

$$\textcircled{2} \quad m_A(A) = A^2 - 3A + 2I = 0$$

$$\text{or } \boxed{A^2 = 3A - 2I}$$

Any polynomial in A reduces to a LC of A and I .

$$P(A) = A^3 + A^2 + I$$

$$= A(3A - 2I) + (3A - 2I) - I$$

$$= 3A^2 - 2A + 3A - I$$

$$= 3(3A - 2I) + A - I$$

$$P(A) = \begin{bmatrix} -7 & -20 & | & -20 \\ 10 & 23 & | & 10 \\ \hline 0 & 0 & | & 13 \end{bmatrix}$$

$q(A)$