}$ is the linear combination of the columns of M where the coefficients are the entries of $\boldsymbol{v}$.

- The linear-combinations definition,
- the dot-product definition, and
- the "ordinary" definition.

$\boldsymbol{v} * M$ is the linear combination of the rows of M where the coefficients are the entries of $\boldsymbol{v}$.

Entry r of $M * \boldsymbol{v}$ is the dot-product of row r with $\boldsymbol{v}$.

- The matrix-vector definition,
- the vector-matrix definition, and
- the dot-product definition.

Entry c of $\boldsymbol{v} * M$ is the dot-product of $\boldsymbol{v}$ with column c of M.

For each row-label r of A,

row r of $AB = $ (row r of A) $* B$

For each column-label s of B,

column s of $AB = A *$ (column s of B)

A function $f : \mathcal{U} \longrightarrow \mathcal{V}$ whose domain and codomain are vector spaces, such that

L1: For any vector $\boldsymbol{u}$ in the domain of f and any scalar α in $\mathbb{F}$,

$$f(\alpha\, \boldsymbol{u}) = \alpha\, f(\boldsymbol{u})$$

L2: For any two vectors $\boldsymbol{u}$ and $\boldsymbol{v}$ in the domain of f,

$$f(\boldsymbol{u} + \boldsymbol{v}) = f(\boldsymbol{u}) + f(\boldsymbol{v})$$

Entry rc of AB is the dot-product of row r of A with column c of B.

What is the matrix-vector definition of matrix-matrix multiplication?

What is the vector-matrix definition of matrix-matrix multiplication?

Transpose of AB is ... ?

Outer product of $\boldsymbol{u}$ and $\boldsymbol{v}$ is ... ?

What is the null space of a matrix?

What is the Matrix Multiplication Lemma?

When is a linear function one-to-one?

What is a trivial vector space?

When are matrices A and B inverses of each other? (Definition)

When are matrices A and B inverses of each other? (Corollary)

Row r of A times B equals (row r of A) times B.

Column c of A times B equals A times column c of B.

$$\begin{bmatrix} \boldsymbol{u} \end{bmatrix} \begin{bmatrix} \quad \boldsymbol{v}^T \quad \end{bmatrix}$$

The s, t element of $\boldsymbol{u}\boldsymbol{v}^T$ is $\boldsymbol{u}[s]\boldsymbol{v}[t]$

$B^T A^T$

Let A and B be matrices. Define $f(\boldsymbol{y}) = A\boldsymbol{y}$ and $g(\boldsymbol{x}) = B\boldsymbol{x}$ and $h(\boldsymbol{x}) = (AB)\boldsymbol{x}$. Then

$$f \circ g = h$$

Null space of A is $\{\boldsymbol{x} \ : A * \boldsymbol{x} = \boldsymbol{0}\}$

A vector space whose only element is a zero vector.

When its kernel is a trivial vector space

Matrices A and B are inverses of each other if and only if both AB and BA are identity matrices.

Let f be the function defined by $f(\boldsymbol{y}) = A\boldsymbol{y}$ and let $g(\boldsymbol{x}) = B\boldsymbol{x}$. If f and g are inverses of each other, we say A and B are matrix inverses of each other.