HW 4
due May 4

1. Compute the Galois group over $\mathbb{Q}$ of either of the polynomials $x^8 - 3$ or $x^8 - 2$.

2. Compute the Galois group $\mathrm{Gal}(\mathbb{Q}(\sqrt{2+\sqrt{2}})/\mathbb{Q})$.

3. Let F be a field of characteristic p and assume that $f = x^p - x + a \in F[x]$ is irreducible over F. Compute the Galois group of f over F. (Hint: If α is a root of f in a splitting field, consider $\alpha + 1$...)

4. In class (so far) we have mostly been concerned with the structure of finite extensions. Do Exercise 6 of V.2 for a taste of something transcendental and a hint of geometry.