Cayley - Hamilton Theorem

Every square matrix satisfy its own characteristic equation i.e. if for a square matrix A of order n,

$$|A-\lambda I| = (-1)^n[\lambda^n + a_1\lambda^{n-1} + a_2\lambda^{n-2} + \cdots + a_n] = 0$$

then the matrix equation

$$X^n + a_1 X^{n-1} + a_2 X^{n-2} + a_3 X^{n-3} + \cdots + a_n I = 0$$

is satisfied by $X = A$

i.e. $A^n + a_1 A^{n-1} + a_2 A^{n-2} + \cdots + a_n I = 0$