2.2 The Inverse of A Matrix

Definition
An $n \times n$ matrix A is said to be invertible if there is an $n \times n$ matrix C such that $AC = I$ & $CA = I$. Where $I = I_n$ the $n \times n$ identity matrix.

$$I = I_2 = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} = [Ie_1, Ie_2] \qquad I = I_3 = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix} = [Ie_1, Ie_2, Ie_3]$$

$$I = I_n = [Ie_1, Ie_2, ...Ie_n]$$

Algebraic Representation
$(CA)x = Ix = x$, with this we can say that I is essentially "1".

$$A \cdot A^{-1} = A^{-1} \cdot A = I$$