Math 491, Tuesday, April 28 Galois Theory (Sage)

Thu - 23 (Insolubility of Quintic)

Fri - Problem Session / Housekeeping
Sage 23

Sun 11:59 PM
(email to RAB)

Mon - Exam 4 22/23

Tue - Presentations
8:00 - 9:20

Tue - Final Exam
10 AM Pacific
(3 hours)

$$M = N(b) = \mathbb{Q}(a)(b) = \mathbb{Q}(a,b)$$

2

$$x^2 + a^2 = \underbrace{(x-b)(x+b)}_{\text{roots } -b,\, b}$$

$$i2^{1/4},\ -i2^{1/4}$$

$$N = \mathbb{Q}(a)$$

4

$$x^4 - 2 = \underbrace{(x-a)(x+a)}_{\text{roots } a,\, -a}(x^2+a^2)$$

$$2^{1/4},\ -2^{1/4}$$

$$\mathbb{Q}$$

$$L = \text{"Galois Closure of } x^4-2\text{"}$$

$$= \mathbb{Q}(c)$$

root of $x^8 + 28x^4 + 2500$

[[b, a, -a, -b] ← tau = identity

[-b -a , a , b] ← rho

$$\text{rho} = \begin{array}{c} \begin{array}{cccc} 1 & 2 & 3 & 4 \end{array} \\ \begin{pmatrix} b & a & -a & -b \\ -b & -a & a & b \end{pmatrix} \end{array}$$

$$= \begin{pmatrix} 1 & 2 & 3 & 4 \\ 4 & 3 & 2 & 1 \end{pmatrix}$$

$$= (1\,4)(2\,3)$$