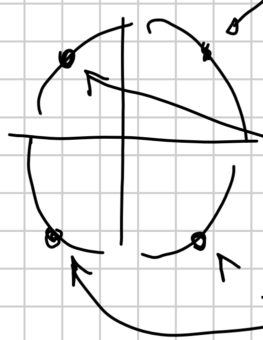
Titolo nota 10/10/2011

X^4+1 è irrid in $\mathbb{Q}$?



$e^{2\pi i/8} = \zeta$

$e^{2\pi i/8 \cdot 3} = \zeta^3$

$e^{2\pi i/8 \cdot 5} = \zeta^5$

$e^{2\pi i/8 \cdot 7} = \zeta^7$

$X^4+1 = \Phi_8(x)$

$\Phi_m(x)$ poly minimo di $e^{\frac{2\pi i}{m}}$ (alg di $\partial = \varphi(m)$)

$\left(\frac{5}{p}\right) = 1$

$\left(\frac{1+\sqrt{5}}{2}\right) \in \mathbb{F}_p$

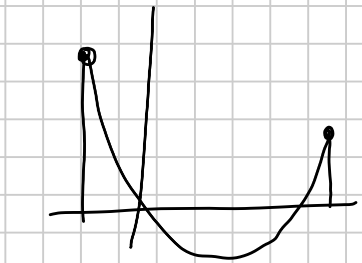
$\left(\frac{5}{p}\right) = -1$

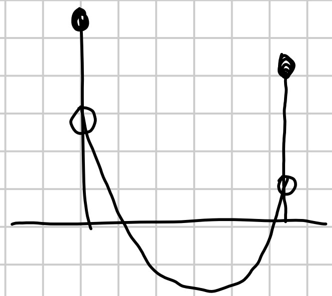
$\left(\frac{1+\sqrt{5}}{2}\right) \in \mathbb{F}_{p^2}$

$$\begin{array}{ccccccccccc}
 & & & & & 1 & & & & & \\
 & & & & 1 & & 1 & & & & \\
 & & & 1 & & 2 & & 1 & & & \\
 & & 1 & & 3 & & 3 & & 1 & & \\
 & 1 & & 4 & & 6 & & 4 & & 1 & \\
1 & & 5 & & 10 & & 10 & & 5 & & 1
\end{array}$$

D è una derivazione se

$D(f \cdot g) = (Df)g + f(Dg)$





Cauchy-Schwarz

$$\left(\sum_{i=1}^{n} a_i b_i\right)^2 \leq \left(\sum a_i^2\right)\left(\sum b_i^2\right)$$

$v, w \in \mathbb{R}^n$

$\|v - w\|^2 \geq 0$

$\langle v, w \rangle \leq \frac{1}{2}\left(\|v\|^2 + \|w\|^2\right)$

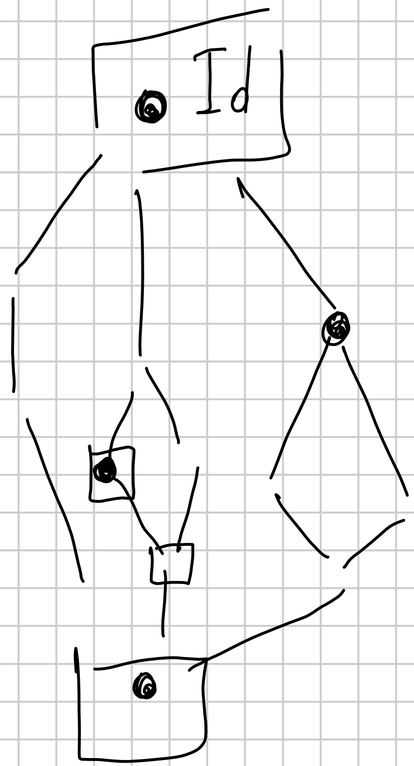
$\langle v, w \rangle \leq \frac{1}{2}\left(\frac{\|v\|^2}{\lambda^2} + \lambda^2 \|w\|^2\right)$

Amplificazione

$\lambda^2 = \frac{\|v\|}{\|w\|}$

$\langle v, w \rangle \leq \|v\| \, \|w\|$ C.S.

S_k



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