

10. Relative degree

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$$(p=q=1)$$

let r be the relative degree of S :
 r is the first p integer such that:

$$\begin{cases} CA^{r-1}B \neq 0 \\ CA^k B = 0 \quad k=0, \dots, r-2 \end{cases}$$

$$P(s) = \frac{N(s) \sim s^n}{D(s) \sim s^m} = \frac{b_0 + \dots + b_m s^m}{a_0 + \dots + s^n} \quad \boxed{r = n - m}$$