2. From Rotman page 211: 3.13.3.16.
3. From Hungerford page 310-311: Problems 1,5.
5. Let $a, b$ be integers such that $\sqrt[3]{a}$ and $\sqrt{b}$ are not integers. Using the discussion in class compute the minimal polynomial of $\sqrt[3]{a} + \sqrt{b}$ over the rational numbers.
6. Determine the Galois group of the polynomial $x^4 + 4x^3 - 4x^2 - 16x + 72$.
7. Construct a rational polynomial $f$ of degree 6, whose Galois group over the rationals is the dihedral group $D_6$.
8. Let $I$ be a maximal ideal of $\mathbb{Q}[x_1, x_2, \ldots, x_d]$. Show that the quotient field $K = \mathbb{Q}[x_1, x_2, \ldots, x_d]/I$ is an algebraic extension of $\mathbb{Q}$. 