

LINEAR ALGEBRA IX - LINEAR MODELS AND DECISIONS

$M = (m_{ij})$ IS SYMMETRIC iff $m_{ij} = m_{ji}$

$M = (m_{ij})$ IS UPPER TRIANGULAR iff $m_{ij} = 0$ FOR $i > j$

$M = (m_{ij})$ IS LOWER TRIANGULAR iff $m_{ij} = 0$ FOR $i < j$

$M = (m_{ij})$ IS DIAGONAL iff $m_{ij} = 0$ FOR $i \neq j$

$M = (m_{ij})$ IS SCALAR iff $m_{ij} = 0$ FOR $i \neq j$ AND $m_{ii} = \alpha$ FOR $\forall i$

i.e., IF $M = \alpha I$

FOR A $M \times N$, $A' A = B$ IS SYMMETRIC
 $M \times N$ $N \times M$ $M \times N$ $N \times N$

IF A IS ORTHOGONAL (HAS ORTHOGONAL COLUMNS), $A' A$ IS DIAGONAL

IF A IS ORTHONORMAL, $A' A = I$ THAT IS, $A^{-1} = A'$ FOR SQUARE A