$f(x)$

$x^2+1 \mid f(x), x^3+x^2+1 \mid f(x)+1$

a

$f(x)=x^n+ax^{n-1}+\ldots+a^{n-1}x+a^n$

$A=(a_{ij})_{n\times n}, B=(1)_{n\times n}$ $\mid A+xB\mid=\mid A\mid+rx$ $\forall x$ $r=\sum_{i=1}^{n}\sum_{j=1}^{n}A_{ij}$ A_{ij}

$$D_n=\begin{vmatrix} x & a & a & \ldots & a & a \\ -a & x & a & \ldots & a & a \\ -a & -a & x & \ldots & a & a \\ \vdots & \vdots & \vdots & & \vdots & \vdots \\ -a & -a & -a & \ldots & x & a \\ -a & -a & -a & \ldots & -a & x \end{vmatrix}$$

$$A=\begin{pmatrix} -1 & 2 & 0 & 0 \\ 1 & -2 & 0 & 0 \\ 0 & 0 & 3 & -1 \\ 0 & 0 & -6 & 2 \end{pmatrix}$$ A^{2017}

$f(x)\in Z[x]$ Z a

$$f(a)=f(a+1)=f(a+2)=1$$

c $f(c)\neq -1$

A, B, C $C = AB - BA$ C A, B C

A A $R(A) = 3$ A A^2 *Jordan*

A $f(x) \in C[x]$ $g(x)$ A

$(f(x), g(x)) = d(x)$

$R(d(A)) = R(f(A))$ R

$f(A)$ $\Leftrightarrow (f(x), g(x)) = 1$

α, β, γ V φ

$$\begin{cases} \varphi(\alpha + 2\beta + \gamma) = \alpha \\ \varphi(3\beta + 4\gamma) = \beta \\ \varphi(4\beta + 5\gamma) = \gamma \end{cases}$$

φ $\alpha, 2\beta + \gamma, \gamma$