2h jan. 4., 18 10 óra

$K \leq L \quad \dim L_K := [L:K]$

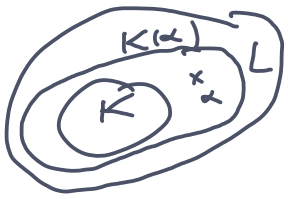
$K \leq K(\alpha) = [K \cup \{\alpha\}]_t \cong K[x]/(m_{\alpha,K})$

$K(\alpha)_K$ bázis: $1, \alpha, \alpha^2, \dots, \alpha^{n-1}$

$n = \deg m_{\alpha,K} = [K(\alpha):K]$

$K \leq L \leq M \quad [M:K] = [L:K] \cdot [M:L]$

$K \leq K(\alpha) \leq L \quad [L:K] = [L:K(\alpha)] \cdot \underbrace{[K(\alpha):K]}_{n}$



$n = \deg m_{\alpha,K} \mid [L:K]$

$\sqrt[3]{2} \notin \mathbb{Q}(\sqrt{2}) \qquad \sqrt{2} \notin \mathbb{Q}(\sqrt[3]{2})$

$2 \nmid 3$

α nöle $m_{\alpha,\mathbb{Q}} = x^5 - 2x^4 + 8x^3 - 22x^2 + 2 \in \mathbb{Q}[x]$; m. 5-ös $p=2$

β nöle $m_{\beta,\mathbb{Q}} = x^{100} + 9 \cdot x^{67} - 15 \cdot x^{23} + 6x + 3 \in \mathbb{Q}[x]$; m. 5-ös $p=3$

$m_{\alpha+\beta,\mathbb{Q}} = ?$

$m_{\sqrt{2},\mathbb{Q}} = x^2 - 2, \quad m_{\sqrt{3},\mathbb{Q}} = x^2 - 3, \quad m_{\sqrt{2}+\sqrt{3},\mathbb{Q}} = ?$

$f \in \mathbb{Q}[x] \quad f(\sqrt[3]{\alpha}) = 0$

$f(\sqrt[3]{\alpha}) = m_{\alpha,\mathbb{Q}}(\alpha) = 0$

$f(x) = m_{\alpha,\mathbb{Q}}(x^3) = x^{15} - 2x^{12} + 8x^9 - 22x^6 + 2$