判斷後矩陣的核空間是否爲兩矩陣乘積後核空間的子集
95台大電機

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題目

For any $m \times n$ matrix A and $n \times p$ matrix B, the null space of B is contained in the null space of AB.

(95 台大電機)

解:

題目問是否爲 $N(B) \subseteq N(AB)$

$N(B) = \{x | Bx = 0\}$

$N(AB) = \{x | ABx = 0\}$

因爲 $ABx = A(Bx) = A \cdot 0 = 0$,

所以 $\forall x \in B$, 則 $\forall x \in AB$

$\Rightarrow N(B) \subseteq N(AB)$, 答案爲true.