Algebraic number theory (Spring 2013), Homework 6

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Due Wednesday, May 8

Note: Any homework turned in after Thursday, May 2 at noon should be sent to me by e-mail, so I can grade it from the road.

1. (5 points) Determine, with proof, the Galois group of $x^4 - 2x^3 + 2x^2 + 4x + 2$.

2. (5 points) Determine, with proof, the Galois group of $x^4 - 2x^2 + 2x^2 + 2x - 1$.

3. (10 points) Determine, with proof, the Galois group of $x^5 + x^3 - 2x^2 - 1$.

4. (10 points) Determine the Galois group of $x^5 + 5x^3 + 5x - 1$.

5. (10 points) Find, with proof, a polynomial with Galois group $Sym(7)$.

6. (50 points) (If applicable) Describe, in around two to three pages, something interesting you have learned this semester, about number theory or a related topic, outside of this course and your other coursework.