Matrix Polynomial.

Let $f(x) = a_0 x^n + a_1 x^{n-1} + a_2 x^{n-2} + \ldots + a_{n-1} x + a_n$ be a polynomial and let *A* be a square matrix of order *n.* Then $f(A) = a_0 A^n + a_1 A^{n-1} + a_2 A^{n-2} + \ldots + a_{n-1} A + a_n I_n$ is called a matrix polynomial.

Example: If $f(x) = x^2 - 3x + 2$ is a polynomial and A is a square matrix, then $A^2 - 3A + 2I$ is a matrix polynomial.