若 $a=1$, $x^{p^q}-1 = x^p-1 = (x-1)^p$ in F_p

若 $a \geq 1$, $x^{p^q}-1 = \prod_{d \mid p^q} \Phi_d(x)$

$$\sum_{n=0}^{\infty} (\cdots)$$

$$J^{p^a} = I + \cancel{(J-I)} \; p^a (J-I) + \frac{p(p-1)}{2} (J-I)^2 + \cdots$$

$p^a \equiv 0 \quad , \quad p^a = 0$ at F_p

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1) $J^{p^a} = I.$

For $p^a \geq n \Rightarrow a \geq \log_p n$

$\min a = \lceil \log_p n \rceil$

$$\Phi^{-1} = \prod_{d \mid p^a} \Phi_d(X)$$

pare to seual pam

$\{1,1,1\}$, $\{3,3\}$, $\{3,2,1\}$, $\{3,1,1,1\}$ $\{2,2,1\}$ $\{2,2,1,1\}$

$n_A(X) = (X-1)^h$

are distinct.

similarity classes.

similarity classes

similarity classes.

$p_B(x) = (x-1)(x-2)$

$(1)^2(x-2)$ $\quad C_B(x) = (x-1)(x-2)^2$.

ce diagonalizable

. . . $\mathbf{b} = 1 \ldots P(x)$ °

$(x) = \prod_i f_i(x)^{k_i}$

...rmed are $F(x)$

$f_i(x)]^{k_{i1}} \oplus \ldots \oplus C\{f_i(x)\}^{k_{ir}}$

...ler i $k_i \neq 0$

...il $\prod^{t} f_i(x)^{k_i}$

④ $\begin{pmatrix} 2 & 1 & 0 & 0 \\ -1 & -1 & 1 & 0 \\ 0 & 0 & 0 & 1 \\ 0 & 0 & -1 & -1 \end{pmatrix}$

$\begin{pmatrix} 2 & 1 & 0 & 0 \\ -1 & -1 & 1 & 0 \\ 0 & 0 & 0 & 1 \\ 0 & 0 & -1 & -1 \end{pmatrix}$.

$)^4$

$+1)^2$.

the degree of each pane of $C(x)$ is bigger than 2

—— to make A and B is not similar. but $C_A(x) = C_B(x)$ $\langle A, B$'s sequa dea not matte here.

$a(b) \in \oplus J(A)$, $J_{2a}(b)$ or $J_{3a}(b)$ or $J_{ta}(b) \in J(B)$.

J_{2a}

, the remainder of ~~the~~ $J(B) / J_{2a}(b) = 1$, if it is not true

, the reminder is $\equiv$

$(b_1) \oplus J_3(b_1) \oplus J_3(b_2)$ $J(B) = J_6(\oplus b_1) J_3(b_2)$

$; x)$

~~$\in J_2(A) J_2$~~ $J_2(b_1) \oplus J_2(b_2)$ of $J_3(b_3)$ $J(B) \equiv J_4(b_1) \subset J_5(b_3)$

$^3+x^2-x+1)$ $m_A(x) = m_B(x) = (x^2+1)^3(x^3+x^2-x+1)$

$^2+1)^3$ @ $C(x^3+x^2-x+1)$ $B = \not\in C(x^2+1) \oplus (C(x^2+1)^3)^2 \oplus C(x^3+x^2-x+1)$

1) are irreducible. , $A \not\sim B$

(B) !

$+1$

rank A = rank B

nge ies rank.

= rank $A - 3$ = rank $B - 3$

$(x) = \prod_{i=1}^{t} f_i^{k_i}$

$m_B(x)$)

f . $f(B) = 0$, while $f(A) \neq 0$

$f(A)$ = rank $f(B)$, ~~max~~ $m_A(x) = m_B(x)$

$V = V_1' \oplus V_1' \oplus \cdots \oplus V_0'$

$m_i(x) = f_i^{a_i}$

$C[f_i(x)]^{k_2} \oplus \cdots$

$]^{k_2'} \oplus C[f_i(x)]^{k_2'} \oplus \cdots$

$B^{a_i - r}$)