$a_0 t^n + a_1 t^{n-1} + \ldots\ldots + a_n \;,\; a_0 \neq 0$

It is monic polynomial if $a_0 = 1$.

↳ If minimal polynomial and characteristic polynomial of two matrices are same, then these two matrices are same.

* $A = \begin{bmatrix} 1 & 1 \\ -2 & 4 \end{bmatrix}$, $B = \begin{bmatrix} 2 & 0 \\ 0 & 3 \end{bmatrix}$

Put $\det(A - \lambda I) = 0$

$\Rightarrow \begin{vmatrix} 1-\lambda & 1 \\ -2 & 4-\lambda \end{vmatrix} = 0$

$\Rightarrow (1-\lambda)(4-\lambda) + 2 = 0$

$\Rightarrow 4 - 5\lambda + \lambda^2 + 2 = 0$

$\Rightarrow \lambda^2 - 5\lambda + 6 = 0$

$\Rightarrow (\lambda - 2)(\lambda - 3) = 0$

$m(\lambda) = (\lambda - 2)(\lambda - 3)$

$\det(B - \lambda I) = 0$

$\Rightarrow (2-\lambda)(3-\lambda) = 0$

$\Rightarrow (\lambda - 2)(\lambda - 3) = 0$

$m(\lambda) = (\lambda - 2)(\lambda - 3)$

∴ Both A and B are similar.

* Diagonalisable matrices :-

Any square matrix A is said to be diagonalisable if there exist an invertible matrix P such that $P^{-1}AP = D$.

$A = \begin{bmatrix} 1 & 1 \\ -2 & 4 \end{bmatrix}$

Characteristic polynomial,

$\Delta t = (\cancel{\lambda} - 2)(\cancel{\lambda} - 3)$