HOMEWORK (*required*):

1. Read section 1.4 in Artin.

2. Let V denote the Klein 4-group. Show that $\mathrm{Aut}(V)$ is isomorphic to S_3.

3. Define $f : GL_n(\mathbf{R}) \to GL_n(\mathbf{R})$ by $f(A) = {}^tA^{-1}$ (where ${}^tA$ is the transpose of A). Show that f is an automorphism, but not an inner automorphism for $n \geq 1$.

4. Do problem 1.4.5 from Artin.