

Key Takeaways

Properties of Inverse of a matrix

If A is a non-singular matrix, $\Rightarrow A^{-1}$ is also non-singular

- $(A^{-1})^{-1} = A$ Let $B = A^{-1}$

$$BB^{-1} = I \Rightarrow A^{-1}(A^{-1})^{-1} = I \text{ (Pre multiply by } A \text{ on both sides)}$$

$$AA^{-1}(A^{-1})^{-1} = AI$$

$$\Rightarrow (A^{-1})^{-1} = A$$

- If $A = \text{diag}(a_1, a_2, \dots, a_n)$, then $A^{-1} = \text{diag}(a_1^{-1}, a_2^{-1}, \dots, a_n^{-1})$

$$A = \begin{bmatrix} a_1 & \dots & \dots \\ \dots & a_2 & \dots \\ \dots & \dots & a_3 \end{bmatrix} \Rightarrow A^{-1} = \begin{bmatrix} 1 & \dots & \dots \\ a_1 & & \\ \dots & \frac{1}{a_2} & \dots \\ \dots & \dots & \frac{1}{a_3} \end{bmatrix}$$