



**Definition**

A *matrix polynomial* of degree  $d$  is a function  $p : \mathbf{R}^{n \times n} \rightarrow \mathbf{R}^{n \times n}$  for which there exists a finite sequence  $(c_0, c_1, \dots, c_{d-1}, c_d) \in \mathbf{R}$  satisfying,

$$p(A) = c_0 I + c_1 A^1 + c_2 A^2 + \dots + c_d A^d,$$

for all  $A \in \mathbf{R}^{n \times n}$ .



