

PROPERTIES : Matrices and Determinants

# Properties of Determinants:	# Properties of Transpose:
$ A' = A $ $ KA = K^n A $ $ AB = A B $ $ A^n = A ^n$ <p style="text-align: center;">Where n = order of Matrix.</p> $AI = IA = A$	$(A')' = A$ $(A \pm B)' = A' \pm B'$ $(AB)' = B'A'$ $(KA)' = K(A')$ $(A^n)' = (A')^n$
# Properties of Adjoint:	# Properties of Inverse:
$ Adj A = A ^{n-1}$ $A.(Adj A) = (Adj A).A = A I$ $Adj (AB) = (Adj B)(Adj A)$ $(Adj A^1) = (Adj A)^1$ $Adj (Adj A) = A ^{n-2}.A$ $ Adj (Adj A) = A ^{(n-1)^2}$ $ A. Adj A = A ^n$	$A^{-1} = \frac{Adj (A)}{ A }$ $A A^{-1} = A^{-1} A = I$ $ A^{-1} = \frac{1}{ A }$ $(AB)^{-1} = B^{-1}A^{-1}$ $(A^{-1})^{-1} = A$ $(A^{-1})^T = (A^T)^{-1}$ $(A^n)^{-1} = (A^{-1})^n \quad n = \text{order}$
<p>Symmetric Matrix $\Rightarrow A = A'$</p> <p>Skew-symm Matrix $\Rightarrow A = -A'$</p> <p>Singular Matrix $\Rightarrow A = 0$</p> <p>Non-Singular Matrix $\Rightarrow A \neq 0$</p> <p>Note: If A is both symmetric and skew-symm. Matrix then A is Zero Matrix</p>	<p># for any square matrix A</p> $A = \frac{1}{2} (A + A') + \frac{1}{2} (A - A')$ <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 5px;"> <div style="text-align: center;"> \downarrow symm. </div> <div style="text-align: center;"> \downarrow sk.symm. </div> </div> <p># MATRIX METHOD to solve linear equation 2/3 variable</p> $\Rightarrow AX = B \quad \Rightarrow X = A^{-1}B$