Applying the inverse (if it exists)—2 Common Methods

Multiply both sides by the inverse: $A^{-1}(A\vec{x}) = A^{-1}\vec{b}$
Reorder parenthesis by associativity: $(A^{-1}A)\vec{x} = A^{-1}\vec{b}$
Cancel A by its inverse: $I_{n\times n}\vec{x} = A^{-1}\vec{b}$
Identity reduces to get $\vec{x}$ alone: $\vec{x} = A^{-1}\vec{b}$

OR

$A_{n\times n}$ must have full pivots to be invertible because it reduces to the identity matrix I so you can make use of the full pivots

What Makes You Invertible

In verse

What Makes You Invertible

In verse

Music by One Direction & idea adapted from Art Benjamin
Interpreted by Dr. Sarah and Joel Landsberg

Baby you'll light up if one of these facts is so,
but you'll need n square columns and rows:

- Like when $\mathbb{R}^n$ is the span of the matrix columns
- That's when you know oh-oh invertible!
- If always you uniquely solve $A\vec{x}$ is $\vec{b}$
- Or if your columns have no linear dependency
- Or if matrix reduces to identity

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Not zero - no no
That makes it not invertible!

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Not zero - no no
That makes it not invertible!

Shout out if one of these facts is so...
but you'll need n square columns and rows:

- Like when your matrix determinant's non-zero

Is when you know oh-oh—that makes it invertible!