

rank

example

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full rank

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The **rank** of a matrix is defined as the number of linearly independent columns (or rows) of a matrix. If all of the columns are independent, we say that the matrix is of **full rank**. We denote the rank of matrix A by as $rank(A)$.

- Full rank \iff nonsingular \iff invertible. All of these imply that A^{-1} exists.
- If a matrix is not of full rank, it is not invertible; i.e., it is singular.

example

Let $A = \begin{bmatrix} 2 & -4 \\ 3 & -6 \end{bmatrix}$. The second column is twice the first column so the rank of the matrix is 1.

It is not full rank.

system of linear equations