rank

example

rank

full rank

rank

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