Properties of Matrices

Suppose $A$, $B$ and $C$ are Matrices of the same dimension and that $c$ and $d$ are scalars.

$A + B = B + A$

$A + (B + C) = (A + B) + C$

$(c \cdot d)A = c \cdot (dA)$

$1A = A$

$c(A + B) = cA + cB$

$(c + d)A = cA + dA$

$A - B = A + (-1)B$

$O_{3x3} = \begin{pmatrix} 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{pmatrix}$ is a Zero Matrix

Suppose that the dimensions of Matrices $A$, $B$ and $C$ are appropriate for multiplication.

$AB \neq BA$ (in general)

$A(BC) = (AB)C$

$A(B + C) = AB + AC$

$(A + B)C = AC + BC$

$c(AB) = (cA)B = A(cB)$

$I_{3x3} = \begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix}$ is an Identity Matrix