

MOAT Let A be an $n \times n$ matrix.

Then the following are equivalent:

- A is nonsingular (elimination never produces a row of 0's)
- A is invertible.
- A has a pivot in every row
- A column.
- A has n pivots
- $A\vec{x} = \vec{b}$ has a unique solution
- Gauss-Jordan on A produces I .
- $\text{rank}(A) = n$
- $\text{RREF}(A) = I$
- $N(A) = \{\vec{0}\}$
- $C(A) = \mathbb{R}^n$