Key Takeaways

Properties of Inverse of a matrix

If matrix A is invertible , then

- $(kA)^{-1} = \frac{1}{k}A^{-1}$, Where k is a scalar

Proof : $(kA)(kA)^{-1} = I$ $\qquad AA^{-1} = I$

$\Rightarrow A \cdot (kA)^{-1} = \frac{1}{k} \cdot I \ (\because |A| \neq 0)$ $\qquad$ Premultiply by A^{-1}

$\Rightarrow A^{-1} \cdot A \cdot (kA)^{-1} = \frac{1}{k} \cdot (A^{-1} \cdot I)$

$$\boxed{(kA)^{-1} = \frac{1}{k}A^{-1}}$$

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