

Inverse of a Matrix

In the last example we saw that G-J transformed the matrix A into the identity I and the vector b into the solution x of our system. We summarize this as

$$Ax = b \iff [A|b] \xrightarrow{\text{G-J}} [I|x]$$

Inverse of a matrix: Let A be a square ($n \times n$) matrix. Then we call a matrix B the inverse of A if

$$AB = BA = I$$

Unproven fact 1: Inverses are unique, so we denote B by A^{-1}

Unproven fact 2: If $AB = I$, then automatically $BA = I$

So how do we find $B = A^{-1}$ if it exists?