Positive Integral Powers of a Matrix.

The positive integral powers of a matrix *A* are defined only when *A* is a square matrix. Also then $A^2 = A.A$, $A^3 = A.A.A = A^2 A$. Also for any positive integers *m*, *n*.

(i) $A^m A^n = A^{m+n}$

(ii) $(A^m)^n = A^{mn} = (A^n)^m$

(iii) $I^n = I, I^m = I$

(iv) $A^0 = I_n$ Where *A* is a square matrix of order *n*.