



Key Takeaways

Properties of adjoint matrix

- Let $A = [a_{ij}]_n$ be a square matrix.

$$A \operatorname{adj}(A) = |A|I_n = \operatorname{adj}(A)A$$

Proof:

$$A \operatorname{adj}(A) = \begin{bmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{bmatrix} \begin{bmatrix} c_{11} & c_{21} & c_{31} \\ c_{12} & c_{22} & c_{32} \\ c_{13} & c_{23} & c_{33} \end{bmatrix}$$

$$A \operatorname{adj}(A) = \begin{bmatrix} |A| & 0 & 0 \\ 0 & |A| & 0 \\ 0 & 0 & |A| \end{bmatrix}$$

$$A \operatorname{adj}(A) = |A|I_n$$

$$a_{11}c_{11} + a_{12}c_{12} + a_{13}c_{13} = \Delta$$

$$a_{11}c_{21} + a_{12}c_{22} + a_{13}c_{23} = 0$$