

$$\begin{aligned}
 & \boxed{2. (2,3)} \quad \begin{pmatrix} 1-x^2 & x^3-x^5 \\ x & x^q-1 \end{pmatrix} \rightarrow \begin{pmatrix} 1 & x^2-x^5+x^5-x \\ x & x^q-1 \end{pmatrix} \\
 & \rightarrow \begin{pmatrix} 1 & x^3-x \\ x & x^q-1 \end{pmatrix} \rightarrow \begin{pmatrix} 1 & x^3-x \\ 0 & x^q-1-x^q+x^2 \end{pmatrix} \\
 & \rightarrow \begin{pmatrix} 1 & 0 \\ 0 & x^2-1 \end{pmatrix}
 \end{aligned}$$

$$\text{f.s.} \quad \text{Coker}(T_A) \cong \mathbb{C}[x]/(x^2-1) \cong \mathbb{C}[x]/(x-1) \oplus \mathbb{C}[x]/(x+1)$$